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August 15, 2016

Andrew McAllister
Commissioner and Presiding Member
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: Coastal Commission's § 30413(d) Report for the Petition to Amend Application for Certification #12-AFC-02C – proposed Huntington Beach Energy Project by AES Huntington Beach Energy, LLC ("AES")

Dear Mr. McAllister:

On August 10, 2016, by a unanimous vote, the Coastal Commission, at public hearing, approved forwarding this letter and the attached report for the California Energy Commission's ("CEC's") consideration. The report assesses the proposed Huntington Beach Energy Project ("HBEP"), as recently modified, for conformity to the Coastal Act's Chapter 3 resource protection and use policies and the policies of the City of Huntington Beach's certified local coastal program ("LCP"). The report provides findings and recommended conditions that will allow the modifications to the proposed project to be built and operated consistent, to the extent feasible, with those policies.

The project involves demolishing the existing Huntington Beach Generating Station and replacing it with the new HBEP that would include new generating units on the same project site. This new facility would end the current power plant's reliance on its "once-through cooling" system that uses large volumes of seawater to cool the existing generating units. This current proposal is a modification of the project the CEC approved in 2014 and for which the Coastal Commission provided an earlier 30413(d) Report.

Pursuant to the Warren-Alquist Act, the CEC has sole permitting authority for locating or modifying power plants with a greater than 50-megawatt capacity, including those located in the coastal zone. Nevertheless, section 30413(d) of the Coastal Act expressly authorizes the Coastal Commission to participate in the CEC's proceedings and provide findings with respect to specific measures to bring a power plant project located within the coastal zone into conformity with Coastal Act and LCP policies. Warren-Alquist Act section 25523(b) requires the CEC to include the Coastal Commission's recommended specific provisions in its final project decision unless it finds that they are infeasible or would cause greater adverse environmental impacts.

Staff of the two Commissions have developed a Memorandum of Agreement that describes the manner in which the two Commissions will coordinate their respective reviews and identifies the process for the CEC to consider the Coastal Commission's findings and recommended specific provisions.

For this currently proposed project, the Coastal Commission has focused its Coastal Act section 30413(d) review on the project's potential adverse effects in two key issue areas: (1) wetlands and environmentally sensitive habitat areas ("ESHA"), and (2) public access to the shoreline. The attached report includes several specific provisions the Coastal Commission recommends the CEC adopt as part of any final approval of 12-AFC-02C to ensure the proposed project is consistent to the maximum extent feasible with relevant Coastal Act and LCP policies.

Thank you for your consideration of the Coastal Commission's findings and recommendations.

Sincerely,

JOHN AINSWORTH
Acting Executive Director

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Coastal Commission Report
to
California CEC
on
Petition to Amend
Application for Certification 12-AFC-02C
– AES Huntington Beach Energy Project –

Reviewed pursuant to
Coastal Act Section 30413(d)

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I. FINDINGS AND RECOMMENDED SPECIFIC PROVISIONS

A. PROJECT DESCRIPTION & BACKGROUND

The Huntington Beach Power Plant is an electrical generating facility located in the City of Huntington Beach (see **Exhibit 1 – Area Map**). It is owned and operated by AES Huntington Beach Energy, LLC (hereafter, either "the applicant" or "AES"). The power plant site covers about 60 acres in the southeast portion of the City and borders the Pacific Coast Highway, the Magnolia Marsh wetlands, and a flood control channel (see **Exhibit 2 – Modified Site Plan**). A switchyard within the site is owned and operated by Southern California Edison.

AES has proposed constructing a new facility, the Huntington Beach Energy Project ("HBEP"), to replace the existing facility. This current proposal is a modification of AES's previously proposed project that the California Energy Commission ("CEC") approved in 2015. Exhibits 3a 3b provide photographic simulations of the two proposals.

Project Description

The proposed modified HBEP involves demolishing existing generating units and installing a new combined-cycle power block producing about 644 megawatts and two 100-megawatt simple-cycle gas turbines. AES would first install the combined-cycle power block, then demolish two existing units (Units 3 & 4), followed by construction of the simple-cycle units, and then demolition of existing Units 1 & 2.

The new facility will be air-cooled and will no longer rely on using seawater for cooling. The existing facility's generating units are cooled using a "once-through cooling" process in which AES pumps up to several hundred million gallons per day of seawater from an open intake located about 2500 feet offshore. As the seawater is pumped through the facility, it removes excess heat from the generating units and is then discharged back into the Pacific Ocean through an outfall pipe. AES's proposed modifications will ensure the facility no longer relies on seawater for cooling and are meant to allow the facility to conform to the California Ocean Plan's 2012 amendment that has resulted in retirement of most of California's coastal power plants that formerly relied on seawater for cooling. Pursuant to that Ocean Plan amendment, AES is to retire its once-through cooling system by the end of 2020. During the construction period, AES proposes to locate its construction laydown areas at this site and at its Alamitos Generating Station, located about 15 miles north in the City of Long Beach. The CEC's review anticipates an expected construction period of about 10 years and a power plant operating life of about 20-30 years, which would extend to between 2050 and 2055.

Background

In June 2012, AES submitted an Application for Certification ("AFC") to the CEC proposing to replace the existing facility with the HBEP, which at that time would have been located on about 29 acres of the site and would produce about 936 MW of electrical power. On July 14, 2014, the Coastal Commission submitted a report required pursuant to Section 30413(d) of the Coastal Act to the CEC (see also Section I.B of these Findings – Regulatory Framework and Standard of Review). That report, which is provided as Attachment 2 to this Report, included a number of

conditions the Coastal Commission determined were necessary for the proposed project to conform to relevant Coastal Act and Local Coastal Program ("LCP") provisions. The report was submitted to the CEC after its Final Staff Assessment had been published, however, making it more difficult procedurally for the CEC to fully consider the Coastal Commission's recommendations. CEC staff and Coastal Commission staff have since met to ensure that the Coastal Commission's report will be submitted at a time when it can be properly entered into the CEC's record. In November 2014, the CEC published its "Final Commission Decision" approving the HBEP subject to a number of conditions, including several, though not all, that the Coastal Commission had recommended.

In September 2015, AES submitted to the CEC a "Petition to Amend" the CEC's previous project approval. The proposed modified HBEP would be built on the same site but with a different project layout and would provide up to about 844 megawatts of generating capacity. The proposed modified HBEP is more fully described in the CEC staff's June 2016 Preliminary Staff Assessment ("PSA"), available here: http://docketpublic.energy.ca.gov/PublicDocuments/12-AFC-02C/TN211973_20160624T152748_Preliminary_Staff_Assessment.pdf

The Findings herein provide the Coastal Commission's recommendations of feasible mitigation measures that must be required as part of any project approval to ensure the modified project conforms to relevant LCP and Coastal Act provisions. The currently proposed project would result in somewhat different effects on coastal resources than the previously approved project, with the main differences being:

- **Direct wetland impacts:** Review of the previously approved project was based in part on there being no identified wetland areas within the project footprint. The currently proposed project, however, includes two areas of known or likely wetlands that would be directly affected by project activities. The Coastal Commission is therefore recommending measures needed to avoid or minimize adverse effects on those wetland areas.
- **Indirect adverse effects to nearby wetlands/Environmentally Sensitive Habitat Areas:** Most locations of the previously proposed project were several hundred feet further from adjacent sensitive habitat areas. The currently proposed footprint includes major components and noise-generating equipment much closer, and in some cases, almost adjacent to these habitat areas. The currently proposed project also identifies potential direct wetland impacts that were not identified or assessed in the previous project review.
- **Effects on public access to the shoreline:** The previous project included an expected construction period of about eight years while the currently proposed project proposes a 10-year construction period, with traffic impacts that may reduce public access to the shoreline. Additionally, and as noted above, one of the proposed offsite construction parking areas includes wetlands.

B. REGULATORY FRAMEWORK AND STANDARD OF REVIEW

Pursuant to the Warren-Alquist Act, the CEC has exclusive siting authority over thermal electric power plants of 50 megawatts or greater capacity proposed to be built in California. According to section 25500 of the Warren-Alquist Act, "The issuance of a certificate by the [Energy] commission shall be in lieu of any permit, certificate, or similar document required by any state, local or regional agency, or federal agency to the extent permitted by federal law, for such use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law." Section 25523(a) of the Warren-Alquist Act additionally requires the CEC to assess the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety. Moreover, section 25523(d)(1) of that Act requires that the CEC make findings regarding the conformity of the proposed project with all applicable laws, including federal laws, such as the Coastal Zone Management Act.

The CEC evaluates and makes its determination regarding proposed facilities through its Application for Certification (AFC) process. When the CEC is considering licensing a facility pursuant to its AFC process, it is the lead state agency for purposes of the California Environmental Quality Act (CEQA), and the PSA includes analyses similar to those normally provided in an Environmental Impact Report (EIR). The PSA provides the initial CEC staff analysis of the proposed project, examines engineering, environmental, public health, and safety aspects of the facility, and includes proposed conditions of certification, which are similar to mitigation measures identified in an EIR.

While the CEC has exclusive jurisdiction over siting proposed power plants as described above, both the Coastal Act and the Warren-Alquist Act provide a role for the Coastal Commission to play in the CEC's review of power plants proposed to be located in the coastal zone. Both Acts include mechanisms authorizing the Coastal Commission to evaluate whether the proposal conforms to Coastal Act policies and to inform the CEC of the results of this evaluation. Section 30413(d) of the Coastal Act requires the Coastal Commission to 1) "participate in proceedings" that the CEC undertakes "pursuant to the provisions of Chapter 6 (commencing with Section 25500) of Division 15 with respect to any thermal powerplant or transmission line to be located, in whole or in part, within the coastal zone," and 2) submit to the CEC a report (hereinafter, the "30413(d) Report") on the proposed project's conformity with the Coastal Act's resource protection and use policies, and the policies and implementing ordinances of the certified local coastal program ("LCP") (in this case, the certified LCP of the City of Huntington Beach). Additionally, Warren-Alquist Act Section 25523(b) requires the CEC to include in its decision any "specific provisions" provided by the Coastal Commission in its 30413(d) Report to bring the proposed project into conformity with the policies of the Coastal Act. That section also establishes that the CEC may omit the specific provisions of the Coastal Commission's report only if the CEC finds that adopting the provisions would result in greater adverse impact on the environment or that such provisions would not be feasible. Staff of the two Commissions have prepared a Memorandum of Agreement that describes the manner in which the two Commissions will coordinate their respective reviews and identifies the process for the CEC to consider the Coastal Commission's findings and recommended specific provisions.

Coastal Act section 30413(d) directs that the Coastal Commission's report consider and make findings regarding the following:

> *(1) The compatibility of the proposed site and related facilities with the goal of protecting coastal resources.*
>
> *(2) The degree to which the proposed site and related facilities would conflict with other existing or planned coastal-dependent land uses at or near the site.*
>
> *(3) The potential adverse effects that the proposed site and related facilities would have on aesthetic values.*
>
> *(4) The potential adverse environmental effects on fish and wildlife and their habitats.*
>
> *(5) The conformance of the proposed site and related facilities with certified local coastal programs in those jurisdictions, which would be affected by any such development.*
>
> *(6) The degree to which the proposed site and related facilities could reasonably be modified so as to mitigate potential adverse effects on coastal resources, minimize conflict with existing or planned coastal-dependent uses at or near the site, and promote the policies of this division.*
>
> *(7) Such other matters as the commission deems appropriate and necessary to carry out this division.*

The findings herein provide the Coastal Commission's 30413(d) Report for the project as modified through AES's Petition to Amend. For this proposed project, the Coastal Commission has focused on elements of the proposed modifications that would result in changes to coastal resource effects in the following issue areas: (1) wetlands and environmentally sensitive habitat areas (ESHA) and (2) public access to the shoreline. The Coastal Commission's analysis relies largely on the information contained in the CEC staff's Preliminary Staff Assessment ("PSA"), the evidentiary record of this AFC proceeding that has been compiled thus far, and on information identified in the Substantive File Documents described in Attachment A to this report. To ensure the CEC has the full record necessary to adopt the Coastal Commission's recommended provisions, Coastal Commission staff will docket separately those relevant documents identified as Substantive File Documents.

C. WETLANDS AND ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)

Coastal Act Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Coastal Act Section 30233(a) states, in relevant part:

> *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> > *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities…*

Coastal Act Section 30240 states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 6.1.4 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain organisms and for the protection of human health shall be maintained and, where feasible, restored.*

LCP Policy C 6.1.20 states:

> *Limit diking dredging, and filling of coastal waters, wetlands, and estuaries to the specific activities outlined in Policy 30233 and 30607.1 of the Coastal Act and to those activities required for the restoration, maintenance, and/or repair of the Municipal Pier and marina docks. Conduct any diking dredging and filling activities in a manner consistent with Section 30233 and 30607.1 of the Coastal Act.*

LCP Policy C 7.1.2 states, in relevant part:

> *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values…*

LCP Policy C 7.1.3 states:

> *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 7.1.4 states:

> *Require that new development contiguous to wetlands or environmentally sensitive habitat areas include buffer zones. Buffer zones shall be a minimum of one hundred feet setback from the landward edge of the wetland, with the exception of the following:*
>
> *A lesser buffer may be permitted if existing development or site configuration precludes a 100 feet buffer, or conversely, a greater buffer zone may be required if substantial development or significantly increased human impacts are anticipated. In either case, the following factors shall be considered when determining whether a lesser or wider buffer zone is warranted. Reduced buffer zone areas shall be reviewed by the Department of Fish and Game prior to implementation.*
>
> *a) Biological significance of adjacent lands: The buffer should be sufficiently wide to protect the functional relationship between the wetland and adjacent upland.*
> *b) Sensitivity of species to disturbance: The buffer should be sufficiently wide to ensure that the most sensitive species will not be disturbed significantly by permitted development, based on habitat requirements of both resident and migratory species and the short and long term adaptability of various species to human disturbance.*
> *c) Susceptibility of parcel to erosion: The buffer should be sufficiently wide to allow for interception of any additional material eroded as a result of the proposed development based on soil and vegetative characteristics, slope and runoff characteristics, and impervious surface coverage.*
> *d) Use existing cultural features to locate buffer zones: The buffer zones should be contiguous with the environmentally sensitive habitat areas and make use of existing features such as roads, dikes, irrigation canals, and flood control channels where feasible.*

LCP Policy C 7.1.5 states, in relevant part:

> *Notify County, State and Federal agencies having regulatory authority in wetlands and other environmentally sensitive habitats when development projects in and adjacent to such areas are submitted to the City.*

LCP Policy C 7.2.7 states:

> *Any areas that constituted wetlands or ESHA that have been removed, altered, filled or degraded as the result of activities carried out without compliance with Coastal Act requirements shall be protected as required by the policies in this Land Use Plan.*

LCP Policy I-C 8(c) states, in relevant part:

> *For proposed projects within the Coastal Zone, utilize the development review/environmental review process to accomplish the following:*
> 1. *Examine each development's potential to affect habitat. To the maximum extent feasible project impacts on habitat shall be minimized through avoidance. In the event mitigation is necessary, mitigation shall be provided on-site if feasible or within the general vicinity if on-site mitigation is not feasible. Determine the necessity for Mitigation Agreements or other coordination with the California Department of Fish and Game, California Coastal Commission and/or federal agencies to obtain necessary permits for developments that appear to affect habitat.*
> 2. *Permit resource dependent and incidental public service related land uses within wetlands and environmentally sensitive habitat areas only if consistent with the following Coastal Act policies: Section 30233 and Section 30240.*
> 3. *Require improving the natural biological value, integrity and function of coastal wetlands and dunes through native vegetation restoration, control of alien plants and animal,* [sic] *landscape buffering and development setbacks.*
> 4. *…*
> 5. *Review any development proposed for non-wetland areas to ensure that appropriate setbacks and buffers are maintained between development and environmentally sensitive areas to protect habitat quality…*

The findings below separately assess two types of project-related impacts – first, direct wetland impacts within the proposed project footprint, and then indirect impacts to adjacent wetlands and ESHA that are likely to occur during facility construction and operations. Both the Coastal Act and the City's LCP include policies requiring the protection of biological productivity in wetlands and environmentally sensitive habitat areas. The policies require that development adjacent to environmentally sensitive areas be sited and designed to prevent impacts which would significantly degrade those areas. The LCP requires buffer zones be established around wetlands to protect them from proposed development.

Direct Wetland Impacts

The CEC's 2015 project approval was based in part on there being no wetlands identified within the proposed project footprint, and the Coastal Commission's previous 30413(d) Report therefore included no recommended provisions regarding direct wetland impacts. However, there now appear to be two areas of Coastal Commission-jurisdictional wetlands within the proposed project footprint.

One area is described in AES's September 2015 Petition to Amend, which shows that the currently proposed project would fill and cause direct adverse effects to between one and two acres identified as wetlands by the U.S. Fish and Wildlife Service ("UWFWS") pursuant to its National Wetland Inventory ("NWI") designation. Figure 5.2-2a in the Petition to Amend (see Exhibit 4) shows these mapped areas within and adjacent to the proposed project footprint. The Petition to Amend states (on page 5.2-2): "…the four fuel oil tank containment basins have been mapped as a palustrine system that has an unconsolidated bottom that is semi-permanently flooded and has been excavated (PUBFx); a portion of the southern-most containment basin is also mapped as a palustrine system that has an unconsolidated shore that is semipermanently flooded and has been excavated (PUSCx)…" However, AES's Petition goes on to say that while the USFWS designated these areas as wetlands, they are not "actual wetlands." AES states that it completed a wetland delineation for the project, though it has not been provided as part of the record before the CEC. AES references a document it provided during the previous AFC proceeding that describes a November 2012 site visit meant to show results of a wetland determination conducted pursuant to Coastal Commission guidelines (provided as Exhibit 5 of the Addendum). The document concludes that the area did not include wetlands; however, that assessment was not conducted consistent with Commission guidelines.

The Coastal Commission's definition of wetlands is similar to that used by USFWS in its NWI designation. Both definitions require the presence of any one of three wetland parameters – hydrology, hydric soils, or hydrophytic vegetation – though the Coastal Commission and USFWS use slightly different methods for determining the presence or absence of those parameters. Additionally, the identified wetlands are within a part of the proposed project footprint that is similar to adjacent areas within the AES site that the Coastal Commission has already determined include jurisdictional wetlands and is the subject of a Coastal Commission investigation of potential violations related to removal of wetland characteristics due to unpermitted grading and vegetation removal.[1,2]

The other part of the proposed project footprint that may include Coastal Commission-jurisdictional wetlands is the vacant lot proposed to be used as a construction parking area across Newland Street from the power plant site (see Exhibit 6 – Proposed Parking Areas). The City has previously identified areas adjacent to this proposed parking area as having wetland characteristics;[3] however, AES's Petition to Amend and the PSA do not provide any description or determination regarding this area's wetland qualities. Other documents suggest that wetlands may exist on this currently vacant and unpaved parcel – for example, the imagery provided in

[1] See October 28, 2014 Coastal Commission letter to AES re: Violation File No. V-7-13-002.

[2] Pursuant to LCP Policy C 7.2.7, any wetland areas that have been removed, altered, filled, or degraded due to activities carried out without compliance with Coastal Act requirements are to be protected as required by relevant LCP policies. For a more complete description of site characteristics and Coastal Commission jurisdiction, see the November 2013 Coastal Commission staff report, available here: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

[3] The area and its wetland characteristics is partially described in the City's April 2007 approval of a Mitigated Negative Declaration and Coastal Development Permit for an adjacent project on Newland Street: http://www.huntingtonbeachca.gov/files/users/planning/07ag0410late.pdf

Exhibit 7 shows evidence of soil staining and standing water that may indicate the presence of wetland characteristics. Using this area for parking could result in up to 10 years of grading, vegetation removal, soil compaction, and other adverse effects that would significantly diminish any wetland functions and values at the site.

The CEC's regulations (at Cal. Code Regs., Title 20, Section 1769) establish that changes evaluated during this Petition to Amend proceeding are limited to "substantial changes" that will result in greater environmental impacts than those evaluated in the CEC's prior approval. The new information available about both of these areas that is provided as part of the Commission's 30413(d) Report represents the potential for a "substantial change" in circumstances and potentially greater adverse impacts at both sites, which therefore allows for additional evaluation during this proceeding.

Coastal Commission Recommended Specific Provisions

LCP Policy C 6.1.20 allows wetland filling for coastal dependent-industrial facilities, such as the proposed project. However, any such filling must conform to the other relevant policies noted above, including LCP C 6.1.4, which requires wetland biological productivity be maintained and where feasible, restored, and LCP Policy I-C 8, which requires that mitigation be provided on-site, if feasible, or within the general vicinity, if on-site mitigation is infeasible. LCP Policy I-C 8 also provides guidance for the necessary mitigation by requiring that wetlands be restored to improve their natural biological value, integrity, and function.

When direct wetland impacts are unavoidable and allowable, mitigation must be required to compensate for the lost habitat functions and values. The Coastal Commission's compensatory mitigation requirements generally include specific performance standards, monitoring provisions, and reporting requirements needed to ensure a project provides the expected level of mitigation. The Coastal Commission also requires a mitigation ratio (starting at about 4:1) to reflect that it usually takes several years for replacement habitat to succeed and replace the lost functions and values, that performance standards are not always met, and that mitigation usually results in different functions and values than were present in the affected wetland area.

For this proposed project, the Coastal Commission recommends the CEC adopt the following two provisions:

- First, that the project not include the above-referenced proposed parking area along Newland Avenue. As discussed in these Findings' Section I.D – Public Access, the proposed project currently has available three to four times the amount of parking actually needed, so it appears feasible to entirely avoid the direct loss of wetlands that could result from using this area for parking. The Coastal Commission specifically recommends that any CEC project approval disallow use of the approximately three acres of proposed parking across Newland Street from the HBEP.

- Second, that the CEC require AES to conduct a wetland determination and delineation of the NWI-designated areas within the proposed project footprint using Coastal Commission protocol as approved by a Coastal Commission staff ecologist. Results of this determination and delineation will be used to determine the necessary types and

amounts of wetland mitigation, as described below. Additionally, should the CEC determine it is not feasible to prohibit parking at the above-referenced Newland Street site, AES should conduct a similar wetland determination and delineation at that site.

Based on results of the wetland determinations and delineation(s), the CEC should require AES to provide compensatory mitigation for any direct impacts in the form of wetland restoration at a 4:1 ratio at a nearby location. The Coastal Commission recommends this requirement be established through a new **BIO** condition, as provided as Exhibit 8 of this 30413(d) Report, that includes provisions for selecting a restoration site and developing a mitigation plan with adequate performance standards and monitoring measures to ensure any direct adverse effects to wetland areas are mitigated.

Indirect Impacts to Wetlands and ESHA

The Coastal Commission's previous 30413(d) Report identified several components of the proposed project that would not conform to relevant LCP policies meant to protect wetlands and ESHA and it therefore provided several recommended provisions meant to allow conformity to those policies.

The currently proposed project would result in significantly increased adverse effects within the adjacent ESHA/wetland areas, as it would move major noise- and vibration-generating components closer to the sensitive species using these areas than the project as originally approved. Additionally, and as described below, studies and conclusions by wildlife agencies show that bird behavior is adversely affected by the sounds generated by construction such as that proposed by AES. The Coastal Commission is therefore recommending feasible provisions needed to avoid and reduce the proposed project's likely effects on these species in the adjacent ESHA/wetland habitat areas.

Background

The HBEP site is part of an extensive area of coastal wetlands and dunes that formerly extended for several miles along this area of the coast. The project site is adjacent to the Magnolia Marsh, which provides a mix of wetlands and environmentally sensitive habitat areas. Similar habitat extends onto the HBEP site adjacent to the flood control channel.

Many areas of the adjacent and nearby habitat complex are being restored and protected as required compensatory mitigation for other development projects or to serve as restoration conducted in response to environmental damages. For example, restoration of the adjacent Magnolia Marsh conducted by the Huntington Beach Wetlands Conservancy was funded in part by the California Coastal Conservancy and the National Oceanic and Atmospheric Administration ("NOAA") as part of its Montrose Settlements Restoration Program.[4] One of the

[4] The Montrose Settlements Restoration Program resulted from settlement of a lawsuit by the state and federal government against Montrose Chemical Corporation regarding discharges of DDTs and PCPs into Southern California marine waters. The Program provides funds for conducting a number of restoration activities in Southern California. It is administered by NOAA and other trustee agencies, including the National Park Service, U.S. Fish & Wildlife Service, California Department of Fish and Wildlife, California Department of Parks and Recreation, and California State Lands Commission. Information about the Program is available at: http://www.montroserestoration.noaa.gov/

main goals of this restoration is to "maximize salt marsh/tidal habitats with no net harm to threatened and endangered (T&E) species existing on site such as the Belding's Savannah Sparrow." The Upper Magnolia Marsh, which is a 1.6 acre ESHA/wetland area closest to AES's project footprint, is the site of compensatory mitigation the City required for impacts to other nearby wetlands caused by construction of improvements along Newland Avenue. This area of required compensatory mitigation consists of a mix of sub-tidal, inter-tidal, and upper marsh habitat with a primary goal of enhancing the site to provide nesting habitat for the endangered Belding's Savannah Sparrow.[5] Specific habitat types within and immediately adjacent to the project site include coastal scrub and salt panne, which is noted as particularly important to the Belding's Savannah Sparrow. A 2015 survey identified eight territories in the Magnolia Marsh in which Belding's Savannah Sparrows were found, which represents about ten percent of all Huntington Beach territories for the species.[6] The Magnolia Marsh area therefore still provides beneficial and important habitat, despite being subject to significant negative stressors from nearby industrial uses.[7] Not only will the currently proposed project result in more significant adverse noise and vibration effects in this habitat, it will more significantly diminish the habitat functions and values expected from these compensatory mitigation areas that have been funded in part by public agencies.

Along with the Belding's Savanna Sparrow, the Magnolia Marsh and other nearby wetland areas provide known or potential habitat for at least several dozen listed sensitive species, including the endangered Light-footed Ridgway's Rail.[8,9] The Magnolia Marsh restoration project is expected to provide suitable breeding habitat for the endangered Light-footed Ridgeway's Rail.[10] The CEC's previous project approval, responding to AES's contention that the Rail is not known to be currently present in Magnolia Marsh, acknowledged that even if the Rail is not currently present, the marsh restoration is meant to provide suitable Rail nesting habitat as the restoration effort progresses, and thus this species could be present during the then seven-year planned project construction period. With the current project having an expected 10-year construction

[5] See City of Huntington Beach, April 10, 2007 *Mitigated Negative Declaration 05-05 and Appeal of Coastal Development Permit No 05-07*, March 17, 2008 *Memorandum of Understanding between the City of Huntington Beach and the Huntington Beach Wetlands Conservancy*, and March 2007 *Huntington Beach Wetlands Conceptual Restoration Plan*, prepared by Chambers Group, Irvine, CA.

[6] See Zembal, Richard, and Susan Hoffman, and Robert Patton, *A Survey of the Belding's Savannah Sparrow (Passerculus sandwichensis beldingi) in California, 2015 – Final Report to California Department of Fish and Game, South Coast Region*, October 2015.

[7] See Solek, Christopher, and Eric Stein, *An Evaluation of Wetland Restoration Projects in Southern California using the California Rapid Assessment Model (CRAM): A Final Report to the Southern California Wetlands Recovery Project*, Technical Report 659, February 2012.

[8] From Moffatt & Nichol, *Huntington Beach Wetlands: Habitats and Sensitive Species*, August, 2004. See also California CEC, *Final Staff Assessment for 12-AFC-02 – Biological Resources, Table 2*, May 2014.

[9] The Light-footed Ridgway's rail (*R. obsoletus levipes*) was formerly known as the Light-footed Clapper Rail, but was recently by the American Ornithologist Union.

[10] See September 12, 2012 USFWS comment letter regarding potential adverse effects of proposed AES power plant replacement, California CEC Application For Certification No. 12-AFC-02.

period, it is even more likely that the habitat used by Rails and therefore the Rails themselves will be present.

Required and Feasible Mitigation Measures Needed to Reduce Effects of Project Noise and Vibration on Species in Adjacent ESHA/wetland areas

The Coastal Commission recommends the CEC require any of three types of mitigation measures – implementation of adequate buffers, limits on allowable noise levels, and timing restrictions on project-related activities – to avoid or reduce adverse effects to these sensitive species and their habitats in the adjacent ESHA/wetland areas. The three measures can be used together or separately to feasibly ensure adequate protection of the sensitive species, as described below.

Adequate Buffers: LCP Policy C 7.1.4 generally requires a buffer of at least 100 feet between new development and ESHA/wetland areas. The LCP defines "buffer" as:

> *Open space that horizontally separates and protects environmentally sensitive habitat areas from development areas. Buffer areas should be contiguous with the sensitive habitat but are not in themselves a part of the environmentally sensitive habitat area to be protected. A typical buffer standard width is 100 feet, but this width may vary depending on the species and habitat to be protected. Buffers may contain limited trail usage and other non-substantial structures such as interpretive signage that serve to reduce the impact of human activities on wildlife. Public trails should not be constructed where construction could have significant adverse affects* [sic] *on the environment or where public access could have significant adverse impacts on habitat.*

The LCP policy allows wider buffers to be imposed if the development is substantial or involves significant increases in adverse effects, both of which apply to the AES proposal. Buffers of less than 100 feet are allowed only through review by the California Department of Fish and Wildlife ("CDFW"). The LCP also establishes that buffer widths are to be based on the biological significance of the wetland area and the sensitivity of species to disturbance. As noted above, the adjacent sensitive habitat areas have a relatively high biological significance due to the presence of listed endangered and threatened species and the habitat suitable for supporting those species. LCP Policy I-C 8(c) additionally requires that setbacks and buffers between development and ESHA be adequate to protect habitat quality.

Limits on Allowable Noise Levels: The currently proposed project would bring major noise- and vibration-generating power plant components even closer to the sensitive species in the adjacent ESHA/wetland area than the previously proposed project and would create even more significant adverse effects. The current PSA, however, states only that the CEC's previously approved Conditions BIO-1 through BIO-8 are adequate to prevent significant impacts to these species, though it does not provide an updated noise analysis to reflect the differences in the locations of the modified project's noise generating activities and equipment. However, because the currently proposed project's equipment and activities are largely the same as the previously proposed project, the Coastal Commission relies largely on the analysis provided in the prior CEC Staff Assessment.

That prior Staff Assessment identified expected construction noise levels at several locations within nearby ESHA/wetland areas that are substantially greater than ambient sound levels.[11] The Staff Assessment notes that the loudest of the construction activities would be pile driving, with levels of 104 dBA at 50 feet, 86 dBA at 375 feet, and 73-78 dBA at more than 1000 feet.[12] AES also provided an analysis of ambient nighttime noise levels at several nearby locations, including two within the Magnolia Marsh close to the project footprint. AES's September 2012 ambient noise survey conducted at six nearby locations showed ambient levels ranging from 38 to 66 decibels, with the two sample locations in the Marsh closest to the proposed project footprint measuring 51 and 66 decibels. CEC staff calculated the long-term average noise levels as 54 dBA and 61 dBA, respectively. AES also provided a site plan showing sound contours in and near the project site,[13] which suggest that some of the noise generated during the existing power plant operations is attenuated before it reaches the wetland areas closest to the project site due to distance and due to intervening structures, including the large storage tank that AES will remove as part of its project.

The CEC's project approval included just one provision directly relevant to project-related noise that requires AES to place sound dampening structures between an active nest and project construction if signs of bird disturbance or distress are observed by the on-site biologist. The prior Staff Assessment noted that these noise levels during project construction could discourage sensitive species from using nearby habitat areas and adversely affect their breeding or nesting behavior, and that chronic exposure to excessive noise has been demonstrated to adversely affect foraging behavior, reproductive success, population density, and community structure. While avian species may be more sensitive to noise during breeding and nesting season, several types of the impacts identified above could occur any time of year due to the relatively high noise levels expected from either project construction or operation. The prior Staff Assessment also specifically noted that cumulative sound from the adjacent Poseidon's project and from the power plant project could create a significant adverse noise impact at monitoring locations several hundred feet farther away than these nearby wetland areas.[14] It recommended a 60 dBA maximum sound level at the ESHA/wetland receptors.

[11] See, for example, *Preliminary Staff Assessment – Part A Supplemental Focused Analysis, Biological Resources Table 2*, December 2013.

[12] dBA is a measure of the relative loudness of sounds through the air, in decibels. Decibels describe the intensity of sound, and are logarithmic – for example a 60 dBA sound is perceived as twice as loud as a 50 dBA sound. Typical sound levels include 30-35 dBA in quiet, rural areas, 70-75 dBA for freeways from about 50 feet away, and 100 dBA for a jet taking off from 1000 feet away.

[13] See AES, *Huntington Beach Energy Project (12-AFC-02) Additional Responses to Jason Pyle's Data Requests, Set 1 (#1-16)*, with specific reference to that document's *Figure DR Pyle 6-1 Estimated Sound Level Contours: Both HBEP Block 1 and Block 2 at Full Load – Facility Sound Only*, January 17, 2013.

[14] See California CEC, *12-AFC-02 Preliminary Staff Assessment – Noise and Vibration*, October 2013.

Coastal Commission staff contacted staff of the California Department of Fish and Wildlife (CDFW) regarding guidance on acceptable noise levels and mitigation measures for construction projects near habitat areas used by sensitive avian species.[15] Both CDFW and the U.S. Fish and Wildlife Service have developed and implemented recommended measures on a number of such projects, and the agencies' work with CalTrans has resulted in a more detailed set of thresholds than the above-referenced "typical noise threshold," for use in identifying potential harm to sensitive species.[16] These thresholds range from "hearing damage" to "masking," which is a level preventing or reducing communication among individuals, and can result from proximity to construction equipment like that being used for this project. CDFW and USFWS have also established a Memorandum of Agreement to coordinate their consultation, permitting, listing, and other activities related to sensitive species under the auspices of the state and federal endangered species acts.[17]

The conclusions and recommendations of CDFW and USFWS essentially identify potential harm when noise levels are above ambient and greater than about 60-65 dBA. These sound levels are considered harmful to avian species and could result in "take," as defined in the Endangered Species Act, of special status species that use these ESHA/wetland areas, including the Belding's Savannah Sparrow and Light-footed Ridgway's Rail. Mitigation measures employed by both CDFW and USFWS generally require applicants to conduct monitoring to ensure sound levels remain below thresholds known to result in take, to conduct nesting surveys and ongoing monitoring to identify and avoid potential adverse effects to nesting birds, and to conduct noise-generating activities that exceed those thresholds only outside sensitive times such as breeding and nesting seasons.

The USFWS has recommended that the CEC require several mitigation measures, including considering the entire adjacent wetlands area a sensitive receptor and that the project include design features, such as a solid fence along the boundary, to maintain noise levels at or below ambient conditions.[18] AES's current proposal includes installing a sound wall along this boundary of the project site to help reduce noise levels; however, there are no analyses provided to show what levels of noise reductions are expected to result from this proposed sound wall.

Additionally, although the prior CEC Staff Assessment described the expected decibel levels from pile driving, it does not identify the expected increase in groundborne noise and vibration levels (VdB) that would occur in the ESHA/wetland areas during project construction and

[15] Coastal Commission staff personal communication with CDFW staff, September 19 and October 18, 2013 and November 20, 2015.

[16] See, for example, Dooling, Robert, and Arthur Popper, *The Effects of Highway Noise on Birds*, prepared for California Department of Transportation, September 2007.

[17] See March 16, 2015 *Memorandum of Agreement Between U.S. Fish and Wildlife Service Pacific Southwest Region and the California Department of Fish and Wildlife – Wildlife Agency Participation for Implementation of the Federal and State Endangered Species Acts*.

[18] See September 10, 2012 letter from USFWS to CEC regarding Application for Certification 12-AFC-02.

operations, particularly during pile driving.[19] CDFW has identified several bird species as being particularly sensitive to vibration, including the Light-footed Ridgway's Rail, and CDFW recommends that pile driving not occur during their nesting season due to its relatively high levels of both noise and vibration.[20]

The new proposed project layout would now have those activities occur much closer to the sensitive habitat areas. With existing ambient noise levels of about 60-65 dBA and construction noise ranging to over 100 dBA, the noise generated during construction would represent an increase of up to about 40 dBA over ambient levels in the nearest areas of ESHA/wetlands. In addition, the unspecified vibration levels that would be generated in the ESHA/wetland areas during project construction are expected to be significantly higher than ambient, since those areas of the project footprint closest to these sensitive habitat areas are currently devoid of these types of vibration sources, and the nearest existing source – the power plant – is several hundred feet distant, with its vibrations largely attenuated in the intervening soil and underground structures between the plant and the ESHA/wetland area.

Timing Restrictions: Another type of mitigation measure is to allow certain noise- or vibration-generating activities only during less sensitive times of the year. For most birds, the breeding and nesting season runs from about March 1 through September 15, and disturbing listed species during this period may harm or harass these species. The prior Staff Assessment, which addressed AES's proposed seven-year construction period, acknowledged that construction could cause a significant impact by disturbing nesting birds or causing them to abandon nests and suitable habitat.[21] AES's currently proposed construction period of up to 10 years, and therefore up to 10 or 11 breeding and nesting seasons, could result in an even more significant impact.

Applying Necessary Mitigation Measures: Buffers, limits on noise levels, and timing restrictions are feasible measures that can be used separately or in combination to ensure adequate protection for nearby sensitive species. If, for example, there is insufficient area for buffers that are adequate to reduce noise impacts in a sensitive habitat area, those impacts can be reduced through timing restrictions or by limiting the amount of noise that reaches the habitat.

To ensure conformity to LCP and Coastal Act provisions, the City and Coastal Commission have both used these measures in different ways. For example, the City has cited the 60 dBA threshold as causing adverse impacts to avian species and has prohibited noise- and disturbance-generating construction activities adjacent to the Magnolia Marsh during the Belding's Savannah Sparrow breeding season, which runs between mid-February and early August (see, for example, City of Huntington Beach CDPs #2006-005 and #PW-08-003, both for nearby sidewalk replacement projects). The Coastal Commission has similarly allowed project activities related

[19] Groundborne noise and vibration is measured using "VdB," or vibration decibel levels, to distinguish it from airborne sound. Very low VdB levels can be imperceptible, but levels of around 100 VdB and higher can cause structural damage.

[20] Coastal Commission staff personal communication with CDFW staff, October 18, 2013.

[21] From California CEC, *Preliminary Staff Assessment for 12-AFC-02, Huntington Beach Energy Project*, Section 5.2, October 2013.

to Magnolia March restoration activities only between September and March (see CDP #5-08-061 for the Huntington Beach Wetland Conservancy). In nearby Bolsa Chica, the Coastal Commission recently conditioned its approval of a bridge construction project by requiring noise levels to not exceed 65 dBA within 100 feet of any active nests (see the Coastal Commission's May 2013 approval of CDP 5-12-191). The Coastal Commission also requires that permittees conduct nest surveys to identify any active nests within 300 feet of a construction site and to prohibit noise levels greater than 65 dBA as long as those nests are active.[22]

Coastal Commission Recommended Specific Provisions

The Coastal Commission recommends that the CEC use the above feasible mitigation measures – buffer width, allowable maximum noise levels, and timing restrictions – either individually or in combination to minimize the potential for project activities to cause significant adverse effects on nearby sensitive species. The Coastal Commission recommends that the CEC's project approval specifically require that project-related noise not exceed 8 dBA over ambient or 65 dBA, whichever is greater, at the edge of ESHA/wetland habitat closest to the project boundary and that it also include the monitoring measures necessary to determine whether those decibel levels are exceeded during project activities – e.g., installation of noise monitoring equipment, sampling and reporting requirements, etc. This performance standard can be achieved by using any or all of the above mitigation measures – for example, if the project site does not provide sufficient buffer widths to reduce project-generated noise in the sensitive habitat, the 65 dBA limit could be ensured by installing a sound wall shown to reduce noise levels as needed.

Conclusion

The Coastal Commission finds that the CEC's implementation of the above-recommended provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

[22] See, for example, CDPs 5-12-191 and 5-12-268, both issued to the City of Huntington Beach.

D. PUBLIC ACCESS

LCP Policy C 2.5 states:

> *Maintain and enhance, where feasible, existing shoreline and coastal resource access sites.*

Coastal Act Section 30211 states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

The proposed HBEP would be built within an existing industrial site where public access is not available and not warranted. However, two offsite components of the project – its construction-related parking and traffic – would adversely affect public access to the shoreline.

Parking

For both the currently proposed project, AES identified a need for up to about 330 parking spaces during its peak construction period. The previously approved project included one onsite and four offsite parking areas that would provide more than 1000 parking spaces total. AES proposed including the additional spaces in recognition that not all the proposed parking locations would necessarily be available at all times during the seven-year construction period. The currently proposed project modifies the previously approved project parking by adding 20 acres of parking and about 160 additional spaces to the adjacent Plains All-American Tank Farm area, which would provide a total of about 1200 parking spaces, or between three and four times the maximum amount of parking AES expects to be needed during its 10-year construction period (see Exhibit 6).

The Coastal Commission's previous 30413(d) Report noted that one of AES's proposed parking locations – the Huntington Beach City Parking Area – is used extensively by beachgoers and that its use by AES would significantly reduce parking meant to provide public access to the shoreline. To ensure public access to the shoreline was maintained, the Coastal Commission recommended that the CEC either delete this parking area from the project plans or that it allow AES to use this parking area only if there was insufficient parking space available in the other proposed parking areas. The CEC's Final Project Decision included **Condition TRANS-3**, which required AES to prepare a Traffic Control Plan to address the project's traffic- and parking-related impacts, and included the Coastal Commission's recommended provision that AES use the beach parking area only when the CPM determines that there are insufficient parking spaces available at the other parking locations.

As noted above in Section I. C of these Findings, new information made available since the Coastal Commission's previous review suggests one of the proposed parking areas includes areas of Commission-jurisdictional wetlands. The Coastal Commission therefore recommends that **Condition TRANS-3** be further modified to delete the proposed 3-acre Newland Street parking area from the project plans. The Coastal Commission has determined that it is feasible to avoid potential direct adverse effects on wetlands by removing this area from the project, since AES

would still have available more than twice the needed parking spaces during all phases of construction. Alternatively, should the CEC determine it is infeasible or would cause greater adverse environmental damage to delete this parking area from the project plans, the Coastal Commission recommends any wetland impacts be mitigated as described in Section I.C above.

Project-Related Traffic

The previously-approved HBEP was expected to result in about seven years of demolition, remediation, and construction activities that would increase traffic along nearby thoroughfares that provide access to the shoreline, including the Pacific Coast Highway (PCH), Newland Avenue, Brookhurst Street, Magnolia Street, and Beach Boulevard. AES estimated that its average daily construction traffic would include about 734 one-way trips, mostly due to worker commutes, along with up to 112 "oversize" trips to deliver larger power plant components. The current PSA estimates that the modified proposed project would have those activities occur over an approximately 10-year period though with a reduced average number of daily trips.

The previous CEC Staff Assessment identified relatively minor reductions in the Traffic Levels of Service (LOS) at nearby intersections during peak construction and peak traffic times.[23] However, it also determined that at least two of the studied intersections are already at LOS E and LOS F. The City's Circulation Element Policy CE 2.1.1 requires a minimum LOS standard at peak hours to be no lower than LOS D.

The Coastal Commission recommends that the Traffic Control Plan include measures necessary to ensure that project-related traffic would at least maintain the existing LOS along those thoroughfares during the anticipated 10 years of construction for this project, to ensure no reduction in public access to the shoreline. The Coastal Commission also recommends that the CEC modify the project's traffic analysis to incorporate additional cumulative traffic impacts– namely, the construction traffic of up to 225 trips per day resulting from the proposed adjacent Poseidon desalination project and up to about 200 trips per day from the nearby Ascon Landfill cleanup project.[24] These two projects are expected to occur within the same expanded timeframe as the HBEP construction and use the same nearby thoroughfares, but are not included in the traffic analysis. The Coastal Commission therefore requests the CEC require that the traffic analysis plan resulting from **Condition TRANS-3** provide documentation that the individual and cumulative traffic effects from the HBEP and these other projects will allow existing LOS to be maintained.

Conclusion

The Coastal Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

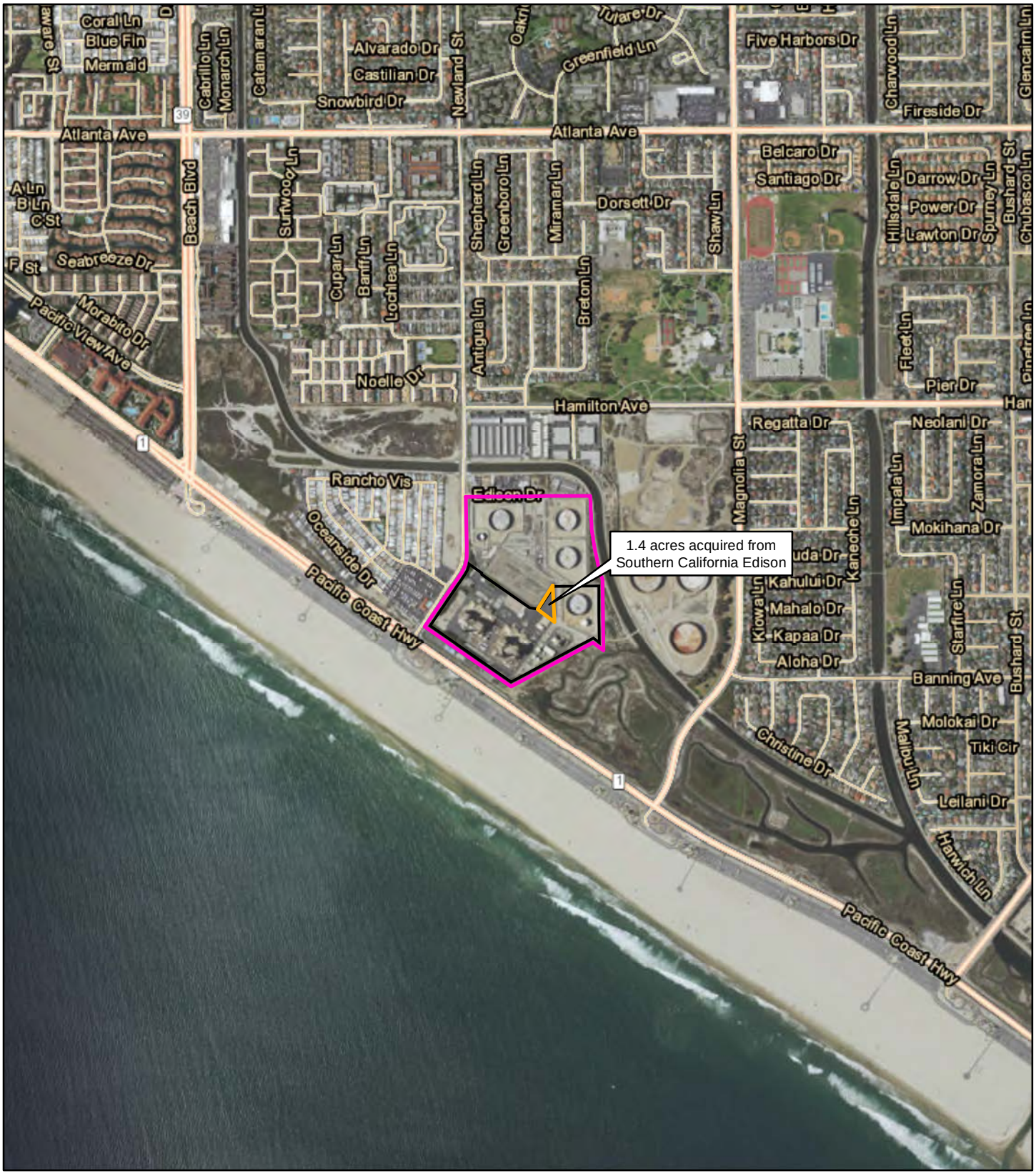
[23] The Level of Service refers to a method used to quantify existing baseline traffic conditions and the level of traffic congestion that may be present at certain times of day or under certain conditions. Levels of Service range from Level A, which allows the free flow of traffic, to Level F, which produces jammed conditions and significant delays.

[24] See 2010 City of Huntington Beach *Poseidon Supplemental Environmental Impact Report*, at http://www.surfcity-hb.org/Government/Departments/Planning/major/poseidon.cfm and DTSC's 2014 *Recirculated Draft Environmental Impact Report for Ascon Landfill* at: http://www.dtsc.ca.gov/SiteCleanup/Projects/Ascon.cfm

ATTACHMENT A – SUBSTANTIVE FILE DOCUMENTS

Coastal Commission, *Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976*, adopted September 1978, revised 1984, re-adopted December 1985, San Francisco, CA

CEC, *Opportunities to Expand Coastal Power Plants in California*, Staff Report P700-80-001, June 1980, Sacramento, CA.



Legend

- AES Huntington Beach Generating Station
- AES Amended Huntington Beach Energy Project

N

0 0.25

Miles

Basemap Source: ESRI

EXHIBIT 1

Figure 2.1-1. HBEP Project Location
AES Amended Huntington Beach Energy Project
Huntington Beach, California

ch2m

\\yosemite\proj\AESCorp\491232DiscPhaseRep\AFC_Archive\HBGS\GIS\AES\MapFiles\Huntington_beach\Project\PTA\Huntington_Expanded_Area.mxd

EXHIBIT 2

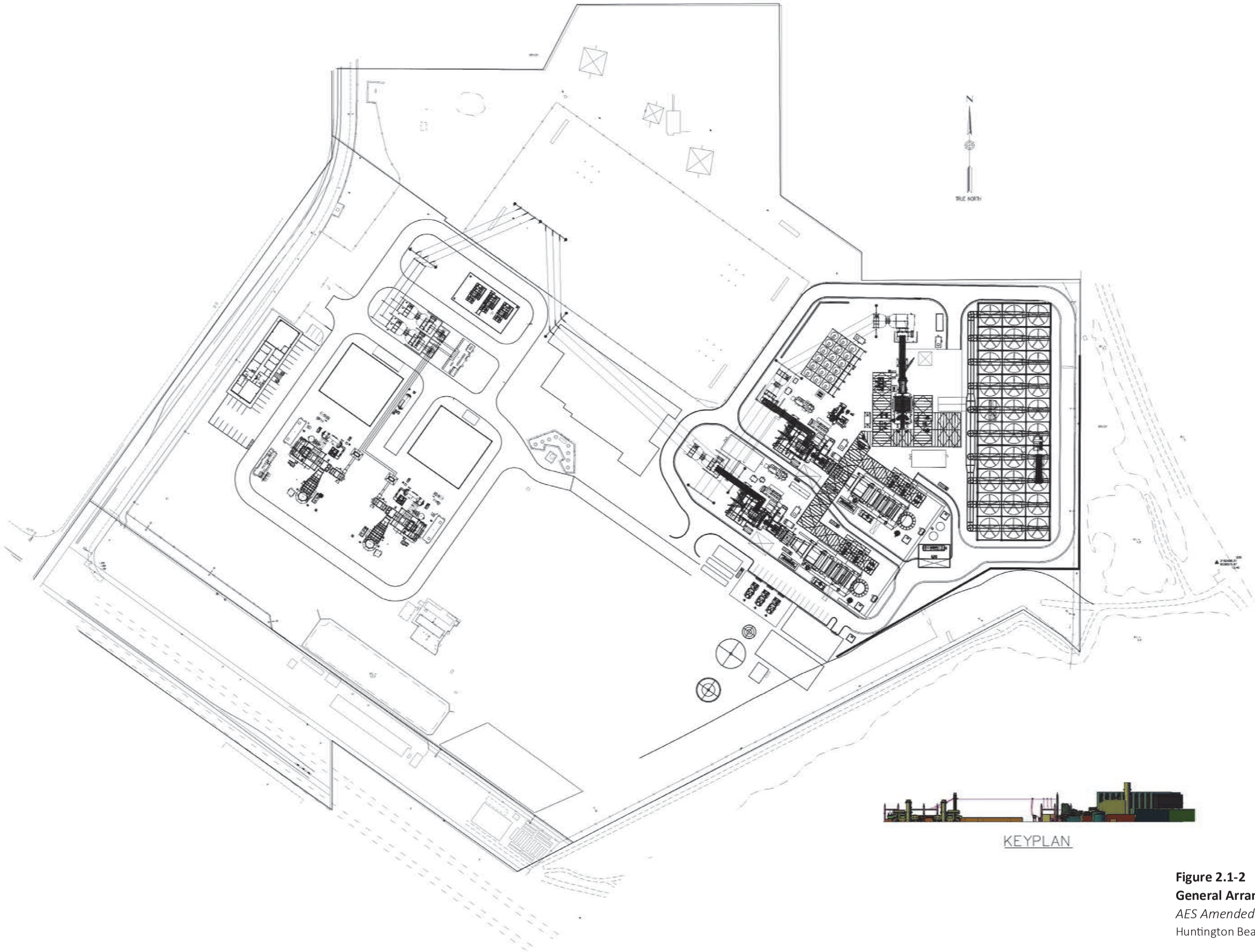


Figure 2.1-2
General Arrangement/Site Plan
AES Amended Huntington Beach Energy Project
Huntington Beach, California

Exhibit 3a

Exhibit 3b

Exhibit 4

Figure 5.2-2a. Sheet 01 of 02
National Wetlands Inventory
AES Amended Huntington Beach Energy Project
Huntington Beach, California

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January 3, 2013

VIA EMAIL

Ms. Felicia Miller, Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Huntington Beach Energy Project (12-AFC-02
Applicant's Supplemental Response to Data Request #27 (Biological Resources)

Dear Ms. Miller:

On behalf of Applicant AES Southland Development, LLC, please find enclosed herewith for docketing Applicant's supplemental response to Staff's Data Request #27 (Biological Resources).

Respectfully submitted,

Melissa A. Foster

MAF:jmw
Enclosure
cc: Proof of Service List

Huntington Beach Energy Project

(12-AFC-02)

Supplemental Data Response, DR27

Submitted to

California Energy Commission

Submitted by

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

January 3, 2013

Exhibit 5

Supplemental Data Response to Biological Resources DR27

DATA REQUEST

27. Please provide a wetland delineation using the guidelines of the USACE (1987 USACE Wetlands Delineation Manual) and guidelines of the Cal. Code Regs., tit. 14, § 13577 to assess any direct or indirect temporary impacts to wetlands adjacent to the power plant site and laydown areas.

Response: Applicant incorporates by reference herein the response provided by Applicant to Data Request DR27 on November 2, 2012. In addition to the information provided in response to DR27 on November 2, 2012, Applicant provides the following information:

The California Energy Commission (CEC) biologist, Anwar Ali, made an additional request during the Huntington Beach Energy Project (HBEP) workshop on November 14, 2012, that the Applicant complete an Arid West Region wetland determination data form for one soil pit within the fuel oil tank containment basin (the data form available in USACE, 2008). The completed Arid West Regional data form and photo log (showing the one soil pit) are included is this supplemental response. As documented in the attached data form and photo log completed by Melissa Fowler, Biologist, CH2M HILL, Inc., none of the three wetland indicators set forth in Section 13577 (hydrophytic vegetation, hydric soil, and/or wetland hydrology) is present within the fuel oil tank containment basin on the HBEP site (SP-01).

Reference:

United States Army Corps of Engineers (USACE). 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Available online at: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046489.pdf

Attachment DR27-1
Arid West Regional Data Form and Photo Log

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HUNTINGTON BEACH ENERGY MARKET City/County: HUNTINGTON BEACH / ORANGE COUNTY Sampling Date: 30 NOV 2017

Applicant/Owner: AES State: CA Sampling Point: SP-01

Investigator(s): MELISSA FOWLER Section, Township, Range: SECTION 13, TOWNSHIP 06 SOUTH, RANGE 11 WEST

Landform (hillslope, terrace, etc.): DEPRESSION Local relief (concave, convex, none): SLIGHTLY CONCAVE Slope (%): 3%

Subregion (LRR): MEDITERRANEAN CA (LRR C) Lat: 33° 38' 41.43" N Long: 117° 58' 33.99" W Datum: WGS 84

Soil Map Unit Name: TIDAL FLATS (ZII) NWI classification: PUBFx AND PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
FUEL OIL TANK CONTAINMENT BASIN

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
NO VEGETATION PRESENT, ACTIVELY MANAGED FUEL OIL TANK CONTAINMENT BASIN.

SOIL

Sampling Point: SP-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2.5	5YR 4/3	100					SANDY LOAM	
2.5-4	10YR 5/4	95					SANDY LOAM	SLIGHT MOISTURE
		5						ROCKS
4-12"	10YR 5/4	100					SAND	NO MOISTURE
BOTTOM OF PIT								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

MOISTNESS IS PRESENT 0-5" FROM RAINFALL

VERY LIGHT MOISTNESS

Huntington Beach Energy Project

Fuel Oil Tank Containment Basin: Soil Pit (SP-01)

Photo 1: Location of soil pit prior to excavation.

Photo 2: Soil pit.

Photo 3: Soil sample.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
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APPLICATION FOR CERTIFICATION FOR THE HUNTINGTON BEACH ENERGY PROJECT

Docket No. 12-AFC-02
PROOF OF SERVICE
(Revised 12/24/12)

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DECLARATION OF SERVICE

I, Judith M. Warmuth, declare that on January 3, 2013, I served and filed copies of the attached **Applicant's Supplemental Response to Data Request #27 (Biological Resources)** dated January 3, 2013. This document is accompanied by the most recent Proof of Service list, which I copied from the web page for this project at:
http://www.energy.ca.gov/sitingcases/huntington_beach_energy/index.html.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, as appropriate, in the following manner:

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

☒ I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those parties noted above as "hard copy required"; **OR**

☐ Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: January 3, 2013

Judith M. Warmuth

PROJECT DESCRIPTION - FIGURE 2
Amended Huntington Beach Energy Project - Construction / Laydown Parking Areas

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: CH2M - Figure 2.3-3 (Rev 1)

Exhibit 6

Exhibit 7

Exhibit 8 **– Recommended New BIO Condition**

Wetland Mitigation Plan

PRIOR TO STARTING PROJECT CONSTRUCTION, AES shall submit for review and written approval of the CPM a Wetland Mitigation Plan for all direct wetland impacts resulting from the proposed project. The Plan shall be developed by a qualified wetland or restoration ecologist in consultation with the California Coastal Commission, the California Department of Fish & Wildlife, and U.S. Fish & Wildlife Service. AES shall undertake development in conformance with the approved final Plan.

The Plan, at a minimum, shall include:

Site Plan

1. A detailed final site plan of the selected coastal wetland mitigation site including both the proposed restoration area and the surrounding buffer areas. The site plan shall include existing and proposed hydrologic, soil and vegetative conditions of the site, engineering/ grading plans and schedule, erosion control plans and schedule, weeding plans and schedule, planting plans and schedule, short- and long-term irrigation needs, on-going maintenance and management plans, and a monitoring plan as described below.

2. A description of how the site will meet success criteria consisting of at least 90% coverage of native vegetation within five years and natural hydrology sufficient to support the native vegetation at the site.

3. The final design and construction methods that will be used to ensure the site achieves the above success criteria.

4. Provisions for submittal, within 30 days of completion of initial restoration work, of "as built" plans demonstrating that the wetland mitigation site has been established in accordance with the approved design and construction methods.

5. Provisions for submittal of a wetland delineation of the mitigation site at the end of five years to confirm total acreage mitigated.

6. If the selected site will be subject to sea level rise, the wetland mitigation plan should consider various projected sea level rise scenarios that could occur over the life of the approved project to anticipate any direct and indirect environmental changes to the mitigation site from sea level rise or other climatic changes, and should provide liberal buffer zone and "habitat migration corridors" to allow sensitive habitat and species to migrate inland or upland as sea level rises in the event that the most extreme sea level rise projections are realized. The final mitigation site plan shall analyze potential impacts from sea level rise, such as changes to the area or extent of the mitigation site, potential barriers to inland migration of the wetland mitigation site, impacts of increased salinity on wetland type and function, and how the project would address these impacts to ensure that the mitigation site can adapt, persist and maintain hydrologic and ecological

functions over time. The plan should require that additional habitat be restored when the development allowed by this permit blocks necessary upland migration due to sea level rise. The mitigation design should incorporate flexibility to allow for project changes or modifications if sea level rise is greater than anticipated in the initial design.

Monitoring

7. Provisions for monitoring consistent with final approved monitoring requirements as described below. The monitoring, at a minimum, shall include the following:
    a. A baseline assessment, including photographs, of the current physical and ecological condition of the proposed mitigation site, including as appropriate, a wetland delineation conducted according to the definitions in the Coastal Act and the Coastal Commission's Regulations, a detailed site description and map showing the area and distribution of vegetation types and site topography, and a map showing the distribution and abundance of sensitive species that includes the footprint of the proposed mitigation.
    b. Projected sea level rise scenarios for life of the mitigation project consistent with the life of the approved development project. Sea level rise scenarios should be used to perform an impact analysis that quantifies total projected erosion rates and changes in sediment flows and other physical properties and which projects future flood elevations, surface drainage, runoff groundwater depth and salinity and changes to wetland extent. If applicable, the location of any species or habitats sensitive to change or reduced vigor from inundation, saltwater intrusion or other impacts associated with sea level rise or climate change should be mapped along with any barriers to inland migration.
    c. A description of the mitigation goals, including, as appropriate, any changes to site topography, hydrology, vegetation types, presence or abundance of sensitive species, and wildlife usage, as well as any anticipated measures for and adaptive management in response to sea level rise or other climatic changes. The description shall include:
        i. Planned site preparation and invasive plant removal;
        ii. Grading and land contouring needed to remove any natural barriers to inland migration with sea level rise and to maintain hydrologic function, where applicable.
        iii. The planting palette (seed mix and container plants), planting design, source of plant material, methods and timing of plant installation, erosion control measures, duration and use of irrigation, and measures for remediation if success criteria (performance standards) are not met. The planting palette shall be made up exclusively of native plants that are appropriate to the habitat and region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used.
        iv. Methods to document and report the physical and biological "as-built" condition of the restoration or mitigation site within 30 days of completion of the initial restoration activities. This "as-built" report is to describe the field implementation of the approved Plan in narrative and photographs,

report any problems in the implementation and their resolution, and include any recommendations for future adaptive management. The "as built" report shall be completed by a qualified biologist, who is independent of the installation contractor.

v. Methods to conduct interim monitoring and maintenance of the site meant to ensure that the site will meet success criteria within five years, including interim performance standards, sampling design, number and frequency of sampling, and sampling methods; and adaptive management measures that may be implemented to ensure success criteria are met.

d. Provision for submission of annual reports of monitoring results to the CPM for the duration of the required monitoring period, beginning the first year after submission of the "as-built" report. Each report shall be cumulative and shall summarize all previous results. Each report shall document the condition of the restoration with photographs taken from the same fixed points in the same directions. Each report shall also include a "Performance Evaluation" section where information and results from the monitoring plan are used to evaluate the status of the restoration project in relation to the interim performance standards and final success criteria.

e. Description for each habitat type within the site that includes total ground cover of all vegetation and of native vegetation, vegetative cover of dominant species, wildlife usage including types and frequency of wildlife species, hydrology, including timing, duration and location of water movement, and presence and abundance of sensitive species or other individual "target" species.

f. Provisions for submission of a final monitoring report to the CPM at the end of the final monitoring period. The final report must be prepared by a qualified restoration ecologist. The report must evaluate whether the restoration site conforms to the success criteria set forth in the approved final mitigation plan. The report must address all of the monitoring data collected over the monitoring period.

8. If the final report indicates that the mitigation has been unsuccessful, in part or in whole, based on the approved success criteria, the applicant shall submit within 90 days a revised or supplemental mitigation program to compensate for those portions of the original program that did not meet the approved success criteria.

BIOLOGICAL RESOURCES

BIO-1 APPOINTMENT AND QUALIFICATIONS OF DESIGNATED BIOLOGIST

The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval and to the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) for review and comment.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least one year of field experience with biological resources found in or near the project area.

Current or prior possession of USFWS 10(a)(1)(A) permit and/or CDFW scientific collecting permit is preferred, but not required.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

The designated biologist may be replaced by submitting the required resume, references and contact information to the CPM for review and approval and to CDFW and USFWS for review and comment.

VERIFICATION: The project owner shall submit the specified information at least 75 days prior to the start of site mobilization or construction-related ground disturbance activities. No pre-construction site mobilization or construction related activities shall commence until a Designated Biologist has been approved by the CPM.

The project owner may replace a Designated Biologist by submitting the required resume, references and contact information to the CPM for review and approval and to the CDFW and USFWS for review and comment, at least ten working days prior to the

termination or release of the then-current Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

The CPM may withhold approval of a Designated Biologist based upon proof that a proposed Designated Biologist has repeatedly failed to comply with the conditions of any Energy Commission license as they pertain to biological resources. The CPM shall meet and confer with the project owner regarding the need to replace a Designated Biologist. Removal may occur if the CPM can establish that the Designated Biologist has repeatedly failed to comply with the conditions of the HBEP license that pertain to biological resources.

In the absence of comments, the CPM shall deem the Designated Biologist acceptable to USFWS and/or CDFW.

BIO-2 DUTIES OF DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR(S)

The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, demolition, and construction activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner and CPM. The Designated Biologist Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) (Condition of Certification BIO-6) to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

5. Inspect or direct the site personnel how to inspect active construction areas where animals may have become trapped prior to construction commencing each day. Inspect or direct the site personnel how to inspect the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way**.** Inspect soil or spoil stockpiles and dust abatement watering for compliance with Condition of Certification **BIO-7**. Inspect erosion control materials (e.g., hay bales) to confirm weed-free certification. Inspect weed infestations and monitor eradication measures to determine success. Inspect trash receptacles, monitor site personnel compliance with trash handling, pet prohibitions, and all other WEAP components (Condition of Certification **BIO-5**);

6. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;

7. Respond directly to inquiries of the CPM regarding biological resource issues;

8. Maintain written records of the tasks specified above and those included in the BRMIMP;

9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and

10. Maintain the ability to be in regular, direct communication with representatives of CDFW, USFWS, and CPM, including notifying these agencies of dead or injured listed species and reporting special status species observations to the California Natural Diversity Database.

VERIFICATION: The Designated Biologist shall notify the CPM of any non-compliance or special-status species injury or mortality within one (1) working day of the incident. The Designated Biologist shall submit in the MCR to the CPM copies of all written reports and summaries that document construction activities that have the potential to affect biological resources. The Designated Biologist's written records will be made available for the CPM's inspection on request at any time during normal business hours. During project operation, the Designated Biologist(s) shall submit

record summaries in the annual compliance report unless their duties cease, as approved by the CPM.

BIO-3 APPOINTMENT AND QUALIFICATIONS OF BIOLOGICAL MONITOR

The project owner shall submit the resume, at least three references, and contact information of the proposed Biological Monitor**(**s**)** to the CPM for approval. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

The project owner may replace a Biological Monitor by submitting the required resume, references and contact information to the CPM for review and approval and to CDFW and USFWS for review and comment,, at least ten working days prior to the termination or release of the then-current Biological Monitor. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Biological Monitor is proposed to the CPM for consideration.

VERIFICATION: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any project-related site disturbance activities. Within 10 days of completion of training, the Designated Biologist shall submit a written statement to CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIO-4 POWERS OF DESIGNATED BIOLOGIST/BIOLOGICAL MONITOR(S)

The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification.

If required by the Designated Biologist or Biological Monitor(s), the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner and the construction/operation manager when to resume activities;

3. Notify the CPM if there is a halt of any activities and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage; and

4. The CPM, in coordination with CDFW or USFWS as appropriate, will determine if corrective action has been effective and will direct the project owner to take further corrective action as needed.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

VERIFICATION: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem within one (1) working day of initiating the corrective action.

Whenever corrective action is taken by the project owner, a determination of success or failure would be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

BIO-5 BIOLOGICAL RESOURCES WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

The project owner shall develop and implement an HBEP-specific Worker Environmental Awareness Program (WEAP). and submit the WEAP to the CPM for review and approval and to the USFWS and CDFW for review and comment. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, and subcontractors. The

WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting electronic media and written material is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, explain the reasons for protecting these resources, and the function of flagging in designating sensitive resources and authorized work areas;
3. Discuss federal and state laws afforded to protect the sensitive species and explain penalties for violation of applicable laws, ordinances, regulations, and standards (e.g., federal, and state endangered species acts);
4. Place special emphasis on the light-footed clapper rail, western snowy plover, California least tern and Belding's savannah sparrow, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection and status, penalties for violations, reporting requirements, and protection measures;
5. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
6. Include a discussion of the biological resources conditions of certification;
7. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
8. Include a training acknowledgment form to be signed by each worker indicating that they received the WEAP training and shall abide by the guidelines.

The specific WEAP shall be administered by a competent individual(s) acceptable to the Designated Biologist.

VERIFICATION: At least 45 days prior to the start of any planned project-related site disturbance activities, the project owner shall provide to the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program. The Notice to Proceed will not be issued until the WEAP has been approved by the CPM.

The project owner shall provide in the monthly compliance reports the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

Throughout the life of the project, WEAP shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attend the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CMP upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate indicating that they have completed the required training.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the completion of all project construction activities. During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

In the absence of comments, the CPM shall deem the WEAP acceptable to USFWS and/or CDFW.

BIO-6 BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN (BRMIMP)

The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the CPM for review and approval and to CDFW and USFWS for review and comment and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include the following:

1. All biological resource mitigation, monitoring, and compliance measures proposed and whether the project owner has agreed to the proposed measures;

2. All biological resource conditions of certification identified in the Commission Decision as necessary to avoid or mitigate impacts;

3. All biological resource mitigation, monitoring, and compliance measures required in other state agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit;

4. A list or tabulation of all sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;

5. All required mitigation measures for each sensitive biological resource;

6. A detailed description of measures that shall be taken to avoid or mitigate disturbances from construction and demolition activities;

7. All locations, shown on a map at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

8. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities prior to any site or related facilities mobilization disturbance, for comparison with aerial photographs at the same scale to be provided and subsequent to completion of project construction (see Verification).

9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

10. Performance standards from each biological resource condition of certification to determine if mitigation and conditions are or are not successful;

11. Remedial measures to be implemented if performance standards are not met;

12. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s);

13. A process for proposing BRMIMP modifications to the CPM and appropriate agencies for review and approval; and

14. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database (CNDDB) per CDFW requirements.

VERIFICATION: No fewer than 45 days prior to planned start of construction, the project owner will submit a draft BRMIMP to the CPM for review and approval and to CDFW and USFWS for review and comment. The Notice to Proceed will not be issued until the BRMIMP has been approved by the CPM. In the absence of comments, the CPM shall deem the BRMIMP acceptable to USFWS and/or CDFW.

If the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit or any other permits has not have not yet been received when the BRMIMP is first submitted, those permits shall be submitted to the CPM, the CDFW, and USFWS within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit conditions, if any.

Prior to implementing any changes to the approved BRMIMP, the project owner shall provide a draft of the proposed modification to the CPM for review and approval and to CDFW and USFWS for review and comment. No modification shall be implemented until approved by the CPM. In the absence of comments, the CPM shall deem the modification to the BRMIMP acceptable to USFWS and/or CDFW.

Implementation of all BRMIMP measures shall be reported in the monthly compliance reports by the Designated Biologist (i.e., survey results, construction activities that were monitored, species observed). Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction closure report identifying which items of the BRMIMP have been completed; a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases; and which mitigation and monitoring items are still outstanding. The Construction Closure Report will include a set of aerial photographs of the site at an approved scale for comparison with the pre-construction set (Item 8 above).

BIO-7 GENERAL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project owner shall implement the following measures during site mobilization, construction, operation, and closure to manage their project site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to demolition or construction activities in consultation with the Designated Biologist. Spoils shall be stockpiled in disturbed areas which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

2. At the end of each work day, the Designated Biologist or Biological Monitor, shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they will immediately notify the Designated Biologist and/or Biological Monitor. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the animal to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

3. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* (APLIC 2012) to reduce the likelihood of large bird electrocutions and collisions.

4. Spoils shall not be stockpiled adjacent to the southeastern fence line to minimize potential for spoils to enter into adjacent wetlands.

5. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

6. To the extent feasible, FAA visibility lighting shall employ only strobed, strobe-like or blinking incandescent lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" duel strobes are preferred, and no steady burning lights (e.g., L-810s) shall be used.

7. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract California least tern predators to construction sites. During construction, site personnel shall patrol these areas to ensure water does not puddle and attract crows and other wildlife to the site, and shall take appropriate action to reduce water application rates where necessary.

8. During construction, each employee shall report on-site deaths, including road kill, and injuries of special-status species to the Designated Biologist or Biological Monitor immediately upon discovery. The Designated Biologist or Biological Monitor shall remove the carcass or injured animal promptly. The Designated Biologist or Biological Monitor shall immediately report any dead or injured special-status species to CDFW and/or USFWS and the CPM, and the project owner shall follow instructions that are provided by CDFW or USFWS. The Designation Biologist shall maintain a record of all dead or injured special-status species, including species name, physical characteristics of the animal (sex, age class, length, weight), disposition of the animal, and other pertinent information and shall include this information in the MCR.

   During operations, each employee shall report all deaths, including road kill, and injuries of special-status species to the Project Environmental Compliance Monitor immediately upon discovery. shall be notified. The Project Environmental Compliance Monitor shall remove the carcass or injured animal promptly. The Project

Environmental Compliance Monitor shall immediately report any dead or injured special-status species to CDFW and/or USFWS and the CPM, and the project owner shall follow instructions that are provided by CDFW or USFWS. The Project Environmental Compliance Monitor shall maintain a record of all dead or injured special-status species, including species name, physical characteristics of the animal (sex, age class, length, weight), disposition of the animal, and other pertinent information.

9. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan (see Condition of Certification **HAZ-2**). Hazardous spills shall be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Any on-site servicing of vehicles or construction equipment shall take place only at a designated area approved by the Designated Biologist. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

10. During construction all trash and food-related waste shall be placed in self-closing containers and removed weekly or more frequently from the site. Workers shall not feed wildlife or bring pets to the project site.

11. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

12. The project owner shall implement the following measures during construction and operation to prevent the spread and propagation of nonnative, invasive weeds:

    a**.** Limit the size of any vegetation and/or ground disturbance to the minimum area needed for safe completion of project activities, and limit ingress and egress to defined routes;

    b**.** Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations. Invasive non-native species shall not be used in landscaping plans and erosion control.

Monitor and rapidly implement control measures to ensure early detection and eradication of weed invasions.

13.. During construction and operation, the project owner shall conduct pesticide management in accordance with standard BMPs. The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. Herbicide applications must follow EPA label instructions. Minimize use of rodenticides and herbicides in the project area and prohibit the use of chemicals and pesticides known to cause harm to non-target plants and wildlife. The project owner shall only use pesticides for which a "no effect" determination has been issued by the EPA's Endangered Species Protection Program for any species likely to occur within the project area or adjacent wetlands. If rodent control must be conducted, zinc phosphide or an equivalent product shall be used.

VERIFICATION: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the monthly compliance reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written Construction Completion Report identifying how measures have been completed (see Condition of Certification **BIO-6** verification).

Monthly and annual compliance reports will include results of all regular inspections by the Designated Biologist and Biological Monitor(s), including but not limited to the requirements cited above and in Condition of Certification BIO-2.

The project owner must maintain written records of vehicle and equipment inspection and maintenance, and provide summaries in each monthly and annual compliance report. The complete written vehicle maintenance record will be available for the CPM's inspection during normal business hours.

The BRMIMP (Condition of Certification **BIO-6**) must include affirmation by the project owner that:

- All electrical component design conforms to applicable APLIC guidelines; and
- All soil binders conform to the requirements stated above.

BIO-8 PRE-CONSTRUCTION NEST SURVEYS AND IMPACT MINIMIZATION MEASURES FOR BREEDING BIRDS

Pre-construction nest surveys shall be conducted if construction or demolition activities will occur from February 1 through August 31. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat and substrate within the project site and areas surrounding the project site within 300 feet of the project boundary.

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 14 days prior to initiation of construction activity. One survey needs to be conducted within the 3-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks during February 1 through August 31 in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

3. If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. Specific buffer distances are provided below for applicable avian groups (Biological Resources Table 1); these buffers may be modified with the CPM's approval. For special-status species, if an active nest is identified, the size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM (in coordination with CDFW and USFWS). Nest locations shall be mapped using GPS technology.

Biological Resources Table 1
HBEP Construction and Demolition Buffers for Active Nests

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Bitterns and herons	Black-crowned night heron, great blue heron, great egret, green heron, snowy egret	250
Cormorants	Double-crested cormorant	100
Doves	Mourning dove	25
Geese and ducks	American widgeon, blue-winged teal, cinnamon teal, Canada goose, gadwall, mallard, northern pintail, ruddy duck	100
Grebes	Clark's grebe, eared grebe, horned grebe, pied-billed grebe, western grebe	100
Hummingbirds	Allen's hummingbird, Anna's hummingbird, black-chinned hummingbird	25
Plovers	Black-bellied plover, killdeer	50
Raptors (Category 1)	American kestrel, barn owl, red-tailed hawk	50
Raptors (Category 2)	Cooper's hawk, red-shouldered hawk, sharp-shinned hawk	150

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Raptors (Category 3)	Northern harrier, white-tailed kite	These are special-status species; buffer determined in consultation with CPM
Stilts and Avocets	American avocet, black-necked stilt	150
Terns	Elegant tern, Forster's tern, royal tern	100
Passerines (cavity and crevice nesters)	House wren, Say's phoebe, western bluebird	25
Passerines (bridge, culvert, and building nesters)	Black phoebe, cliff swallow, house finch, Say's phoebe	25
Passerines (ground nesters, open habitats)	Horned lark	100

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Passerines (understory and thicket nesters)	American goldfinch, blue-gray gnatcatcher, bushtit, California towhee, common yellowthroat, red-winged blackbird, song sparrow, Swainson's thrush	25
Passerines (scrub and tree nesters)	American crow, American goldfinch, American robin, blue-gray gnatcatcher, Bullock's oriole, bushtit, Cassin's kingbird, common raven, hooded oriole, house finch, lesser goldfinch, northern mockingbird	25
Passerines (tower nesters)	Common raven, house finch	25
Passerines (marsh nesters)	Common yellowthroat, red-winged blackbird	25
Species not covered under MBTA	Domestic waterfowl, including domesticated mallards, feral (rock) pigeon, European starling, and house sparrow	N/A

4. If active nests are detected during the survey, the Designated Biologist or Biological Monitor shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the

Designated Biologist or Biological Monitor shall immediately implement adaptive measures to reduce disturbance in coordination with the CPM. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity.

5. If active nests are detected during the survey, the Designated Biologist shall prepare a Nest Monitoring Plan. The Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist or Biological Monitor, disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made.

6. A qualified biologist shall conduct a habitat assessment for light-footed clapper rail shall be conducted in Magnolia and Upper Magnolia Marshes during the breeding season (March 1 to August 1) immediately preceding the commencement of construction and demolition activities. If suitable breeding habitat for the light-footed clapper rail is identified, focused surveys will be conducted prior to any construction or demolition activities. Surveys are not required if no suitable habitat is present. If clapper rails are detected during the breeding season, the CPM, CDFW, and USFWS will be notified and the project owner will consult with the USFWS for incidental take authorization, if required.

VERIFICATION: The project owner shall provide notification to the CPM, CDFW, and USFWS at least 2 weeks prior to initiating the habitat assessment and any subsequent surveys for light-footed clapper rail; notification will include the name and resume of the biologist(s) conducting the habitat assessment and surveys and the timing of the surveys. Within ten (10) days of completion of the field work, the project owner shall provide the CPM, CDFW, and USFWS a -report describing the findings of the preconstruction nest surveys and the light-footed clapper rail habitat assessment and focused survey (if surveys were conducted), including a description and representative photographs of habitat in the marshes; the time, date, methods, and duration of the surveys; identity and qualifications of the surveyor(s); and a list of

species observed. If active nests are detected during the surveys, the reports shall include a map or aerial photo identifying the location of the nest(s) and shall depict the boundaries of the proposed no disturbance buffer zone around the nest(s). The CPM will consider any timely comments received from CDFW and USFWS in review of the -report. In the absence of comments within that timeframe, the CPM shall deem the report acceptable to USFWS and/or CDFW.

Additionally, the nest monitoring plan shall be submitted to the CPM for review and approval and to USFWS and CDFW for review and comment prior to any planned demolition or construction activities in the vicinity of any active nest. No such demolition or construction activities may proceed without CPM approval of the nest monitoring plan..If light-footed clapper rails are documented during the breeding season in Upper Magnolia or Magnolia Marshes, prior to any planned pile driving on the site or demolition or construction activities within 400 feet of the marsh boundary, the project owner will notify the CPM and will consult with the USFWS for incidental take authorization or a determination that no incidental take authorization is required. All impact avoidance and minimization measures related to nesting birds shall be included in the BRMIMP and implemented. In the absence of comments within that timeframe, the CPM shall deem the nest monitoring plan acceptable to USFWS and/or CDFW.

Implementation of the measures shall be reported in the monthly compliance reports by the Designated Biologist.

ATTACHMENT B – JULY 2014 COASTAL COMMISSION 30413(d) REPORT ON 12-AFC-02 HUNTINGTON BEACH ENERGY PROJECT

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Coastal Commission Report
to
California Energy Commission
on
Application for Certification 12-AFC-02
– AES Huntington Beach Energy Project –

Reviewed pursuant to
Coastal Act Section 30413(d)

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ATTACHMENTS

EXHIBITS

I. FINDINGS AND RECOMMENDED SPECIFIC PROVISIONS

A. PROJECT DESCRIPTION

The Huntington Beach power plant is an existing electrical generating facility located in the City of Huntington Beach (see **Exhibit 1 – Area Map**). It is owned and operated by AES Southland, LLC (hereafter, either "the applicant" or "AES"). The power plant site covers about 60 acres in the southeast portion of the City and borders the Pacific Coast Highway, the Magnolia Marsh wetlands, and a flood control channel (see **Exhibit 2 – Site Plan**). A switchyard within the site is owned and operated by Southern California Edison.

The existing facility includes five electrical generating units, four of which are currently operational. The facility's existing generating units are cooled using a "once-through cooling" process in which AES pumps in up to several hundred million gallons per day of seawater from an open intake located about 2500 feet offshore. As the seawater is pumped through the facility, it removes excess heat from the generating units and is then discharged back into the Pacific Ocean through an outfall pipe.

Proposed Huntington Beach Energy Project ("HBEP")
In June 2012, AES submitted its Application for Certification ("AFC") to the Energy Commission. AES is proposing to upgrade and expand the facility on about 28.6 acres of its site with new equipment that would produce about 936 MW of electrical power (see **Exhibit 3 – Conceptual Aerial View**). The proposed HBEP is more fully described in the CEC's Final Staff Assessment ("FSA"), available here: http://docketpublic.energy.ca.gov/PublicDocuments/12-AFC-02/TN202405_20140602T085620_Final_Staff_Assessment.pdf

The main project components include demolition of the existing generating units, and construction of two new power blocks, each capable of generating up to about 470 megawatts. The new facility will be air-cooled and will therefore no longer rely on using seawater for cooling. Visually, the new facility will have an overall lower profile than the existing facility – for example, the existing facility includes two boiler exhaust stacks about 200 feet high, while the proposed HBEP would have a maximum height of about 120 feet. AES has proposed a visual enhancement and screening plan that includes three surfboard sculptures leaning against the HBEP and a mesh screen around part of the facility that resembles a wave (see **Exhibits 4a and 4b – Proposed Visual Amenities**). In April 2014, the City adopted a resolution supporting these proposed visual enhancements.

AES proposes to construct the HBEP in stages by first demolishing some of the generating units to provide a footprint for one of the new power blocks, then demolishing some of the remaining units to allow for construction of the second power block, and then completing demolition of the existing generating units and support structures. During the construction period, AES proposes to locate its construction laydown area on about six acres of this site, along with about 16 acres of its Alamitos Generating Station, located about 15 miles north in the City of Long Beach. The CEC's review anticipates an expected construction period of about eight years and a power plant operating life of 30 years, which would extend to between 2050 and 2055.

B. REGULATORY FRAMEWORK AND STANDARD OF REVIEW

Pursuant to the Warren-Alquist Act, the CEC has exclusive siting authority over thermal electric power plants of 50 megawatts or greater capacity proposed to be built in California. According to section 25500 of the Warren-Alquist Act, "The issuance of a certificate by the [Energy] commission shall be in lieu of any permit, certificate, or similar document required by any state, local or regional agency, or federal agency to the extent permitted by federal law, for such use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law." Section 25523(a) of the Warren-Alquist Act additionally requires the CEC to assess the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety. Moreover, section 25523(d)(1) of that Act requires that the CEC make findings regarding the conformity of the proposed project with all applicable laws, including federal laws, such as the Coastal Zone Management Act.[1]

The CEC evaluates and makes its determination regarding proposed facilities through its Application for Certification (AFC) process. When the CEC is considering licensing a facility pursuant to its AFC process, it is the lead state agency for purposes of the California Environmental Quality Act (CEQA), and the FSA includes analyses similar to those normally provided in an Environmental Impact Report (EIR). The FSA provides the CEC staff analysis of the proposed project, examines engineering, environmental, public health, and safety aspects of the facility, and includes proposed conditions of certification, which are similar to mitigation measures identified in an EIR.

While the CEC has exclusive jurisdiction over siting proposed power plants as described above, both the Coastal Act and the Warren-Alquist Act provide a role for the Coastal Commission to play in the CEC's review of power plants proposed to be located in the coastal zone. Both Acts include mechanisms authorizing the Coastal Commission to evaluate whether the proposal conforms to Coastal Act policies and to inform the CEC of the results of this evaluation. Section 30413(d) of the Coastal Act requires the Coastal Commission to 1) "participate in proceedings" that the CEC undertakes pursuant to its siting authority "with respect to any thermal powerplant…to be located…within the coastal zone," and 2) submit to the CEC a report (hereinafter, the "30413(d) report") on the proposed project's conformity with the Coastal Act's resource protection and use policies, and the policies and implementing ordinances of the certified local coastal program ("LCP") (in this case, the certified LCP of the City of Huntington Beach). Additionally, Warren-Alquist Act Section 25523(b) requires the CEC to include in its decision on the AFC any "specific provisions" provided by the Coastal Commission in its 30413(d) report to bring the proposed project into conformity with the policies of the Coastal Act. That section also establishes that the CEC may omit the specific provisions of the Coastal Commission's report only if the CEC finds that adopting the provisions would result in greater adverse impact on the environment or that such provisions would not be feasible. Staff of the two Commissions have prepared a Memorandum of Agreement that describes the manner in

[1] The CEC does not review or issue NPDES permits, and the power plant operator must still obtain those permits from the State or Regional Water Quality Control Boards, as the federal Environmental Protection Agency delegated that authority to just those Boards.

which the two Commissions will coordinate their respective reviews and identifies the process for the CEC to consider the Coastal Commission's findings and recommended specific provisions (see **Attachment B – Memorandum of Agreement**).

Coastal Act section 30413(d) directs that the Coastal Commission's report consider and make findings regarding the following:

> *(1) The compatibility of the proposed site and related facilities with the goal of protecting coastal resources.*
>
> *(2) The degree to which the proposed site and related facilities would conflict with other existing or planned coastal-dependent land uses at or near the site.*
>
> *(3) The potential adverse effects that the proposed site and related facilities would have on aesthetic values.*
>
> *(4) The potential adverse environmental effects on fish and wildlife and their habitats.*
>
> *(5) The conformance of the proposed site and related facilities with certified local coastal programs in those jurisdictions, which would be affected by any such development.*
>
> *(6) The degree to which the proposed site and related facilities could reasonably be modified so as to mitigate potential adverse effects on coastal resources, minimize conflict with existing or planned coastal-dependent uses at or near the site, and promote the policies of this division.*
>
> *(7) Such other matters as the commission deems appropriate and necessary to carry out this division.*

This report is the Coastal Commission's analysis of the proposed project's conformity with the Chapter 3 policies of the Coastal Act and the certified LCP. For this proposed project, the Coastal Commission has focused on the following issue areas: (1) land use, (2) wetlands and environmentally sensitive habitat areas (ESHA), (3) flood, tsunami, and sea level rise, (4) geologic hazards, and (5) public access and recreation. The Coastal Commission's analysis relies largely on the information contained in the CEC staff's Final Staff Assessment ("FSA"), the evidentiary record of this AFC proceeding that has been compiled thus far, and on information identified in the Substantive File Documents described in Attachment A to this report.

C. LAND USE AND ALTERNATIVES

AES proposes to construct the HBEP on part of its existing power plant site. As noted in the FSA's Land Use Section (page 4.5-7), the City's LCP and Land Use Element designate the site as "Public," with allowable uses including public utilities and infrastructure. The site is also within the City's "Subarea 4G – Edison Plant" designation, which allows utility uses and wetland conservation. The FSA's Alternatives Section (at pages 6-7 and 6-8) further identifies the site and adjacent areas as being designated by both the Energy Commission and Coastal Commission as suitable for energy facility expansion.

That designation results from studies and mapping conducted by the two Commissions to identify areas within the state's coastal zone that were unsuitable for locating or expanding power plants due to the presence of sensitive coastal resources.[2] Those studies and mapping effort also identified areas that were suitable for reasonable expansion of existing power plants. For this Huntington Beach site, the identified expansion area includes the entirety of the power plant site as well as the adjacent Plains America Tank Farm.

Despite this designation, AES is currently proposing to use only a portion of the area designated for the HBEP's expansion. Of the approximately 58 acres of the AES power plant site, all of which is within the designated area, the proposed expansion would use only 28.6 acres. Approximately 10 acres are occupied by the existing Southern California Edison substation, which will remain, but there is at least one on-site area, along with the above-mentioned Plains America Tank Farm area that are within the designated expansion area, that appear to be at least partially available for the proposed project and that, if used, could help reduce project-related adverse impacts:

- The AES site includes an 11-acre former tank farm area. AES stated in its AFC application that it intends to lease this area to Poseidon Water for construction of a desalination facility; however, it is unclear when this might occur, and it appears that at least part of this site may be available for at least short-term use during the approximately eight years of planned project construction.

  Part of this tank farm site consisted of wetlands that AES removed without benefit of a coastal development permit, which is the subject of a Coastal Commission staff investigation of a potential violation.[3] Commission staff estimated that the wetlands covered about 3.5 acres of the site; however, it appears that some of the remainder of this site could be used for the power plant expansion.

[2] See Coastal Commission, *Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976*, adopted September 1978, revised 1984, re-adopted December 1985, San Francisco, CA, and Energy Commission, *Opportunities to Expand Coastal Power Plants in California*, Staff Report P700-80-001, June 1980, Sacramento, CA.

[3] See Commission staff's August 3, 2012, Data Adequacy letter for 12-AFC-02 and Commission staff report for Poseidon Water – Appeal #A-5-HNB-10-225 and Application No.: E-06-007, November 2013, available at: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

- Across the flood channel adjacent to the AES site is the Plains America Tank Farm, an approximately 32-acre site that is within the area designated as suitable for power plant expansion. AES is proposing to use about 1.9 acres of that site for construction parking, but similar to the AES tank farm site above, much more of the Plains America site may be available for use for the proposed expansion project, which would likely reduce expected project impacts.

Instead of fully using these areas designated for expansion, AES is proposing to locate several project components offsite and outside the designated area. These include locating three of its five proposed construction parking sites outside the area and locating about 16 acres of project staging at AES's Alamitos Energy Facility about 15 miles north of the expansion site. This approach frustrates the intent of designating the facility site and the surrounding area for consolidation and expansion of energy facilities. It also increases the proposed project's adverse impacts on public access to the shoreline by increasing project-related traffic along 15 miles of coastal highway and using up to 225 parking spaces the City established to provide beach access (see additional discussion in this report's Section I.G – Public Access). This approach will also result in increased adverse effects and potential spills to wetlands adjacent to the Alamitos site and the Pacific Coast Highway route, which include Los Cerritos, the Seal Beach National Wildlife Refuge, Bolsa Chica, and the Huntington Beach wetland complex.

Project-related adverse effects could be avoided or substantially reduced if AES was able to use more of the adjacent areas designated for energy facility expansion. To more fully use the two sites mentioned above, AES may have to remove all or some of the several decommissioned fuel oil storage tanks and associated pipelines; however, the cost and effort of removing this equipment is well within the scope of the project and is similar to work done as part of other AFC proceedings.

Coastal Commission Recommended Specific Provisions

Based on the information available in the AFC record, use of all or part of these areas appears to provide a feasible method to potentially reduce project-related impacts. The Commission therefore recommends the following Specific Provisions to allow Coastal Act and LCP conformity:

- First, CEC staff should determine the availability of these sites for the proposed project by reviewing documentation showing the legal status of the AES and Plains America Tank Farm sites. If all or part of the sites are available for use during this project, CEC staff should prepare a modified staff assessment that identifies whether use of one or both sites will reduce the project's overall expected adverse impacts. The modified assessment should evaluate whether using all or part of the sites for construction staging or parking would reduce the project's expected adverse impacts, including reducing adverse effects on traffic and public access to the shoreline along the 15 miles between HBEP and Alamitos. The assessment should also consider whether use of all or part of either site may be limited due to land use or other conflicts with relevant LCP policies as described below in Section I.D – Wetlands and Environmentally Sensitive Habitat Areas (ESHA).

- Next, should this modified assessment show that all or part of the two sites are available and their use would reduce project-related impacts, we recommend the CEC provide additional opportunity for public review and comment on the modified assessment and possible new or modified conditions.

Conclusion
The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

D. WETLANDS AND ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)

Coastal Act Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Coastal Act Section 30240 states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 6.1.4 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain organisms and for the protection of human health shall be maintained and, where feasible, restored.*

LCP Policy C 6.1.20 states:

> *Limit diking dredging, and filling of coastal waters, wetlands, and estuaries to the specific activities outlined in Policy 30233 and 30607.1 of the Coastal Act and to those activities required for the restoration, maintenance, and/or repair of the Municipal Pier and marina docks. Conduct any diking dredging and filling activities in a manner consistent with Section 30233 and 30607.1 of the Coastal Act.*

LCP Policy C 7.1.2 states, in relevant part:

> *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values…*

LCP Policy C 7.1.3 states:

> *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 7.1.4 states:

> *Require that new development contiguous to wetlands or environmentally sensitive habitat areas include buffer zones. Buffer zones shall be a minimum of one hundred feet setback from the landward edge of the wetland, with the exception of the following:*
>
> *A lesser buffer may be permitted if existing development or site configuration precludes a 100 feet buffer, or conversely, a greater buffer zone may be required if substantial development or significantly increased human impacts are anticipated. In either case, the following factors shall be considered when determining whether a lesser or wider buffer zone is warranted. Reduced buffer zone areas shall be reviewed by the Department of Fish and Game prior to implementation.*
>
> *a) Biological significance of adjacent lands: The buffer should be sufficiently wide to protect the functional relationship between the wetland and adjacent upland.*
> *b) Sensitivity of species to disturbance: The buffer should be sufficiently wide to ensure that the most sensitive species will not be disturbed significantly by permitted development, based on habitat requirements of both resident and migratory species and the short and long term adaptability of various species to human disturbance.*
> *c) Susceptibility of parcel to erosion: The buffer should be sufficiently wide to allow for interception of any additional material eroded as a result of the proposed development based on soil and vegetative characteristics, slope and runoff characteristics, and impervious surface coverage.*
> *d) Use existing cultural features to locate buffer zones: The buffer zones should be contiguous with the environmentally sensitive habitat areas and make use of existing features such as roads, dikes, irrigation canals, and flood control channels where feasible.*

LCP Policy C 7.1.5 states, in relevant part:

> *Notify County, State and Federal agencies having regulatory authority in wetlands and other environmentally sensitive habitats when development projects in and adjacent to such areas are submitted to the City.*

LCP Policy C 7.2.7 states:

> *Any areas that constituted wetlands or ESHA that have been removed, altered, filled or degraded as the result of activities carried out without compliance with Coastal Act requirements shall be protected as required by the policies in this Land Use Plan.*

LCP Policy I-C 8(c) states, in relevant part:

> *For proposed projects within the Coastal Zone, utilize the development review/environmental review process to accomplish the following:*
>
> 1. *Examine each development's potential to affect habitat. To the maximum extent feasible project impacts on habitat shall be minimized through avoidance. In the event mitigation is necessary, mitigation shall be provided on-site if feasible or within the general vicinity if on-site mitigation is not feasible. Determine the necessity for Mitigation Agreements or other coordination with the California Department of Fish and Game, California Coastal Commission and/or federal agencies to obtain necessary permits for developments that appear to affect habitat.*
> 2. *Permit resource dependent and incidental public service related land uses within wetlands and environmentally sensitive habitat areas only if consistent with the following Coastal Act policies: Section 30233 and Section 30240.*
> 3. *Require improving the natural biological value, integrity and function of coastal wetlands and dunes through native vegetation restoration, control of alien plants and animal,* [sic] *landscape buffering and development setbacks.*
> 4. …
> 5. *Review any development proposed for non-wetland areas to ensure that appropriate setbacks and buffers are maintained between development and environmentally sensitive areas to protect habitat quality…*

The findings below separately assess two types of project-related impacts – first, direct wetland impacts within the potential project footprint, and then indirect impacts to adjacent wetlands and ESHA that are likely to occur during facility construction and operations. Both the Coastal Act and the City's LCP include policies requiring the protection of biological productivity in wetlands and environmentally sensitive habitat areas. The policies require that development adjacent to environmentally sensitive areas be sited and designed to prevent impacts which would significantly degrade those areas. The LCP requires buffer zones be established around wetlands to protect them from proposed development.

Direct Wetland Impacts

The FSA states that there are no wetlands within the proposed project footprint, which appears to accurately reflect current conditions within the proposed site. However, as noted above in this report's Section I.C – Land Use and Alternatives, the Commission recommends that CEC staff evaluate whether other areas within or adjacent to the power plant site are available for the proposed project and whether the use of these areas might reduce project-related impacts to coastal resources. These areas include the 11-acre AES tank farm within the power plant site and the adjacent 32-acre Plains America Tank Farm, of which AES plans to use approximately 1.9 acres.

Regarding the AES tank farm area, we understand that it is currently devoid of wetland characteristics; however, as noted above, AES's removal of wetland vegetation in that area several years ago is the subject of a Commission staff investigation of a potential violation. Pursuant to LCP Policy C7.2.7, the areas formerly containing wetlands remain subject to the LCP's wetland and ESHA protection policies.[4] The adjacent Plains America Tank Farm area appears to have similar wetland characteristics within part of its 32 acres, and may have similar limitations on its use. As stated in the previous section, we recommend that the CEC staff evaluation assess the effect of these policies on the potential use of these sites, and that the evaluation be provided for additional public review and comment as part of this AFC proceeding.

Indirect Impacts to Wetlands and ESHA

Several components of the project as currently proposed are inconsistent with LCP Policy C7.1.4, which requires new development to be located at least 100 feet from wetlands.[5] Additionally, project construction and operations are expected to cause adverse indirect impacts to nearby wetlands and ESHA due to dewatering, noise, and vibration. These impacts are described below, along with recommended conditions to ensure the project avoids and minimizes these impacts to the extent feasible, as required by relevant LCP and Coastal Act provisions.

[4] For a more complete description of site characteristics and Commission jurisdiction, see the November 2013 Coastal Commission staff report, available here: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

[5] "Development," as defined in Section 30106 of the Coastal Act and in the LCP, means "on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (commencing with Section 4511).

As used in this section, "structure" includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line."

Background
The HBEP site is part of an extensive area of coastal wetlands and dunes that formerly extended for several miles along this area of the coast. The project site is adjacent to the Magnolia Marsh, which provides a mix of wetlands and environmentally sensitive habitat areas (see **Exhibit 5 – Huntington Beach Wetlands Conservancy Site Plan**). Similar habitat extends onto the HBEP site adjacent to the flood control channel.

Much of this habitat complex is being restored and protected by the Huntington Beach Wetlands Conservancy, including restoration of the adjacent Magnolia Marsh starting in 2009. One of the main goals of the Conservancy's restoration plan is to "maximize salt marsh/tidal habitats with no net harm to threatened and endangered (T&E) species existing on site such as the Belding's Savannah Sparrow." The Magnolia Marsh and other nearby wetland areas provide known or potential habitat for at least several dozen listed sensitive species.[6] The habitat types within and immediately adjacent to the project site include coastal scrub and salt panne, which is noted as particularly important to the endangered Belding's Savannah Sparrow (see **Exhibit 6 – Huntington Beach Wetlands: Vegetation Communities** and **Exhibit 7 – Sensitive Species Habitats**). Although the Magnolia Marsh area has been identified as being subject to significant negative stressors due to nearby industrial uses,[7] a 2010 survey identified 26 separate sparrow territories in the Magnolia Marsh, which represents about 25% of the territories in the full Huntington Beach wetland complex.[8] The Magnolia Marsh restoration project is expected to provide suitable breeding habitat for the endangered Light-footed Clapper Rail, which also breed nearby.[9]

Required Buffer
LCP Policy C7.1.4 requires a minimum 100-foot buffer between new development and ESHA/wetland areas. The proposed project layout includes locating structures and development activities within 100 feet of nearby ESHA and wetlands, which results in non-conformity to this LCP policy. The proximity of these activities and the habitat areas also exacerbates some of the other indirect adverse impacts described below, including potential dewatering of wetland habitat during project construction, and adverse effects of noise, vibration, and project lighting on listed sensitive species known or potentially occurring in those areas during both construction and operations. The FSA includes proposed **Condition BIO-7**, which identifies a number of

[6] From Moffatt & Nichol, *Huntington Beach Wetlands: Habitats and Sensitive Species*, August, 2004. See also California Energy Commission, *Final Staff Assessment for 12-AFC-02 – Biological Resources, Table 2*, May 2014.

[7] See Solek, Christopher, and Eric Stein, *An Evaluation of Wetland Restoration Projects in Southern California using the California Rapid Assessment Model (CRAM): A Final Report to the Southern California Wetlands Recovery Project*, Technical Report 659, February 2012.

[8] See Zembal, Richard, and Susan Hoffman, *A Survey of the Belding's Savannah Sparrow (Passerculus sandwichensis beldingi) in California – Final Report to California Department of Fish and Game, South Coast Region*, September 2010.

[9] See September 12, 2012 USFWS comment letter regarding potential adverse effects of proposed AES power plant replacement, California Energy Commission Application For Certification No. 12-AFC-02.

measures that, if implemented, will reduce the project's indirect impacts on nearby wetlands (see FSA, pp. 4.2-62 to 4.2-65).

Coastal Commission Recommended Specific Provision

- To ensure the project conforms to the extent feasible with LCP Policy C7.1.4, we recommend the Energy Commission modify **Condition BIO-7** to require that AES move all project-related development to be at least 100 feet, and further, if feasible, from nearby areas that meet the Coastal Commission's definition of wetlands or ESHA. We also recommend that the project plans required pursuant to **Condition GEN-2** reflect this change in the project layout.

  This recommended modification would also require AES to submit a revised project plan showing that all project-related development is at least 100 feet from those areas. From the proposed project layout presented in the AFC, it appears this would require moving a few structures and development activities no more than a few dozen feet further inward on the site, which appears feasible based on the amount of space available within the project site.

Avoiding Effects of Construction Dewatering on Adjacent ESHA/Wetland Areas
Groundwater levels beneath both the HBEP and the adjacent wetlands are within a few feet of the ground surface. Results from groundwater monitoring wells on the HBEP site indicate that groundwater levels fluctuate with tidal levels in the adjacent flood control channel and show that the site's groundwater is responsive to and directly connected to groundwater in nearby areas, including the adjacent wetlands. The FSA notes that excavation needed to construct project foundations will likely require dewatering and removal of liquefiable soils, though it does not identify the expected depths, amounts, or possible adverse impacts of these activities.

Analyses conducted by Commission staff for the adjacent proposed Poseidon project site, which has similar groundwater and liquefaction characteristics, show that liquefiable soils extend to a depth of about 20 feet below grade. The dewatering volumes needed to excavate those soils to construct two of that project's proposed structures were estimated at 740,000 gallons per day and 1.28 million gallons per day, respectively, which would occur over several months and total about 84 million gallons. Site geotechnical data provided by Poseidon showed that the radius of influence from its expected dewatering operations – that is, the distance within which groundwater levels would be reduced – would be up to 225 feet from the dewatering locations and would encompass parts of the adjacent ESHA/wetland areas. Based on these analyses, Commission staff recommended conditions for the proposed Poseidon project that required additional geotechnical investigations and implementation of dewatering methods that avoided potential drawdown in those habitat areas. The HBEP site's similar characteristics make it likely to have similar drawdown potential, though it is unclear from documentation provided in the AFC review where the dewatering would occur and what drawdown levels to expect.

Coastal Commission Recommended Specific Provisions

Drawdown that affects nearby ESHA/wetland areas would be inconsistent with LCP Policies 6.1.4, 7.1.2, and 7.1.3, which require that habitat values be maintained and

protected. To ensure project dewatering is done in a manner consistent with these policies, the Commission recommends the CEC modify FSA **Condition GEO-1** to require AES to conduct a geotechnical investigation that identifies expected dewatering volumes and the spatial extent of drawdown expected from that dewatering. If the investigation shows potential drawdown effects to nearby ESHA/wetland areas, the Condition would also require AES to identify and implement methods to avoid those effects, such as installing sheet piles, slurry walls, or other similar barriers, or conduct alternative dewatering methods that would avoid drawing down groundwater in these sensitive areas. The Commission also recommends that these structural mitigation methods be included on any relevant final design plans required pursuant to FSA **Condition GEN-2**. These modifications provide a feasible method to avoid potential adverse dewatering impacts to adjacent habitat areas.

Reducing Effects of Project Noise and Vibration on Adjacent ESHA/Wetland Areas
The FSA (see page 4.2-34, Biological Resources, Table 3) identifies expected construction noise levels at several locations within nearby ESHA/wetland areas. At the closest locations within the adjacent Magnolia Marsh, noise levels from project construction are expected to range from the mid-60 dBA level to greater than 70 dBA. It notes that the loudest of the construction activities would be pile driving, with levels of 104 dBA at 50 feet, 86 dBA at 375 feet, and 73-78 dBA at more than 1000 feet.[10]

The FSA notes that these noise levels during project construction could discourage sensitive species from using nearby habitat areas and adversely affect their breeding or nesting behavior, and that chronic exposure to excessive noise has been demonstrated to adversely affect foraging behavior, reproductive success, population density, and community structure. Although avian species may be more sensitive to noise during breeding and nesting season, several types of "take" or harm identified above could occur any time of year due to the relatively high noise levels expected from both project construction and operation.

Commission staff contacted staff of the California Department of Fish and Wildlife (CDFW) regarding guidance on acceptable noise levels and mitigation measures for construction projects near habitat areas used by sensitive avian species.[11] Both CDFW and the U.S. Fish and Wildlife Service have developed and implemented recommended measures on a number of such projects, and the agencies' work with CalTrans has resulted in a more detailed set of thresholds than the above-referenced "typical noise threshold," for use in identifying potential "take" or harm to sensitive species.[12] These thresholds range from "hearing damage" to "masking," which is a level preventing or reducing communication among individuals, and can result from proximity to construction equipment like that being used for this project.

[10] dBA is a measure of the relative loudness of sounds through the air, in decibels. Decibels describe the intensity of sound, and are logarithmic – for example a 60 dBA sound is perceived as twice as loud as a 50 dBA sound. Typical sound levels include 30-35 dBA in quiet, rural areas, 70-75 dBA for freeways from about 50 feet away, and 100 dBA for a jet taking off from 1000 feet away.

[11] Commission staff personal communication with CDFW staff, September 19 and October 18, 2013.

[12] See, for example, Dooling, Robert, and Arthur Popper, *The Effects of Highway Noise on Birds*, prepared for California Department of Transportation, September 2007.

The conclusions and recommendations of CDFW and USFWS essentially identify potential harm or "take" when noise levels are above ambient and greater than about 60 dBA. These sound levels are considered harmful to avian species and could result in "take" of special status species that use these ESHA/wetland areas, such as Belding's Savannah Sparrow, California Least Tern, and Light-footed Clapper Rail. Mitigation measures employed by both CDFW and USFWS generally require that applicants conduct monitoring to ensure sound levels remain below thresholds known to result in take and conduct nesting surveys and ongoing monitoring to identify and avoid potential adverse effects to nesting birds. The USFWS has recommended several mitigation measures be implemented for the project, including considering which will generate construction-related noise at levels similar to Poseidon's project, including considering the entire wetlands area adjacent to that project a sensitive receptor and that the project include design features that maintain noise levels at or below ambient conditions.[13]

CDFW has also identified several bird species as being particularly sensitive to vibration, including the Light-footed Clapper Rail, and CDFW specifically prohibits pile driving during their nesting season due to its relatively high levels of both noise and vibration.[14]
While the FSA describes the expected decibel levels from pile driving, it does not identify the expected increase in groundborne noise and vibration levels (VdB) that would occur in the ESHA/wetland areas during project operations, particularly during pile driving.[15]
To reduce noise effects on nearby avian species, the FSA's proposed **Condition BIO-9** would require AES to implement a Noise Monitoring Plan during breeding and nesting season (February 1 to August 31 each year). The Plan would require continuous noise monitoring at three specified locations and would require noise levels not exceed 8 dBA above ambient levels or 60 dBA, whichever is greater. It would also require that monitoring devices be reviewed daily during any construction occurring within 400 feet of the project's fenceline with the Magnolia Marsh areas and during any pile-driving activities. If construction noise exceeds these levels, AES would be required to implement noise-reduction measures, such as installing temporary sound walls or other similar barriers, moving noise-generating activities further from the ESHA/wetland areas, and avoiding pile driving or confining pile driving to project areas furthest from the Marsh areas.

Coastal Commission Recommended Specific Provisions

We generally concur with the FSA's proposed approach to avoiding and reducing noise-related effects in the nearby ESHA/wetland areas. However, we recommend two modifications to **Condition BIO-9** to ensure consistency with LCP provisions requiring protection of these habitat areas and to be consistent with previous City and Coastal Commission determinations regarding noise impacts on wildlife.

[13] See September 10, 2012 letter from USFWS to California Energy Commission regarding Application for Certification 12-AFC-02.

[14] Commission staff personal communication with CDFW staff, October 18, 2013.

[15] Groundborne noise and vibration is measured using "VdB," or vibration decibel levels, to distinguish it from airborne sound. Very low VdB levels can be imperceptible, but levels of around 100 VdB and higher can cause structural damage.

- **Recommended modified noise threshold:** First, we recommend the **Condition BIO-9** allowable noise threshold be modified as follows:

  "The project owner shall prepare and implement a Wildlife Noise Monitoring Plan throughout construction and demolition activities taking place during the bird breeding season (February 1 to August 31). Sound levels in Upper Magnolia and Magnolia marshes shall not exceed 8 dBA above ambient levels or 60 dBA (hourly average Leq), whichever is greater. **In addition, sound levels within the marshes and within 100 feet of active nests (as identified during the nesting surveys required pursuant to Condition BIO-8) shall not exceed 65 dBA.**"

This would be consistent with the City's approach in other nearby projects where the City has cited the 60 dBA threshold as causing adverse impacts to avian species and where it has prohibited noise- and disturbance-generating construction activities adjacent to the Magnolia Marsh during the Belding's Savannah Sparrow breeding season (see, for example, City of Huntington Beach CDPs #2006-005 and #PW-08-003, both for nearby construction projects). It would also be consistent with conditions of the Commission's recent approval of a bridge construction project in the nearby Bolsa Chica Wetlands requiring that noise levels not exceed 65 dBA within 100 feet of any active nests (see the Commission's May 2013 approval of CDP 5-12-191). This recommended condition appears feasible, given that it has been implemented in similar construction projects in and near nearby ESHA/wetland areas.

- **Recommended prohibition on pile driving during nesting season:** Regarding vibration effects, we recommend that **Condition BIO-9** be modified to require AES schedule and conduct all pile driving activities outside the February 1 through August 31 breeding and nesting season. **Condition BIO-9** currently lists pile driving avoidance as one of several feasible noise reduction techniques that AES could implement if its activities exceed the noise threshold; however, as noted above, the FSA already anticipates that expected noise levels will exceed that threshold. Additionally, pile driving is expected to cause substantial vibration levels (VdB), in the nearby marsh areas, though the FSA does not identify those expected levels. Given the expected threshold exceedance and the additional unquantified but likely significant vibration-related effects, this modification would further reduce expected adverse project-related effects on nearby ESHA and wetland areas.

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

E. FLOOD, TSUNAMI, AND SEA LEVEL RISE HAZARDS

Coastal Act Section 30253 states, in relevant part:

> *New development shall do all of the following:*
> *(a)Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

LCP Policy I-C.20, Environmental Hazards Element, states:

> *Enforce and implement the policies and programs of the Environmental Hazards Element of the General Plan to the extent that these programs and policies are not inconsistent with the City's Local Coastal Program.*

The relevant and applicable policies and programs of the above-cited Environmental Hazards Element are listed below. [Figures in parentheses at the end of each Environmental Hazards Policy refer to the Implementation Program applicable to each Policy.]

> Environmental Hazards Policy 5.1.1 states: *Identify tsunami and seiche susceptible areas, and require that specific measures be taken by the developer, builder, or property owner, during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety (see Figure EH-8). (I-EH 1 and I-EH 4)*
>
> Environmental Hazards Program I-EH 4, Development Review or Environmental Review Process, states: *During development review (site plan, tract map, etc.) and/or environmental review, require:*
>
> *a. building structures proposed in liquefaction, unstable soil/slope conditions, flood prone areas, high water tables, peat or other geologic hazards prone areas to determine potential problems and to require mitigation measures;*
> *b. a potential seismic/geologic damage assessment to be conducted for essential public utilities (gas, water, electricity, communications, sewer) and require that appropriate mitigation measures be incorporated;*
> *c. critical or sensitive facilities and uses to be located in areas where utility services and continuous road access can be maintained in the event of an earthquake;*
> …
> *g. that proposed critical, essential, and high-occupancy facilities be subject to seismic review, including detailed site investigations for faulting, liquefaction, ground motion characteristics, and slope stability, and application of the most current professional standards for seismic design;*
> *h. that proposed projects located in the tsunami hazard areas (Figure EH-9):*
> - *are designed to minimize beach/bluff erosion and the need for sand replenishment along city beaches; and*

- *consider design options which reduce the potential for damage to private property and threats to public safety, i.e., raised foundations, ground floor parking with upper level uses.*

LCP Coastal Element Hazards Section C10.1.19 states:

> *Identify tsunami and seiche susceptible areas (Figure C-30), and require that specific measures be taken by the developer, builder or property owner during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety. Development permitted in tsunami and seiche susceptible areas shall be designed and sited to minimize this hazard and shall be conditioned to prohibit a shoreline protective device.*

The HBEP site is subject to adverse effects from floods, tsunamis, and sea level rise. These hazards are described separately below, along with recommended Specific Provisions to allow consistency with relevant Coastal Act and LCP policies.

Sea Level Rise

The project site is within an area of the Orange County coastline that has been singled out as being particularly susceptible to sea level rise. It has a wide range of critical infrastructure, including the existing proposed power plant and proposed HBEP, that will be affected unless significant effort is taken to protect, replace, or remove it. A recent study found that the Orange County coastline has structures worth more than $17 billion (in 2000 dollars), including the power plant, that are vulnerable to a 4.5-foot rise in sea level, which is a level expected before the end of this century.[16] Another recent study found a more immediate danger in the area of the HBEP site where up to 5,000 nearby homes are at risk due to sea level rise by 2020.[17]

California has adopted the 2013 *State of California Sea-Level Rise Guidance Document* ("*State Guidance Document*), based on guidance from the 2012 NRC Report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*.[18] These documents, considered the current best-available science on sea level rise projections, anticipate sea level rise of up to two feet by 2050 and up to 5.5 feet by 2100 along this part of the Orange County shoreline. These projections are also consistent with the Commission staff's recently published draft guidance for incorporating sea level rise hazards and projections into LCP and coastal development permit review.

[16] Heberger, Matthew, et al., *The Impacts of Sea-Level Rise on the California Coast*, prepared by the Pacific Institute for the California Climate Change Center – California Energy Commission, California Environmental Protection Agency, Metropolitan Transportation Commission, California Department of Transportation, the California Ocean Protection Council, March 2009.

[17] See Climate Central, *Surging Seas: Sea Level Rise Analysis*, June 2013.

[18] For more information on the NRC Report, go to http://www.nap.edu/catalog.php?record_id=13389 and on the OPC Guidance, go to: http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf .

The *State Guidance Document* cautions that its sea level rise projections likely underestimate the amount of increase and that uncertainties about these projections increase as planning timeframes increase – i.e., they are likely more accurate for the immediate couple of decades and less so for subsequent decades. It notes that the rate of sea level rise is not expected to be linear and that it is likely to rise faster later in this century. The *State Guidance Document* recommends that state agencies during project evaluation consider the projected lifespan of the facility, its cost, and the impact or consequence of damage or loss of the facility. It also recommends that consideration be given to the project's adaptive capacity, impacts, and risk tolerance for projects with an expected timeframe beyond 2050.[19]

Importantly, and as noted in the *State Guidance Document*, the expected increase in water levels are likely to occur not just at some point several decades in the future, but also during shorter-term events in the very near future, such as storm waves, or during recurring events like El Nino. The *State Guidance Document* notes that, "[w]here feasible, consideration should be given to scenarios that combine extreme oceanographic conditions on top of the highest water levels projected to result from SLR over the expected life of a project." It also states that water levels during these large, short-term events along some parts of the coast have already exceeded sea level rise levels projected for 2030 and have reached levels projected for 2050.

The FSA evaluates the proposed project based on a 30-year operating life, which would extend until between approximately 2045 and 2055, depending on the eventual project construction schedule. This would subject the facility to hazards associated with a sea level rise of up to about two feet, which is expected by about 2050. As illustrated in **Exhibit 8 – Predicted Sea Level Rise**, a two-foot water level increase could result in the facility becoming an "island" separated from nearby inland areas during high tides, floods, storm surges, or other similar events. The increase in sea level will also alter shoreline processes, such as the rate and location of beach erosion, though the extent of these changes has not yet been determined. Additionally, the site is already subject to tidally-influenced high groundwater tables, with monitoring wells having shown groundwater at or above the existing grade.[20] Groundwater levels are expected to rise with those of sea level, with the higher groundwater table affecting the facility's foundations, and increasing its susceptibility to hazards such as liquefaction and lateral spread. The facility would also likely be subject to other secondary or indirect effects, such as salt water intrusion into foundations, changes in the flood channel hydraulics, potential increased sedimentation in the flood channel with an associated loss of flood conveyance, and others. As discussed below, although site elevations are above most expected flood and tsunami runup levels, those levels and the associated risks will increase with sea level rise. Therefore, although the project site is about one-half mile from the current shoreline, site conditions and its location make it likely that, unless mitigated, the facility will be affected by the predicted higher water levels during its operating life.

[19] See also California Emergency Management Agency, California Natural Resources Agency, and Federal Emergency Management Agency, *California Adaption Planning Guide: Planning For Adaptive Communities*, September 2012.

Flooding

The FSA describes the proposed project as having final grades of between 12 and 16 feet above sea level. It notes that the project site is within an area classified as "Zone X" by the Federal Emergency Management Agency (FEMA), a designation describing an area that is protected by levees from the 100-year flood but is still within the 500-year flood zone. The City's Environmental Hazards Chapter, completed in 1996, additionally identifies the project site as being within a City-designated Flood Zone (see FSA, Soil and Water Resources, Figure 2 – Huntington Beach Flood Zones (FEMA, 2009).

The HBEP site is within an area that has been subjected to numerous severe floods. It is adjacent to the Huntington Beach Flood Control Channel, which was built in the 1960s in response to local flooding and is managed by the Orange County Flood Control District. The District recently upgraded a section of the Flood Channel near the project site to handle projected 100-year flood events. The site is also within the Prado Dam Failure Inundation Zone (see **Exhibit 9 – Prado Dam Failure Inundation Zone**), which the City established in recognition of the potential failure of the Prado Dam, an earthen structure in the upper Santa Ana River watershed built before modern seismic-resistant designs. Failure of the dam would flood over 100,000 acres, including most of the area of Huntington Beach surrounding the proposed project, with an inundation area of up to 15 miles wide and water levels of greater than 30 feet in some areas. Maximum water levels at the HBEP site from that event are estimated to reach elevations of between 10 and 15 feet.

For structures such as the HBEP that are proposed to be located in flood-prone areas, the LCP's Environmental Hazards Program I-EH 4 requires, during development or environmental review, that potential problems in flood-prone areas be identified and mitigation measures be required. The City has also developed several planning documents to help implement the Environmental Hazards Chapter of its LCP. These include the City's FEMA-approved Flood Management Plan, which describes the policies and actions the City is to implement to ensure its eligibility for FEMA flood insurance and other similar programs. FEMA has established that planning and siting for "critical facilities," which include police and fire stations, hospitals, and electrical facilities such as the proposed project, be based on avoiding risks from the 500-year flood event.[21] The City has also adopted the Huntington Beach/Fountain Valley Hazard Mitigation Plan, which identifies the power plant as a critical facility.[22]

The site and proposed facility are subject to three different types of flood risks. First, although the site is protected from the 100-year flood event by sheet piling on the adjacent flood control channel, those structures are not designed to resist the area's seismic forces. The site and facility could experience a 100-year flood event if those structures are damaged. Second, the project site is within the 500-year flood zone, and, as noted above, a critical facility such as the power plant is to be protected from the 500-year flood elevation and its risk assessment is to be based on that

[21] See, for example, *Design Guide for Improving Critical Facility Safety from Flooding and High Winds*, FEMA Publication 543, January 2007, as well as CalEMA criteria described at: http://hazardmitigation.calema.ca.gov/plan/local_hazard_mitigation_plan_lhmp

[22] Available at: http://hazardmitigation.calema.ca.gov/docs/lhmp/Huntington_Beach_Fountain_Valley_Cities_of_LHMP.pdf

500-year event. These events and their associated risks are reasonably foreseeable, since during the project's eight years of construction and its 30-year operating life, it would have about a 1 in 3 chance of experiencing the 100-year flood and a 1 in 14 chance of experiencing the 500-year flood event.[23] Finally, as noted above, the facility is within the Prado Dam Inundation Zone, which would result in flood elevations of between 10 and 15 feet at the HBEP site.

Commission staff used data from the adjacent flood control channel and from a hydrologic analysis of the adjacent Huntington Beach wetlands that show a 100-year flood elevation of between about 9 to 10.2 feet in a nearby portion of the flood channel.[24] Data were not available for the 500-year flood event from the City or provided in the FSA, though it is presumably higher. Adding the two feet of projected increase in sea level rise puts the 100-year flood elevation at between 12 and 13 feet, which is in the same range as expected tsunami elevations described below and somewhat lower than inundation from a Prado Dam failure.

Flooding from any of these events could cause significant adverse impacts. For example, below grade facility components could be subject to complete inundation, potentially resulting in plant outages. Additionally, debris carried by a flood could damage above-grade components of the facility, or conversely, structural debris from the facility could damage nearby structures or property. Potential and likely risks include temporary or permanent loss of electricity production to the area, damage to adjacent properties, and increased public costs to provide measures that would protect the facility from these flood events. These flood risks will increase with the expected increase in sea level rise during the project's operating life. The degree of flood protection provided at the site is already influenced by the tides – that is, flood waters are released more slowly during a high tide than during a low tide and back up into the channel and surrounding areas during a high tide – and this effect will increase with sea level rise.

Tsunami Hazards

Although the site is located about one-half mile inland from the shoreline, it is subject to significant tsunami hazards. The site sits within a Tsunami Runup Zone the City designated in 1996 that extends about a mile inland from the shoreline (see **Exhibit 10 –Tsunami Runup Zone**).[25] At the time of that designation, the City identified expected tsunami elevations of up to five feet for a 100-year event and up to 7.5 feet for a 500-year event. More recent data and updated studies show the site is subject to higher runup levels and more severe tsunami risks. The 2009 California Geological Survey *Tsunami Inundation Map* for the Huntington Beach area shows the site within a tsunami runup zone in this part of the City that extends more than two miles inland, with expected water levels within parts of that zone of up to 16 feet above mean sea

[23] The calculation used to determine these probabilities is $r = 1-(1- 1/T)^N$, with T = the return period (i.e., the 100- or 500-year event), N = the expected life of the facility (i.e., eight years construction and 30 years operation), with r equal to the probability that the event will occur at least once in N years. During a 38-year facility life, there is about a 32% probability it would experience a 100-year event and about a 7% probability it would experience a 500-year event.

[24] See Federal Emergency Management Agency, *Flood Profiles, Huntington Beach Channel (D01)*, December 15, 2009, and Moffatt & Nichol, *Hydrologic and Hydraulic Baseline Report*, prepared for Huntington Beach Wetlands Conservancy, August 18, 2004.

[25] This map is the Figure C-30 referenced in LCP Policy C 10.1.19 above.

level (see FSA Soil and Water Resources, Figure 3 – 2009 Tsunami Inundation Map for Huntington Beach).[26]

This 2009 Map is based not on 100- or 500-year probabilities, but on the maximum expected inundation an area could experience from either far-field tsunamis (i.e. those tsunamis that are generated far from Huntington Beach) and from locally generated or near-field events.[27] For each mapped area of the coast, the CGS identified expected inundation levels for every 30-meter grid within the modeled runup zone. The site's tsunami risk and its expected tsunami runup elevations are also based in part on nearby seafloor bathymetry and other characteristics offshore of Huntington Beach that create a tsunami amplification area.[28]

The City's LCP requires that proposed projects within its designated Tsunami Runup Zone be evaluated for consistency with several of the Environmental Hazards policies identified above. In addition, Coastal Element section C10.1.19 requires that development located in tsunami or seiche susceptible areas be designed to prevent or reduce damage from these events. This LCP policy also prohibits the installation of shoreline protective devices as mitigation against tsunamis or seiches.

As noted in the FSA, the CGS modeling used to develop the tsunami runup maps shows a projected runup elevation at the power plant site of approximately 11 feet above mean sea level (msl). This elevation would result from at least two events – a magnitude 7.6 earthquake on the nearby offshore Catalina fault or a magnitude 9.2 event in Alaska's Aleutian Islands. With up to two feet of sea level rise expected during the project life, the maximum expected runup elevation would increase to about 13 feet above mean sea level. Final grades of the proposed project would have elevations ranging from about 12 to 16 feet above mean sea level; however, several important facility components and foundations will be below grade. The site may also be subject to seiches running up the flood control channel, though modeling for those events is apparently not available.[29]

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[26] A more recent study suggests even greater inundation levels at or near the site. A September 2013 report, *Science Application for Risk Reduction (SAFRR) Tsunami Scenario*, published by the California Natural Resources Agency, Department of Conservation, and California Geological Survey and the United States Geological Survey and Department of Interior, describes a tsunami scenario for the California coast that would result from a 9.1 earthquake in the Aleutians. The modeled tsunami would inundate large areas of the coastline, including areas with significant economic and infrastructure importance. This study used multiple coarse- and fine-grained models to identify likely inundation depths and water velocities, which were used to determine likely levels of damage along key parts of the coast, such as the Ports of Long Beach and Los Angeles. The study did not identify specific runup elevations along the Huntington Beach shoreline, but noted that in nearby Newport Beach, tsunami elevations could reach up to about 20 feet above msl with velocities of up to about 60 feet per second (or roughly 45 miles per hour).

[27] Tsunami inundation analyses used in land use planning often refer to 100-year and 500-year events, based on FEMA's methods for floodplain mapping. For several reasons, however, determining tsunami probabilities is significantly more difficult than predicting flood events. Tsunamis occur less frequently than floods, their historic and prehistoric records are often less exact, and the events that generate them can occur over a much larger area.

[28] See Legg, Borrero, and Synolakis, *Evaluation of Tsunami Risk to Southern California Coastal Cities*, Federal Emergency Management Agency and Earthquake Engineering Research Institute, January 2003.

[29] A seiche is a wave generated by the same types of events that cause a tsunami, but that occurs within an enclosed water body such as a bay, reservoir, or, in this case, a flood control channel.

As evidenced by recent tsunami events worldwide and in California, an 11- to 13-foot tsunami can cause significant adverse impacts. At this site, it would result in partial inundation and possible damage to below-grade facility components. It is also likely that damaged structural components could contribute structural debris to the tsunami and worsen the damage at the facility and at nearby structures and properties. Smaller tsunamis can also prove damaging – for example, the Orange County Multi-Hazard Mitigation Plan describes a one- to three-foot tsunami as being highly destructive[30] – and at this site, a smaller tsunami could create the same "island" effect as described in the flood hazard discussion above.

Tsunami mitigation

Other than locating proposed facilities outside of tsunami runup areas, the simplest approach to preventing or reducing tsunami-related hazards is to elevate structures above expected runup levels. However, elevating the facility's proposed structures would require significant amounts of fill and would likely redirect tsunami energy away from the facility and towards other nearby structures and properties, including the adjacent flood control levees. Additional fill could also be used to create berms around the structures while keeping the structures at the same proposed elevation; however, this approach would similarly redirect tsunami energy towards other nearby properties.

Either of these approaches would likely increase tsunami-related damage and safety risks and would therefore not conform to the LCP's Environmental Hazards Policy 5.1.1. Additional fill would also involve increased truck traffic, with the associated adverse effects on public access and air quality. The additional fill could also affect the groundwater regime beneath the project site and in the adjacent wetlands and flood control channel.

Other possible mitigation approaches include incorporating tsunami-resistant design features into structures that are subject to inundation. These features include enclosing below-grade structures within reinforced concrete walls to resist tsunami forces, protecting tanks against uplift due to tsunami buoyant forces, and others.[31] Another standard approach for facilities in tsunami-prone areas is to develop and implement a safety plan that includes on-site signage, training for facility personnel to know how to recognize tsunami watches and warnings that may be issued, and identifying an evacuation site.

Coastal Commission Recommended Specific Provisions to Avoid and Reduce Flood- and Tsunami-related Effects

To address these hazards and their associated risks to the proposed facility, and to allow consistency with relevant provisions of the Coastal Act and LCP, the Commission recommends the CEC include the new and modified conditions shown below as part of any approval of the AFC. Proposed **Condition Soil&Water8** will ensure that the proposed critical facility is sited to be protected from both the current and future predicted 500-year flood elevation. Proposed **Condition GEO-3** is meant to allow

[30] See the Municipal Water District of Orange County, *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan*, February 2012.

[31] See, for example, the 2008 Federal Emergency Management Agency's (FEMA's) *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*.

consistency with the health, public safety, and damage prevention components of Environmental Hazard Policy EH 5.1.1 and Environmental Hazards Program I-EH 4 by requiring AES to submit a Facility Hazard Emergency Response Plan prepared in coordination with other nearby property owners and government entities that identifies the hazards to the facility and to nearby structures owned by others, and that identifies measures that will be implemented to avoid or reduce these hazards. This recommended Condition also requires AES to provide documentation from these other nearby landowners and government entities that the plan accurately reflects expected hazards. It further requires AES provide documentation from the City that the proposed project is consistent with the goals and objectives of the City's Flood Management Plan, which is meant to help the City implement its LCP's Environmental Hazards Chapter. To address specific tsunami-related LCP policies, proposed **Condition GEO-3** also ensures the facility includes adequate life safety measures, as required by LCP Policy I-EH 4(g). **Condition GEO-3** also requires AES to submit for CPM approval a project design approved by a structural engineer identifying structural elements that allow project personnel to immediately remove themselves to one or more locations that will not be subject to tsunami inundation or that will be safe from inundation. Finally, recommended **Condition GEN-9** prohibits the project owner from constructing a shoreline protection device, as required pursuant to the LCP's Coastal Elements Hazards Section C10.1.19.

- **Recommended New Condition SOIL&WATER8: Flood Damage Prevention. Prior to the start of construction, AES shall submit for CPM review and approval, certification from a licensed engineer that the proposed facility is elevated above, or protected from, a 500-year flood event at the project site that includes an additional 24 inches of sea level rise. The engineer's determination shall describe the methods and include the calculations used to determine the elevation of the current 500-year flood event at the site and those used to determine the elevation of a future 500-year flood event with the additional 24 inches of sea level rise expected during the facility's thirty year operating life.**

  The elevations and proposed changes to the facility design shall be incorporated into the final project design submittals required pursuant to Condition GEN-2.

- **Recommended New Condition GEO-3: Flood and Tsunami Hazard Mitigation Planning. Prior to the start of construction, AES shall submit for CPM review and approval, a Facility Hazard Emergency Response Plan developed in coordination with the City of Huntington Beach, Southern California Edison, and the Orange County Flood Control District. The Facility Hazard Emergency Response Plan shall include, at a minimum:**

  1. **Results of hydraulic and hydrodynamic modeling using methods approved by the Federal Emergency Management Agency (FEMA) or the National Oceanic and Atmospheric Administration (NOAA) showing the effects of the facility's proposed structures on other nearby structures**

(including, but not limited to, structures associated with the existing adjacent power plant, the on-site Southern California Edison substation, and the Orange County Flood Control Channel) during: (1) a tsunami runup of 11 feet above mean sea level with an additional two feet of sea level rise (for a total runup of 13 feet above mean sea level); (2) the 100-year flood event with an additional two feet of sea level rise; and (3) the 500-year flood events as determined pursuant to Condition SOIL&WATER8.

2. **Concurrence from Southern California Edison and the Orange County Flood Control District that the modeling efforts accurately reflect expected hazard levels at these nearby structures, and concurrence from the City of Huntington Beach that the Plan is consistent with the City's most recent Hazard Mitigation Plan and Multi-Hazard Mitigation Plan prepared pursuant to California Government Code Sections 8685.9 and 65302.6 and 44 CFR 201.6 et. seq.**

3. **Structural and non-structural measures AES will implement to avoid, or if infeasible to avoid, to reduce any identified adverse effects of tsunami and flood events and to ensure human safety. Structural measures shall include either those that allow facility personnel immediate vertical evacuation to safe areas above tsunami runup elevations or those that allow facility personnel to remain inside structures that are not subject to inundation. The structural measures identified and required by this Plan shall be determined by a licensed structural engineer to be fully tsunami-resistant.**

Changes to the facility resulting from the above analyses shall be incorporated into the final project design submittals required pursuant to Condition GEN-2.

- **Recommended new Condition GEN-9: No Shoreline Protective Device. In the event that the approved development, including any future improvements, is threatened with damage or destruction from coastal hazards, or is damaged or destroyed by coastal hazards, protective structures (including but not limited to seawalls, revetments, groins, deep piers/caissons, etc.) shall be prohibited. By acceptance of the CEC approval, the project owner waives any right to construct such protective structures, including any that may exist under Public Resources Code Section 30235.**

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

F. GEOLOGIC HAZARDS

Coastal Act Section 30253 states, in relevant part:

> *New development shall do all of the following:*
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

LCP Policy C1.1 states:

> *Ensure that adverse impacts associated with coastal zone development are mitigated or minimized to the greatest extent feasible.*

LCP Policy C 10.1.3 states:

> *Require seismic/geologic assessment prior to construction in the Alquist-Priolo Earthquake Fault Zone as shown in Figure C-28.*

LCP Policy C 10.1.4 states:

> *Require appropriate engineering and building practices for all new structures to withstand ground shaking and liquefaction such as those stated in the Uniform Building Code.*

LCP Policy I-C.20, Environmental Hazards Element, states:

> *Enforce and implement the policies and programs of the Environmental Hazards Element of the General Plan to the extent that these programs and policies are not inconsistent with the City's Local Coastal Program.*

The relevant and applicable policies and programs of the above-cited Environmental Hazards Element are listed below. Figures in parentheses at the end of each Environmental Hazards Policy refer to the Implementation Program applicable to each Policy.

> Environmental Hazards Policy 1.1.4 states: *Evaluate the levels of risk based on the nature of the hazards and assess acceptable risk based on the human, property, and social structure damage compared to the cost of corrective measures to mitigate or prevent damage. (I-EH 3 and I-EH 4)*

> Environmental Hazards Policy 1.2.1 states: *Require appropriate engineering and building practices for all new structures to withstand groundshaking and liquefaction such as stated in the Uniform Building Code (UBC). (I-EH 5)*

Environmental Hazards Program I-EH-1, Studies/Mapping/Master Plans, states, in relevant part:

a. Conduct, prepare and/or update the following as funding permits:

...

- *an assessment of potential damage to essential utility and transportation infrastructure and public service facilities due to geologic/seismic hazards. The findings of the assessment should be utilized in the review of proposed development projects, and used for maintaining and updating emergency preparedness plans;*

Environmental Hazards Program I-EH-3, Alquist-Priolo Earthquake Fault Zone, states:

a. Continue to implement the Alquist-Priolo Earthquake Fault Zone requirements.
b. Implement the fault classification system suggested by Leighton & Associates (April 17, 1986) with regard to faults in the City susceptible to fault rupture, and establish a study requirement based on risk and structure importance.

Environmental Hazards Program I-EH 4, Development Review or Environmental Review Process, states:

During development review (site plan, tract map, etc.) and/or environmental review, require:
d. building structures proposed in liquefaction, unstable soil/slope conditions, flood prone areas, high water tables, peat or other geologic hazards prone areas to determine potential problems and to require mitigation measures;
e. a potential seismic/geologic damage assessment to be conducted for essential public utilities (gas, water, electricity, communications, sewer) and require that appropriate mitigation measures be incorporated;
f. critical or sensitive facilities and uses to be located in areas where utility services and continuous road access can be maintained in the event of an earthquake;
…
i. that proposed critical, essential, and high-occupancy facilities be subject to seismic review, including detailed site investigations for faulting, liquefaction, ground motion characteristics, and slope stability, and application of the most current professional standards for seismic design;

Environmental Hazards Program I-EH-5 – Ordinances:

a. Enforce the most current Uniform Building code adopted by the State of California.
b. *Prepare ordinances prohibiting the location of critical or sensitive facilities or high occupancy facilities within a predetermined distance of an active or potentially active fault.*

The proposed HBEP site and vicinity is subject to several types of relatively severe geologic hazards, including surface fault rupture, ground shaking, liquefaction, and lateral spread. The analysis provided below shows that there is a significant probability that the project would experience one or more of these hazards during its expected operating life. In addition, the expected increase in sea level described above will increase the risk from some of these hazards during the project's operating life. The site's seismic setting and its specific seismic hazards are briefly described below, followed by several recommended conditions to allow the proposed facility to more fully conform to relevant Coastal Act and LCP policies.

Seismic setting

The proposed facility is located within a seismically-active region that includes the underlying Newport-Inglewood Fault Zone (NIFZ), which extends about 50 miles from Newport Beach to Los Angeles. It consists of a series of known faults, and geologists believe there are additional unknown faults in a zone that ranges up to somewhat more than a mile wide. The NIFZ is generally thought to be contiguous with the Rose Canyon Fault Zone which underlies parts of San Diego, trends offshore at La Jolla, and continues north to meet the NIFZ. Just offshore of the facility site is the epicenter of the geologically recent 1933 Long Beach earthquake, which was a magnitude 6.3 event on the NIFZ that resulted in significant loss of life and extensive property damage.

The City's 1996 Environmental Hazards Chapter states that faults within the NIFZ have an expected maximum earthquake of magnitude 7, an expected maximum ground acceleration of up to 1g, and potential surface fault rupture of more than ten feet in earthquakes of between magnitude 6.0 and 7.5. Other more recent reports calculate that the NIRC fault could generate a quake of up to magnitude 7.5[32] or an offshore magnitude 7.4 earthquake.[33] Various entities consider the entire NIRC fault zone as active.[34] Within that NIFZ, the California Geological Survey (CGS) has designated several specific fault segments as being within an Alquist-Priolo Earthquake Fault Zone, including a portion of the NIFZ's North Branch Fault about one-half mile from the HBEP site.[35]

[32] See *City of Huntington Beach Draft Hazard Mitigation Plan*, 2011.

[33] Grant, L., and Shearer, P., *Activity of the Offshore Newport-Inglewood Rose Canyon Fault Zone, Coastal Southern California*, from Relocated Microseismicity, Bulletin of the Seismological Society of America, Vol., 94, No. 2, pp. 747-752, April 2004.

[34] See, for example, Pischke, Gary, *Earthquakes and Folds on the Rose Canyon Fault Zone*, in *The Seismic Risk in the San Diego Region: Special Focus on the Rose Canyon Fault System*, edited by Glenn Roquemore, the Southern California Earthquake Preparedness Project, 1989.

[35] Section 1613A.2 of the California Building Code defines an "active earthquake fault" as "a fault that has been the source of earthquakes or is recognized as a potential source of earthquakes, including those that have exhibited surface displacement within Holocene time (about 11,000 years) as determined by California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act , those included as type A or type B faults for the U.S. Geological Survey (USGS) National Seismic Hazard Maps, and faults considered to have been active in Holocene time by an authoritative source, federal, state or local governmental agency."

The HBEP would be located within a few hundred feet of the NIFZ's South Branch Fault (see **Exhibit 11 – Mapped South Branch Fault Beneath Project Site**). The South Branch Fault is less well understood than some other segments of the NIFZ, due in part to the extensive development and areas of fill existing along the fault route, both of which tend to mask surface expressions of faulting and make investigations at depth more difficult. A 1981 study noted that the NIFZ in the immediate project area had not been designated as active mainly because of the difficulty in identifying evidence for faulting.[36] When investigating the NIFZ for designation within an Alquist-Priolo Earthquake Fault Zone, the CGS found sufficient evidence to designate just the above-referenced segment of the NIFZ's North Branch near the proposed project site. Results of geodetic studies published in 2001 found evidence suggesting that the South Branch may be active.[37] Additionally, a 2007 study of another nearby project's potential pipeline routes described the South Branch Fault as "potentially active."[38]

More recently, the City noted that additional studies of the South Branch and other fault traces could result in Alquist-Priolo Earthquake Fault Zone designations. The City had already classified the South Branch Fault as a "Category C" fault, which requires special studies and subsurface investigation for nearby proposed developments. In 2010, the City's *Beach and Edinger Corridor Specific Plan EIR*, which is a planning document for an area of the City near the HBEP site, discussed the hazards associated with the South Branch Fault and acknowledged the potential for surface fault rupture.[39] The City's 2011 Hazard Mitigation Plan describes the South Branch Fault as "active," and identifies critical infrastructure near that fault that may be subject to damage from seismic activity.

In addition to the NIFZ, the site and facility are subject to potential seismic events and significant hazards from other regional faults, including the Compton-Los Angeles Blind Thrust Fault, the Elysian Park Blind Thrust Fault, and the Palos Verdes, Whittier-Elsinore, Serra Madre-Cucamonga, and San Andreas fault systems and others.[40] For example, the project site has been

[36] See Guptill, Paul, and Edward Heath, *Surface Faulting Along the Newport-Inglewood Zone of Deformation*, California Geology, July 1981, referencing Hart, E. W., *Fault hazard zones in California: California Division of Mines and Geology Special Publication 42 Revised Edition*, 1980.

[37] See Bender, E., et. al, *Surface Motion Detection from a Small Aperture Geodetic Network, Southern Los Angeles Basin*, from 97th Annual Meeting of Pacific Section American Association of Petroleum Geologists, 2001. The report explains that geodetic stations installed across a potential restraining bend along the south branch of the Newport-Inglewood fault zone appeared to be converging at a high rate. Assuming that surface motions accurately depict subsurface conditions, this may indicate that strain is accumulating at depth, which could indicate the South Branch Fault is active.

[38] See ENSR Corporation, *Topic Report 6 – Geological Resources*, for Woodside Natural Gas, Inc., OceanWay Secure Energy, August 2007.

[39] The EIR states, "[t]his does not mean there is no threat of surface rupture along the other fault traces [including the South Branch]: only that the current state of our knowledge about them does not indicate whether a threat is present." It further states that "it is prudent to consider the possibility of surface rupture in the design and construction of development in the Specific Plan Area south of Ellis Avenue," an area that includes the South Branch Fault.

[40] See Magorian, D. Scott, *Preliminary Review of Geotechnical Constraints and Geologic Hazards Poseidon Resources Orange County Desalination Project – North and West Tank Options*, September 7, 2002, and Municipal

identified as subject to "Very Heavy" damage from a magnitude 6.9 earthquake on the Newport-Inglewood Fault, "Moderate to Heavy" damage from a magnitude 6.6 earthquake on the San Joaquin Fault (which is approximately 2.2 miles from the site), and "Moderate" damage from earthquakes on any of several other faults, including a magnitude 6.8 earthquake on the Peralta Hills fault (about 10 miles distant), a magnitude 7.5 earthquake on the Puente Hills fault (19.5 miles distant), and a magnitude 6.8 earthquake on the Whittier fault (20.7 miles distant).[41]

Site Seismic Hazards

The HBEP site is subject to several types of seismic hazards, as described below.

Surface Fault Rupture

The FSA notes that the proposed HBEP site is likely not subject to surface fault rupture. However, AES's July 2012 site assessment identified the above-referenced South Branch Fault trace as being located below the northeast corner of the power plant site, and stated it was proposing to locate its new generating units to provide a 500-foot buffer from the mapped fault and the location of potential surface fault rupture.

As noted in the Land Use and Alternatives discussion above, the Commission recommends that Energy Commission staff evaluate whether that part of the power plant site could be used for construction staging or parking that would reduce the project's effects on offsite coastal resources. That evaluation should include consideration of potential surface fault rupture and geologic stability.

Ground Shaking

The FSA identifies a range of potential ground motions at the site expected from several different seismic events and based on different modeling approaches.[42] They range from 0.598 g up to 2.4 g, which is a relatively severe level of ground movement. Structural measures needed to respond to ground motions at the upper end of this range could require substantial alterations to the facility as it is currently proposed.

Liquefaction and Lateral Spread

Liquefaction occurs in certain soils during seismic events. It results in the soil losing its strength and acting similar to a liquid, often resulting in collapse or damage to overlying structures. Lateral spread occurs when soils that are on flat to gently sloping surfaces above liquefiable soils and adjacent to an unsupported slope move in response to a seismic event – it is essentially a landslide that occurs on nearly flat ground.

Water District of Orange County, *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan, Orange County*, California, February 1, 2012.

[41] See the 2012 *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan*.

[42] See FSA's Geology & Paleontology Section, page 5.2-20, Table 3.

The proposed project site is within an area the City has designated as having "Very High" liquefaction potential (see **Exhibit 12 – Map of Liquefaction Potential in Huntington Beach**). The FSA notes that conditions within the power plant site are likely conducive to liquefaction, though less so for lateral spread. As noted above, the power plant site's liquefaction and lateral spread hazards are likely to be exacerbated by the increased surface and groundwater levels associated with predicted sea level rise during the HBEP facility life. The City additionally notes in its Environmental Hazards Chapter that earthquake intensities are likely to be higher in liquefaction-prone areas than in nearby non-liquefaction prone areas. It is not clear whether the range of ground motions noted above incorporate this potential for higher intensities.

Initial geotechnical investigations conducted at the adjoining AES Tank Farm for the proposed Poseidon project showed that site to be underlain by liquefiable soils extending to about 20 feet below the ground surface.[43] Those investigations also concluded that the site had a high potential for lateral spread, due to its soil characteristics, high groundwater levels, and its location along several hundred feet of the sloping sides of the adjacent flood control channel that were not designed to resist lateral spread.[44] Poseidon considered several methods to reduce liquefaction and lateral spread effects, including building the facility on stone columns, constructing below-grade buttress walls, and over-excavating soils subject to liquefaction, and the SEIR for that project required Poseidon to conduct additional geotechnical investigations prior to constructing the facility.

The FSA includes several proposed conditions to address the above-identified risks. Proposed **Condition GEO-1** would require AES to conduct geotechnical engineering analyses and prepare an engineering report that more specifically describes the site's seismicity and anticipated geologic hazards. **Condition GEO-1** also requires that report to include recommended measures to respond to the identified hazards. Proposed **Condition GEN-1** requires AES to design and construct its facility consistent with the requirements of the state's Building Codes, and proposed **Condition GEN-5** requires AES to use licensed engineers, engineering geologists, and other similarly accredited personnel to review the various geotechnical analyses, design the facility plans, and consult as needed during construction. This approach is largely consistent with relevant Coastal Act and LCP policies listed above. However, we are recommending several modifications to these proposed conditions to allow fuller conformity to those policies.

Coastal Commission Recommended Specific Provision

As noted above, it is not yet clear whether the upcoming geotechnical investigations and the resulting proposed mitigation measures will require substantial changes to the facility and cause additional and as-of-yet unknown and unquantified adverse effects on coastal resources. For example, if conditions beneath the HBEP footprint are similar to those beneath the adjacent AES tank farm site, the project could require significant dewatering,

[43] See SEIR, Appendix C – *Updated Preliminary Review of Geological Constraints and Geologic Hazards*, page 13.

[44] See Magorian, D. Scott, *Preliminary Review of Geotechnical Constraints and Geologic Hazards Poseidon Resources Orange County Desalination Project – North and West Tank Options*, September 7, 2002, and Magorien, D. Scott, *Updated Preliminary Review of Geotechnical Constraints and Geologic Hazards, Poseidon Resources Seawater Desalination Project, Huntington Beach, California*, February 2, 2010.

construction of stone columns or buttresses, placement of sheet piles, excavation, as well as other measures, any of which could change the project's anticipated coastal resource effects and its conformity to Coastal Act and LCP policies. Placement of buttress walls, for instance, could alter or reduce groundwater flow beneath the site and affect nearby wetlands, while extensive excavation could require significantly increased truck traffic and adversely affect public access to the shoreline. Additionally, given the site's potential for relatively severe ground motion, results of the upcoming studies could show that the facility will require extraordinary means of construction to ensure its stability. We are therefore recommending the following modifications, as shown in strikethrough/bold underline below:

- In recognition that hazards to the site and proposed facility are not yet fully identified, the Commission expects that some of the current evaluation regarding project effects on coastal resources may be understated and may require additional review to determine the project's conformity to relevant Coastal Act and LCP provisions. We recommend that project changes resulting from the upcoming studies undergo additional public review, if those changes are likely to increase adverse coastal resource effects or reduce the project's conformity to relevant Coastal Act and LCP provisions. We recommend the following modification to the FSA's proposed Condition GEO-1:

  "A Soils Engineering Report as required by Section 1803 of the California Building Code (CBC 2013), shall specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils; and tsunami. In accordance with CBC 2013, the report should also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. **If the analyses or recommendations show that the project will cause greater or more significant adverse effects to coastal resources than identified and evaluated in the Presiding Member's Final Decision for this AFC, the project owner shall submit the analyses and recommendations for additional public review to be conducted by the CEC staff.**

  Verification: The project owner shall include in the application for a grading permit a copy of the Soils Engineering Report which addresses the potential for strong seismic shaking; liquefaction; dynamic compaction; settlement due to compressible soils; corrosive soils; and tsunami, and a summary of how the results of the analyses were incorporated into the project foundation and grading plan design for review and comment by the Chief Building Official (CBO). A copy of the Soils Engineering Report, application for grading permit and any comments by the CBO are to be provided to the CPM at least 30 days prior to grading."

Site Seismic Hazards – Coastal and Geologic Hazards and Risks to a Critical Facility

LCP Environmental Hazards Policy 1.1.4 requires evaluating the risk to the proposed project from the above-described hazards. It also requires evaluating the risk of human, property, and social structure damage resulting from these hazards, identifying a level of "acceptable" risk, and comparing the risks to the costs of corrective measures to mitigate or prevent these damages. These analyses are particularly important for this proposed critical facility that, despite its location on a relatively hazardous site, is meant to support regional electrical grid reliability.

The City has not conducted a facility-specific risk assessment for the project; however, it has developed several hazard mitigation plans that address hazards and risks to critical infrastructure in the City. The findings of these hazard mitigation plans can be applied to the proposed project to determine the project's consistency with the hazard planning and risk assessment required pursuant to the above LCP policies.

Pursuant to state and federal requirements, local jurisdictions prepare Hazard Mitigation Plans to identify the suite of natural hazards known or expected to affect a community, identify actions that will reduce losses from those hazards, and establish a coordinated process for implementing the plan and these actions.[45] These requirements also require the Plans be in place for local jurisdictions to be eligible for certain disaster recovery funding. The above-cited FEMA guidance states that these Plans are to describe how a local government will integrate the mitigation elements identified in its Plan into that government's local land use decisions.

The Plans are to include:

- A risk assessment of the type, location, and extent of all natural hazards that can affect the local jurisdiction, along with a description of previous occurrences and the probability of future occurrences.
- A description of the local jurisdiction's vulnerability to these hazards, including the type and number of critical facilities and infrastructure located in hazard areas and an estimate of potential costs should these facilities be lost or damaged due to these hazards.
- Mitigation measures needed to avoid or reduce hazards and potential effects of the loss of critical facilities.
- A description of land uses and development in the local jurisdiction to allow the Plan's mitigation options to be considered as part of land use decisions.

The City has prepared three plans that address these concerns – the aforementioned Flood Management Plan, prepared pursuant to FEMA requirements and meant to help implement the City's Environmental Hazards Element of its LCP, a 2012 Hazard Mitigation Plan, and a Multi-Hazard Mitigation Plan [n.d.] prepared with the neighboring City of Fountain Valley. The Plans identify a number of hazards at the project site, including those described above – flooding, tsunami, seismic events, and others.

[45] See guidance from the California Emergency Management Agency regarding compliance with AB 2140 at http://hazardmitigation.calema.ca.gov/docs/AB2140_Letter_to_Local_Government.pdf , and Federal Emergency Management Agency, pursuant to 44 CFR 201 *et. seq*. regarding Federal Emergency Management Agency requirements.

Additionally, and given the number of site hazards, it is highly probable that the facility will experience one or more of the identified hazards during its operating life. Considering only those hazards with an expected recurrence interval or return period – e.g., a "100-year flood" – the site and facility have the following probabilities of any one of these hazards occurring during the project's expected 30-year operating life:

Hazard:	**Probability:**[46]
100-year flood:	**26%** (approximately 1 in 4 chance).
100-year tsunami:	**26%** (approximately 1 in 4 chance).
500-year tsunami:	**6%** (approximately 1 in 14 chance).
500-year flood:	**6%** (approximately 1 in 14 chance).

However, because the site and the proposed facility are subject to multiple hazards, the probability is much greater that they will experience not just one hazard – i.e., just a 100-year flood – but any one of the several hazards. For example, the probability that the site will experience either a 100-year tsunami or a 100-year flood is about twice as high than if the site was subject to just one or the other of those events. Looking at just the above four events, there is a greater than even chance that the site would experience at least any one of them during its operating life – that is, the probability that the site will experience a 100-year flood or a 500-year flood or a 100-year tsunami or a 500-year tsunami is somewhat greater than 50%.[47] The actual probability is somewhat higher, as the list above does not include all the site hazards for which recurrence intervals can be developed – for example, any damaging seismic events resulting from the above-referenced regional faults for which recurrence intervals have been calculated. Risks from damage to the facility that result from these hazards include short- or long-term disruption of electrical power from the facility, loss of grid support provided by the facility, release of chemicals or structural debris to nearby properties and habitats, and others.

While the FSA's proposed conditions reduce the facility's risk, the site's hazards still make the facility highly vulnerable to damage and result in risks that must be addressed pursuant to Environmental Hazards Policy 1.1.4. Additionally, addressing the risks associated with some of the hazards will require coordination with multiple nearby landowners and local governments – for example, the site's flood protection relies on levees and sheet piles constructed and managed by the Orange County Flood Control District; however, as noted above, those structures are not designed to withstand the area's seismic forces, so the facility's reliability is dependent on ongoing system improvements made by the Flood Control District.

[46] The calculation used is $r = 1-(1- 1/T)^N$, with T = the return period (e.g., a 100-year event), N = the expected operating life of the facility (i.e., 30 years), and r = the probability that the event will occur at least once in N years.

[47] This combined probability is the sum of the individual probabilities minus the probabilities of the site experiencing more than one of the hazards during its operating life. The calculation is ((0.26 + 0.26 + 0.06 + 0.06 - (0.26 * 0.26) – (0.26 – 0.06) – (0.26 * 0.06) - (0.06 * 0.06)) = .5376, or just over 50% probability.

Coastal Commission Recommended Specific Provision

To allow conformity to the LCP's Environmental Hazards Policy 1.1.4, the Commission recommends the following additional condition:

"**Condition GEO-4: Prior to issuance of the project grading permit, the project owner shall provide to the CPM documentation from the City of Huntington Beach showing that the project is consistent with the City's most recent Flood Management Plan, Hazard Mitigation Plan, and Multi-Hazard Mitigation Plan prepared pursuant to California Government Code Sections 8685.9 and 65302.6 and 44 CFR 201.6 et seq.**"

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

G. PUBLIC ACCESS

LCP Policy C 2.5 states:

> *Maintain and enhance, where feasible, existing shoreline and coastal resource access sites.*

Coastal Act Section 30211 states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

The proposed facility is to be built within an industrial site about one-half mile from the shoreline where public access is not available and not warranted. However, the project, as proposed, would cause two main types of adverse effects on public access. First, AES proposes to use over 200 parking spaces near the shoreline that are typically used for public access to the beach. Second, it would increase and interrupt traffic on streets used for public access to the shoreline in this area of Huntington Beach and along about 15 miles of the Pacific Coast Highway between the HBEP site and AES's Alamitos Power Plant site. These two adverse effects and the Commission's proposed mitigation measures are described below.

Beach Access Parking

AES expects a maximum of 331 workers on-site during the peak construction period. AES has proposed using one onsite and four offsite parking areas, and is planning to provide shuttle service to transport workers between the offsite areas and the project site (see **Exhibit 13 – Proposed HBEP Construction Parking**). The proposed parking areas, which are listed below, would provide more than three times the expected parking needed for the project.

Parking Area Location	Parking Area Size	Number of Spaces (approximate)
Onsite at HBEP	1.5 acres	130
Plains All-American Tank Farm, adjacent to HBEP	1.9 acres	170
Graded area west of HBEP on Newland Street	3 acres	300
Graded area at PCH and Beach Street	2.5 acres	215
Huntington Beach City Parking Area at PCH and Beach Street	N/A	225
Total Number of Spaces:		**1040**

The Huntington Beach City Parking Area described in the AES proposal is located about one-half mile from the power plant site and is used extensively by beachgoers. The 225 spaces AES proposes to use at this location would reduce parking that is meant to provide public access to the shoreline along this stretch of the coast.

The FSA's proposed **Condition TRANS-3** would require AES to prepare a Traffic Control Plan to address the project's traffic- and parking-related impacts. The required Plan would include a Parking/Staging Plan that is to ensure all project-related parking during construction and operation be either on-site or in the designated off-site parking areas. However, **Condition TRANS-3** does not yet ensure conformity to the City's LCP to the extent feasible.

Coastal Commission Recommended Specific Provision:
As noted above, LCP Policy C2.5 requires that existing shoreline access sites be maintained and enhanced, where feasible. The Commission therefore recommends that **Condition TRANS-3** be modified to delete the Huntington Beach City Parking Area from the project's parking plans. This feasible modification ensures continued availability of beach parking, allows AES to still have more than three times the expected parking needed, and would allow conformity to LCP Policy C 2.5.[48]

Additionally, and as described above in the Land Use and Alternatives section of this report, the Commission recommends the CEC evaluate whether additional space is available for short- or long-term use at the on-site AES Tank Farm or at the adjacent Plains America Tank Farms. Each of these tank farm areas is larger than the total of all five of AES's currently proposed parking area, and using all or some of the tank farm space could further reduce the project's cumulative and off-site impacts.

[48] Alternatively, Condition TRANS-3 could be modified to require that the Parking/Staging Plan specify that the Huntington Beach City Parking Area be used only if there is insufficient parking space available in the other four proposed parking areas.

Project-Related Traffic

Project-related traffic during approximately eight years of demolition, remediation, and construction activities at the facility site will occur along several thoroughfares, all of which provide access to the shoreline. These include the Pacific Coast Highway (PCH), Newland Avenue, Brookhurst Street, Magnolia Street, and Beach Boulevard. Because AES proposes to stage some of its equipment at its Alamitos Power Plant site, located about 15 miles north of Huntington Beach, the traffic effects would extend along that entire stretch of the PCH. AES also expects to require up to 112 "oversize" trips to transport the largest power plant components from the Port of Long Beach to the project site. AES expects its average daily construction traffic to include about 734 one-way trips, with most (662) due to the workers' commutes and the remainder due to deliveries (48 delivery/haul trucks and 72 cars or trucks that would accompany the deliveries).

The FSA identifies relatively minor reductions of no more than a few seconds delay in the Traffic Levels of Service (LOS) at nearby intersections during peak construction and peak traffic times.[49] However, at least two of the studied intersections are already at LOS E and LOS F, and the City's Circulation Element Policy CE2.1.1 requires a minimum LOS standard at peak hours to be no lower than LOS D. To address this issue, the FSA includes **Condition TRANS-3**, which would require AES to prepare a Traffic Control Plan in consultation with the City and with other agencies, noting that AES would need to monitor the affected intersections and use alternate routes during construction.

Coastal Commission Recommended Specific Provision

To ensure compatibility with LCP Policy C2.5, the Commission recommends that **Condition TRANS-3** be modified to require that project-related traffic needing to use any alternative routes at least maintain existing levels of public access to the shoreline.

We also recommend a modification to the traffic analysis presented in the FSA. The FSA evaluated cumulative traffic impacts expected to result from this project and 26 other projects that are proposed, under review, or approved in the area between the power plant site and the Alamitos Power Plant staging area. However, that analysis does not appear to include two projects – the proposed Poseidon desalination facility and the Ascon Landfill cleanup – that are immediately adjacent to the HBEP site and could involve significant amounts of traffic. The Poseidon project is expected to generate up to about 225 trips per day and would use the same power plant access points and several of the same roads that AES plans to use for its project. The Ascon Landfill cleanup, which the FSA analysis mentions but does not include in its traffic analysis, is expected to involve up to about 200 truck trips per day for about a year starting in 2015.[50] Traffic associated with either of these projects could substantially change the FSA's analysis and further decrease the Levels of Service on nearby roads.

[49] The Level of Service refers to a method used to quantify existing baseline traffic conditions and the level of traffic congestion that may be present at certain times of day or under certain conditions. Levels of Service range from Level A, which allows the free flow of traffic, to Level F, which produces jammed conditions and significant delays.

[50] See DTSC's Ascon Landfill Draft EIR at: http://www.dtsc.ca.gov/SiteCleanup/Projects/Ascon.cfm

To ensure the AES project and these other projects do not create unanticipated cumulative traffic impacts, we also recommend the Traffic Control Plan required pursuant to **Condition TRANS-3** incorporate traffic that may be generated by these two projects, either or both of which could occur concurrently with the AES project.

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

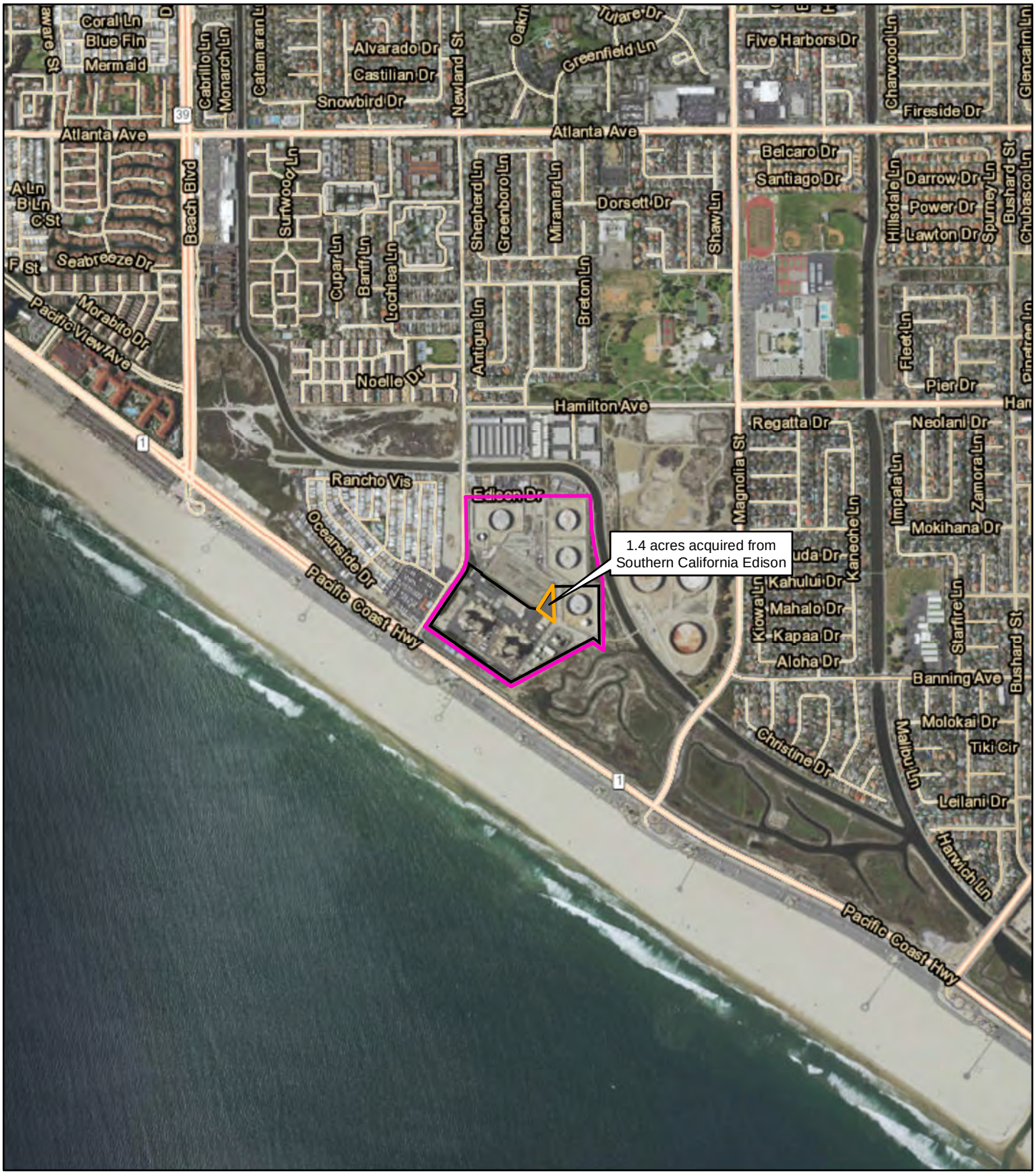
ATTACHMENT A – SUBSTANTIVE FILE DOCUMENTS

Coastal Commission, *Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976*, adopted September 1978, revised 1984, re-adopted December 1985, San Francisco, CA

Coastal Commission, staff report for Poseidon Water Huntington Beach Desalination Facility – Appeal #A-5-HNB-10-225 and Application No.: E-06-007, November 2013, available at: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

Energy Commission, *Opportunities to Expand Coastal Power Plants in California*, Staff Report P700-80-001, June 1980, Sacramento, CA.

Energy Commission, Final Staff Assessment and associated docketed documents for 12-AFC-02, Application for Certification for AES Southland, LLC Huntington Beach Energy Project, filed prior to June 2014.



Legend

- AES Huntington Beach Generating Station
- AES Amended Huntington Beach Energy Project

N

0 0.25

Miles

Basemap Source: ESRI

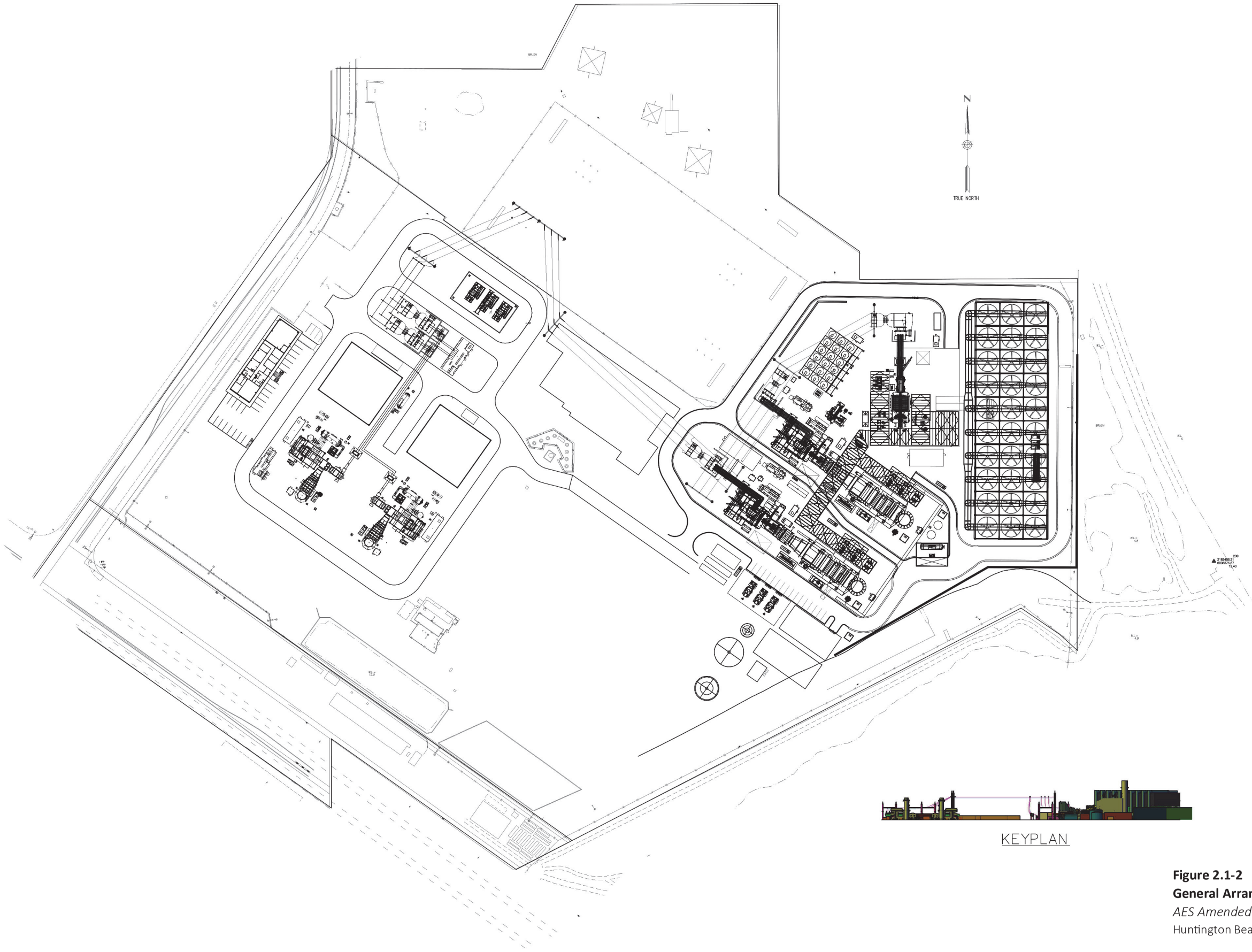
EXHIBIT 1

Figure 2.1-1. HBEP Project Location
AES Amended Huntington Beach Energy Project
Huntington Beach, California

ch2m

\\yosemite\proj\AESCorp\491232DiscPhaseRep\AFC_Archive\HBGS\GIS\AES\MapFiles\Huntington_beach\Project\PTA\Huntington_Expanded_Area.mxd

EXHIBIT 2

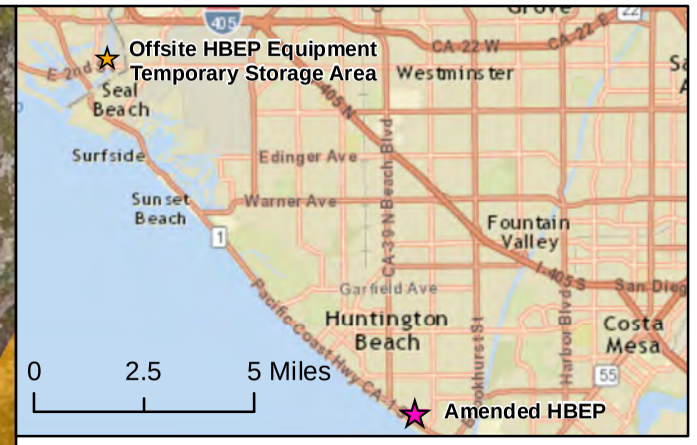


KEYPLAN

Figure 2.1-2
General Arrangement/Site Plan
AES Amended Huntington Beach Energy Project
Huntington Beach, California

Exhibit 3a

Exhibit 3b



Legend

- AES Huntington Beach Generating Station
- AES Amended Huntington Beach Energy Project
- 250-Foot Radius From Project Site

Wetland Type

- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

Sources:
1. ESRI
2. U.S. Fish and Wildlife Service, NWI (2015)

N

0 200 400
Feet

Exhibit 4

Figure 5.2-2a. Sheet 01 of 02
National Wetlands Inventory
AES Amended Huntington Beach Energy Project
Huntington Beach, California

ch2m

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January 3, 2013

VIA EMAIL

Ms. Felicia Miller, Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Huntington Beach Energy Project (12-AFC-02
Applicant's Supplemental Response to Data Request #27 (Biological Resources)

Dear Ms. Miller:

On behalf of Applicant AES Southland Development, LLC, please find enclosed herewith for docketing Applicant's supplemental response to Staff's Data Request #27 (Biological Resources).

Respectfully submitted,

Melissa A. Foster

MAF:jmw
Enclosure
cc: Proof of Service List

Huntington Beach Energy Project

(12-AFC-02)

Supplemental Data Response, DR27

Submitted to

California Energy Commission

Submitted by

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

January 3, 2013

Exhibit 5

Supplemental Data Response to Biological Resources DR27

DATA REQUEST

27. Please provide a wetland delineation using the guidelines of the USACE (1987 USACE Wetlands Delineation Manual) and guidelines of the Cal. Code Regs., tit. 14, § 13577 to assess any direct or indirect temporary impacts to wetlands adjacent to the power plant site and laydown areas.

Response: Applicant incorporates by reference herein the response provided by Applicant to Data Request DR27 on November 2, 2012. In addition to the information provided in response to DR27 on November 2, 2012, Applicant provides the following information:

The California Energy Commission (CEC) biologist, Anwar Ali, made an additional request during the Huntington Beach Energy Project (HBEP) workshop on November 14, 2012, that the Applicant complete an Arid West Region wetland determination data form for one soil pit within the fuel oil tank containment basin (the data form available in USACE, 2008). The completed Arid West Regional data form and photo log (showing the one soil pit) are included is this supplemental response. As documented in the attached data form and photo log completed by Melissa Fowler, Biologist, CH2M HILL, Inc., none of the three wetland indicators set forth in Section 13577 (hydrophytic vegetation, hydric soil, and/or wetland hydrology) is present within the fuel oil tank containment basin on the HBEP site (SP-01).

Reference:

United States Army Corps of Engineers (USACE). 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Available online at: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046489.pdf

Attachment DR27-1
Arid West Regional Data Form and Photo Log

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HUNTINGTON BEACH ENERGY MARKET City/County: HUNTINGTON BEACH / ORANGE COUNTY Sampling Date: 30 NOV 2017

Applicant/Owner: AES State: CA Sampling Point: SP-01

Investigator(s): MELISSA FOWLER Section, Township, Range: SECTION 13, TOWNSHIP 06 SOUTH, RANGE 11 WEST

Landform (hillslope, terrace, etc.): DEPRESSION Local relief (concave, convex, none): SLIGHTLY CONCAVE Slope (%): 3%

Subregion (LRR): MEDITERRANEAN CA (LRR C) Lat: 33° 38' 41.43" N Long: 117° 58' 33.99" W Datum: WGS 84

Soil Map Unit Name: TIDAL FLATS (ZII) NWI classification: PUBFx AND PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
FUEL OIL TANK CONTAINMENT BASIN

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
NO VEGETATION PRESENT, ACTIVELY MANAGED FUEL OIL TANK CONTAINMENT BASIN.

SOIL

Sampling Point: SP-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2.5	5YR 4/3	100					SANDY LOAM	
2.5-4	10YR 5/4	95					SANDY LOAM	SLIGHT MOISTURE
		5						ROCKS
4-12"	10YR 5/4	100					SAND	NO MOISTURE
BOTTOM OF PIT								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

MOISTNESS IS PRESENT 0-5" FROM RAINFALL

VERY LIGHT DAMPNESS

Huntington Beach Energy Project

Fuel Oil Tank Containment Basin: Soil Pit (SP-01)

Photo 1: Location of soil pit prior to excavation.

Photo 2: Soil pit.

Photo 3: Soil sample.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE HUNTINGTON BEACH ENERGY PROJECT

Docket No. 12-AFC-02
PROOF OF SERVICE
(Revised 12/24/12)

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COMMISSION DOCKET UNIT
California Energy Commission – Docket Unit
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1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
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OTHER ENERGY COMMISSION PARTICIPANTS (LISTED FOR CONVENIENCE ONLY):

After docketing, the Docket Unit will provide a copy to the persons listed below. Do not send copies of documents to these persons unless specifically directed to do so.

ANDREW McALLISTER
Commissioner and Presiding Member

KAREN DOUGLAS
Commissioner and Associate Member

*indicates change

Raoul Renaud
Hearing Adviser

OTHER ENERGY COMMISSION PARTICIPANTS (LISTED FOR CONVENIENCE ONLY) (cont.):

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Commissioners' Technical
Adviser for Facility Siting

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Patrick Saxton
Adviser to Commissioner McAllister

Galen Lemei
Adviser to Commissioner Douglas

Jennifer Nelson
Adviser to Commissioner Douglas

Felicia Miller
Project Manager

Kevin W. Bell
Staff Counsel

DECLARATION OF SERVICE

I, Judith M. Warmuth, declare that on January 3, 2013, I served and filed copies of the attached **Applicant's Supplemental Response to Data Request #27 (Biological Resources)** dated January 3, 2013. This document is accompanied by the most recent Proof of Service list, which I copied from the web page for this project at:
http://www.energy.ca.gov/sitingcases/huntington_beach_energy/index.html.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, as appropriate, in the following manner:

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

☒ I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those parties noted above as "hard copy required"; **OR**

☐ Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: January 3, 2013

Judith M. Warmuth

PROJECT DESCRIPTION - FIGURE 2
Amended Huntington Beach Energy Project - Construction / Laydown Parking Areas

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: CH2M - Figure 2.3-3 (Rev 1)

Exhibit 6

Exhibit 7

Exhibit 8 **– Recommended New BIO Condition**

Wetland Mitigation Plan

PRIOR TO STARTING PROJECT CONSTRUCTION, AES shall submit for review and written approval of the CPM a Wetland Mitigation Plan for all direct wetland impacts resulting from the proposed project. The Plan shall be developed by a qualified wetland or restoration ecologist in consultation with the California Coastal Commission, the California Department of Fish & Wildlife, and U.S. Fish & Wildlife Service. AES shall undertake development in conformance with the approved final Plan.

The Plan, at a minimum, shall include:

Site Plan

1. A detailed final site plan of the selected coastal wetland mitigation site including both the proposed restoration area and the surrounding buffer areas. The site plan shall include existing and proposed hydrologic, soil and vegetative conditions of the site, engineering/ grading plans and schedule, erosion control plans and schedule, weeding plans and schedule, planting plans and schedule, short- and long-term irrigation needs, on-going maintenance and management plans, and a monitoring plan as described below.

2. A description of how the site will meet success criteria consisting of at least 90% coverage of native vegetation within five years and natural hydrology sufficient to support the native vegetation at the site.

3. The final design and construction methods that will be used to ensure the site achieves the above success criteria.

4. Provisions for submittal, within 30 days of completion of initial restoration work, of "as built" plans demonstrating that the wetland mitigation site has been established in accordance with the approved design and construction methods.

5. Provisions for submittal of a wetland delineation of the mitigation site at the end of five years to confirm total acreage mitigated.

6. If the selected site will be subject to sea level rise, the wetland mitigation plan should consider various projected sea level rise scenarios that could occur over the life of the approved project to anticipate any direct and indirect environmental changes to the mitigation site from sea level rise or other climatic changes, and should provide liberal buffer zone and "habitat migration corridors" to allow sensitive habitat and species to migrate inland or upland as sea level rises in the event that the most extreme sea level rise projections are realized. The final mitigation site plan shall analyze potential impacts from sea level rise, such as changes to the area or extent of the mitigation site, potential barriers to inland migration of the wetland mitigation site, impacts of increased salinity on wetland type and function, and how the project would address these impacts to ensure that the mitigation site can adapt, persist and maintain hydrologic and ecological

functions over time. The plan should require that additional habitat be restored when the development allowed by this permit blocks necessary upland migration due to sea level rise. The mitigation design should incorporate flexibility to allow for project changes or modifications if sea level rise is greater than anticipated in the initial design.

Monitoring

7. Provisions for monitoring consistent with final approved monitoring requirements as described below. The monitoring, at a minimum, shall include the following:
    a. A baseline assessment, including photographs, of the current physical and ecological condition of the proposed mitigation site, including as appropriate, a wetland delineation conducted according to the definitions in the Coastal Act and the Coastal Commission's Regulations, a detailed site description and map showing the area and distribution of vegetation types and site topography, and a map showing the distribution and abundance of sensitive species that includes the footprint of the proposed mitigation.
    b. Projected sea level rise scenarios for life of the mitigation project consistent with the life of the approved development project. Sea level rise scenarios should be used to perform an impact analysis that quantifies total projected erosion rates and changes in sediment flows and other physical properties and which projects future flood elevations, surface drainage, runoff groundwater depth and salinity and changes to wetland extent. If applicable, the location of any species or habitats sensitive to change or reduced vigor from inundation, saltwater intrusion or other impacts associated with sea level rise or climate change should be mapped along with any barriers to inland migration.
    c. A description of the mitigation goals, including, as appropriate, any changes to site topography, hydrology, vegetation types, presence or abundance of sensitive species, and wildlife usage, as well as any anticipated measures for and adaptive management in response to sea level rise or other climatic changes. The description shall include:
        i. Planned site preparation and invasive plant removal;
        ii. Grading and land contouring needed to remove any natural barriers to inland migration with sea level rise and to maintain hydrologic function, where applicable.
        iii. The planting palette (seed mix and container plants), planting design, source of plant material, methods and timing of plant installation, erosion control measures, duration and use of irrigation, and measures for remediation if success criteria (performance standards) are not met. The planting palette shall be made up exclusively of native plants that are appropriate to the habitat and region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used.
        iv. Methods to document and report the physical and biological "as-built" condition of the restoration or mitigation site within 30 days of completion of the initial restoration activities. This "as-built" report is to describe the field implementation of the approved Plan in narrative and photographs,

report any problems in the implementation and their resolution, and include any recommendations for future adaptive management. The "as built" report shall be completed by a qualified biologist, who is independent of the installation contractor.

v. Methods to conduct interim monitoring and maintenance of the site meant to ensure that the site will meet success criteria within five years, including interim performance standards, sampling design, number and frequency of sampling, and sampling methods; and adaptive management measures that may be implemented to ensure success criteria are met.

d. Provision for submission of annual reports of monitoring results to the CPM for the duration of the required monitoring period, beginning the first year after submission of the "as-built" report. Each report shall be cumulative and shall summarize all previous results. Each report shall document the condition of the restoration with photographs taken from the same fixed points in the same directions. Each report shall also include a "Performance Evaluation" section where information and results from the monitoring plan are used to evaluate the status of the restoration project in relation to the interim performance standards and final success criteria.

e. Description for each habitat type within the site that includes total ground cover of all vegetation and of native vegetation, vegetative cover of dominant species, wildlife usage including types and frequency of wildlife species, hydrology, including timing, duration and location of water movement, and presence and abundance of sensitive species or other individual "target" species.

f. Provisions for submission of a final monitoring report to the CPM at the end of the final monitoring period. The final report must be prepared by a qualified restoration ecologist. The report must evaluate whether the restoration site conforms to the success criteria set forth in the approved final mitigation plan. The report must address all of the monitoring data collected over the monitoring period.

8. If the final report indicates that the mitigation has been unsuccessful, in part or in whole, based on the approved success criteria, the applicant shall submit within 90 days a revised or supplemental mitigation program to compensate for those portions of the original program that did not meet the approved success criteria.

BIOLOGICAL RESOURCES

BIO-1 APPOINTMENT AND QUALIFICATIONS OF DESIGNATED BIOLOGIST

The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval and to the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) for review and comment.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least one year of field experience with biological resources found in or near the project area.

Current or prior possession of USFWS 10(a)(1)(A) permit and/or CDFW scientific collecting permit is preferred, but not required.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

The designated biologist may be replaced by submitting the required resume, references and contact information to the CPM for review and approval and to CDFW and USFWS for review and comment.

VERIFICATION: The project owner shall submit the specified information at least 75 days prior to the start of site mobilization or construction-related ground disturbance activities. No pre-construction site mobilization or construction related activities shall commence until a Designated Biologist has been approved by the CPM.

The project owner may replace a Designated Biologist by submitting the required resume, references and contact information to the CPM for review and approval and to the CDFW and USFWS for review and comment, at least ten working days prior to the

termination or release of the then-current Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

The CPM may withhold approval of a Designated Biologist based upon proof that a proposed Designated Biologist has repeatedly failed to comply with the conditions of any Energy Commission license as they pertain to biological resources. The CPM shall meet and confer with the project owner regarding the need to replace a Designated Biologist. Removal may occur if the CPM can establish that the Designated Biologist has repeatedly failed to comply with the conditions of the HBEP license that pertain to biological resources.

In the absence of comments, the CPM shall deem the Designated Biologist acceptable to USFWS and/or CDFW.

BIO-2 DUTIES OF DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR(S)

The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, demolition, and construction activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner and CPM. The Designated Biologist Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) (Condition of Certification BIO-6) to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

5. Inspect or direct the site personnel how to inspect active construction areas where animals may have become trapped prior to construction commencing each day. Inspect or direct the site personnel how to inspect the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way**.** Inspect soil or spoil stockpiles and dust abatement watering for compliance with Condition of Certification **BIO-7**. Inspect erosion control materials (e.g., hay bales) to confirm weed-free certification. Inspect weed infestations and monitor eradication measures to determine success. Inspect trash receptacles, monitor site personnel compliance with trash handling, pet prohibitions, and all other WEAP components (Condition of Certification **BIO-5**);

6. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;

7. Respond directly to inquiries of the CPM regarding biological resource issues;

8. Maintain written records of the tasks specified above and those included in the BRMIMP;

9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and

10. Maintain the ability to be in regular, direct communication with representatives of CDFW, USFWS, and CPM, including notifying these agencies of dead or injured listed species and reporting special status species observations to the California Natural Diversity Database.

VERIFICATION: The Designated Biologist shall notify the CPM of any non-compliance or special-status species injury or mortality within one (1) working day of the incident. The Designated Biologist shall submit in the MCR to the CPM copies of all written reports and summaries that document construction activities that have the potential to affect biological resources. The Designated Biologist's written records will be made available for the CPM's inspection on request at any time during normal business hours. During project operation, the Designated Biologist(s) shall submit

record summaries in the annual compliance report unless their duties cease, as approved by the CPM.

BIO-3 APPOINTMENT AND QUALIFICATIONS OF BIOLOGICAL MONITOR

The project owner shall submit the resume, at least three references, and contact information of the proposed Biological Monitor**(**s**)** to the CPM for approval. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

The project owner may replace a Biological Monitor by submitting the required resume, references and contact information to the CPM for review and approval and to CDFW and USFWS for review and comment,, at least ten working days prior to the termination or release of the then-current Biological Monitor. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Biological Monitor is proposed to the CPM for consideration.

VERIFICATION: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any project-related site disturbance activities. Within 10 days of completion of training, the Designated Biologist shall submit a written statement to CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIO-4 POWERS OF DESIGNATED BIOLOGIST/BIOLOGICAL MONITOR(S)

The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification.

If required by the Designated Biologist or Biological Monitor(s), the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner and the construction/operation manager when to resume activities;

3. Notify the CPM if there is a halt of any activities and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage; and

4. The CPM, in coordination with CDFW or USFWS as appropriate, will determine if corrective action has been effective and will direct the project owner to take further corrective action as needed.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

VERIFICATION: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem within one (1) working day of initiating the corrective action.

Whenever corrective action is taken by the project owner, a determination of success or failure would be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

BIO-5 BIOLOGICAL RESOURCES WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

The project owner shall develop and implement an HBEP-specific Worker Environmental Awareness Program (WEAP). and submit the WEAP to the CPM for review and approval and to the USFWS and CDFW for review and comment. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, and subcontractors. The

WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting electronic media and written material is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, explain the reasons for protecting these resources, and the function of flagging in designating sensitive resources and authorized work areas;
3. Discuss federal and state laws afforded to protect the sensitive species and explain penalties for violation of applicable laws, ordinances, regulations, and standards (e.g., federal, and state endangered species acts);
4. Place special emphasis on the light-footed clapper rail, western snowy plover, California least tern and Belding's savannah sparrow, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection and status, penalties for violations, reporting requirements, and protection measures;
5. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
6. Include a discussion of the biological resources conditions of certification;
7. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
8. Include a training acknowledgment form to be signed by each worker indicating that they received the WEAP training and shall abide by the guidelines.

The specific WEAP shall be administered by a competent individual(s) acceptable to the Designated Biologist.

VERIFICATION: At least 45 days prior to the start of any planned project-related site disturbance activities, the project owner shall provide to the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program. The Notice to Proceed will not be issued until the WEAP has been approved by the CPM.

The project owner shall provide in the monthly compliance reports the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

Throughout the life of the project, WEAP shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attend the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CMP upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate indicating that they have completed the required training.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the completion of all project construction activities. During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

In the absence of comments, the CPM shall deem the WEAP acceptable to USFWS and/or CDFW.

BIO-6 BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN (BRMIMP)

The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the CPM for review and approval and to CDFW and USFWS for review and comment and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include the following:

1. All biological resource mitigation, monitoring, and compliance measures proposed and whether the project owner has agreed to the proposed measures;

2. All biological resource conditions of certification identified in the Commission Decision as necessary to avoid or mitigate impacts;

3. All biological resource mitigation, monitoring, and compliance measures required in other state agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit;

4. A list or tabulation of all sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;

5. All required mitigation measures for each sensitive biological resource;

6. A detailed description of measures that shall be taken to avoid or mitigate disturbances from construction and demolition activities;

7. All locations, shown on a map at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

8. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities prior to any site or related facilities mobilization disturbance, for comparison with aerial photographs at the same scale to be provided and subsequent to completion of project construction (see Verification).

9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

10. Performance standards from each biological resource condition of certification to determine if mitigation and conditions are or are not successful;

11. Remedial measures to be implemented if performance standards are not met;

12. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s);

13. A process for proposing BRMIMP modifications to the CPM and appropriate agencies for review and approval; and

14. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database (CNDDB) per CDFW requirements.

VERIFICATION: No fewer than 45 days prior to planned start of construction, the project owner will submit a draft BRMIMP to the CPM for review and approval and to CDFW and USFWS for review and comment. The Notice to Proceed will not be issued until the BRMIMP has been approved by the CPM. In the absence of comments, the CPM shall deem the BRMIMP acceptable to USFWS and/or CDFW.

If the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit or any other permits has not have not yet been received when the BRMIMP is first submitted, those permits shall be submitted to the CPM, the CDFW, and USFWS within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit conditions, if any.

Prior to implementing any changes to the approved BRMIMP, the project owner shall provide a draft of the proposed modification to the CPM for review and approval and to CDFW and USFWS for review and comment. No modification shall be implemented until approved by the CPM. In the absence of comments, the CPM shall deem the modification to the BRMIMP acceptable to USFWS and/or CDFW.

Implementation of all BRMIMP measures shall be reported in the monthly compliance reports by the Designated Biologist (i.e., survey results, construction activities that were monitored, species observed). Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction closure report identifying which items of the BRMIMP have been completed; a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases; and which mitigation and monitoring items are still outstanding. The Construction Closure Report will include a set of aerial photographs of the site at an approved scale for comparison with the pre-construction set (Item 8 above).

BIO-7 GENERAL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project owner shall implement the following measures during site mobilization, construction, operation, and closure to manage their project site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to demolition or construction activities in consultation with the Designated Biologist. Spoils shall be stockpiled in disturbed areas which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

2. At the end of each work day, the Designated Biologist or Biological Monitor, shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they will immediately notify the Designated Biologist and/or Biological Monitor. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the animal to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

3. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* (APLIC 2012) to reduce the likelihood of large bird electrocutions and collisions.

4. Spoils shall not be stockpiled adjacent to the southeastern fence line to minimize potential for spoils to enter into adjacent wetlands.

5. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

6. To the extent feasible, FAA visibility lighting shall employ only strobed, strobe-like or blinking incandescent lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" duel strobes are preferred, and no steady burning lights (e.g., L-810s) shall be used.

7. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract California least tern predators to construction sites. During construction, site personnel shall patrol these areas to ensure water does not puddle and attract crows and other wildlife to the site, and shall take appropriate action to reduce water application rates where necessary.

8. During construction, each employee shall report on-site deaths, including road kill, and injuries of special-status species to the Designated Biologist or Biological Monitor immediately upon discovery. The Designated Biologist or Biological Monitor shall remove the carcass or injured animal promptly. The Designated Biologist or Biological Monitor shall immediately report any dead or injured special-status species to CDFW and/or USFWS and the CPM, and the project owner shall follow instructions that are provided by CDFW or USFWS. The Designation Biologist shall maintain a record of all dead or injured special-status species, including species name, physical characteristics of the animal (sex, age class, length, weight), disposition of the animal, and other pertinent information and shall include this information in the MCR.

   During operations, each employee shall report all deaths, including road kill, and injuries of special-status species to the Project Environmental Compliance Monitor immediately upon discovery. shall be notified. The Project Environmental Compliance Monitor shall remove the carcass or injured animal promptly. The Project

Environmental Compliance Monitor shall immediately report any dead or injured special-status species to CDFW and/or USFWS and the CPM, and the project owner shall follow instructions that are provided by CDFW or USFWS. The Project Environmental Compliance Monitor shall maintain a record of all dead or injured special-status species, including species name, physical characteristics of the animal (sex, age class, length, weight), disposition of the animal, and other pertinent information.

9. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan (see Condition of Certification **HAZ-2**). Hazardous spills shall be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Any on-site servicing of vehicles or construction equipment shall take place only at a designated area approved by the Designated Biologist. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

10. During construction all trash and food-related waste shall be placed in self-closing containers and removed weekly or more frequently from the site. Workers shall not feed wildlife or bring pets to the project site.

11. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

12. The project owner shall implement the following measures during construction and operation to prevent the spread and propagation of nonnative, invasive weeds:

    a**.** Limit the size of any vegetation and/or ground disturbance to the minimum area needed for safe completion of project activities, and limit ingress and egress to defined routes;

    b**.** Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations. Invasive non-native species shall not be used in landscaping plans and erosion control.

Monitor and rapidly implement control measures to ensure early detection and eradication of weed invasions.

13.. During construction and operation, the project owner shall conduct pesticide management in accordance with standard BMPs. The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. Herbicide applications must follow EPA label instructions. Minimize use of rodenticides and herbicides in the project area and prohibit the use of chemicals and pesticides known to cause harm to non-target plants and wildlife. The project owner shall only use pesticides for which a "no effect" determination has been issued by the EPA's Endangered Species Protection Program for any species likely to occur within the project area or adjacent wetlands. If rodent control must be conducted, zinc phosphide or an equivalent product shall be used.

VERIFICATION: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the monthly compliance reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written Construction Completion Report identifying how measures have been completed (see Condition of Certification **BIO-6** verification).

Monthly and annual compliance reports will include results of all regular inspections by the Designated Biologist and Biological Monitor(s), including but not limited to the requirements cited above and in Condition of Certification BIO-2.

The project owner must maintain written records of vehicle and equipment inspection and maintenance, and provide summaries in each monthly and annual compliance report. The complete written vehicle maintenance record will be available for the CPM's inspection during normal business hours.

The BRMIMP (Condition of Certification **BIO-6**) must include affirmation by the project owner that:

- All electrical component design conforms to applicable APLIC guidelines; and
- All soil binders conform to the requirements stated above.

BIO-8 PRE-CONSTRUCTION NEST SURVEYS AND IMPACT MINIMIZATION MEASURES FOR BREEDING BIRDS

Pre-construction nest surveys shall be conducted if construction or demolition activities will occur from February 1 through August 31. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat and substrate within the project site and areas surrounding the project site within 300 feet of the project boundary.

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 14 days prior to initiation of construction activity. One survey needs to be conducted within the 3-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks during February 1 through August 31 in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

3. If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. Specific buffer distances are provided below for applicable avian groups (Biological Resources Table 1); these buffers may be modified with the CPM's approval. For special-status species, if an active nest is identified, the size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM (in coordination with CDFW and USFWS). Nest locations shall be mapped using GPS technology.

Biological Resources Table 1
HBEP Construction and Demolition Buffers for Active Nests

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Bitterns and herons	Black-crowned night heron, great blue heron, great egret, green heron, snowy egret	250
Cormorants	Double-crested cormorant	100
Doves	Mourning dove	25
Geese and ducks	American widgeon, blue-winged teal, cinnamon teal, Canada goose, gadwall, mallard, northern pintail, ruddy duck	100
Grebes	Clark's grebe, eared grebe, horned grebe, pied-billed grebe, western grebe	100
Hummingbirds	Allen's hummingbird, Anna's hummingbird, black-chinned hummingbird	25
Plovers	Black-bellied plover, killdeer	50
Raptors (Category 1)	American kestrel, barn owl, red-tailed hawk	50
Raptors (Category 2)	Cooper's hawk, red-shouldered hawk, sharp-shinned hawk	150

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Raptors (Category 3)	Northern harrier, white-tailed kite	These are special-status species; buffer determined in consultation with CPM
Stilts and Avocets	American avocet, black-necked stilt	150
Terns	Elegant tern, Forster's tern, royal tern	100
Passerines (cavity and crevice nesters)	House wren, Say's phoebe, western bluebird	25
Passerines (bridge, culvert, and building nesters)	Black phoebe, cliff swallow, house finch, Say's phoebe	25
Passerines (ground nesters, open habitats)	Horned lark	100

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Passerines (understory and thicket nesters)	American goldfinch, blue-gray gnatcatcher, bushtit, California towhee, common yellowthroat, red-winged blackbird, song sparrow, Swainson's thrush	25
Passerines (scrub and tree nesters)	American crow, American goldfinch, American robin, blue-gray gnatcatcher, Bullock's oriole, bushtit, Cassin's kingbird, common raven, hooded oriole, house finch, lesser goldfinch, northern mockingbird	25
Passerines (tower nesters)	Common raven, house finch	25
Passerines (marsh nesters)	Common yellowthroat, red-winged blackbird	25
Species not covered under MBTA	Domestic waterfowl, including domesticated mallards, feral (rock) pigeon, European starling, and house sparrow	N/A

4. If active nests are detected during the survey, the Designated Biologist or Biological Monitor shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the

Designated Biologist or Biological Monitor shall immediately implement adaptive measures to reduce disturbance in coordination with the CPM. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity.

5. If active nests are detected during the survey, the Designated Biologist shall prepare a Nest Monitoring Plan. The Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist or Biological Monitor, disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made.

6. A qualified biologist shall conduct a habitat assessment for light-footed clapper rail shall be conducted in Magnolia and Upper Magnolia Marshes during the breeding season (March 1 to August 1) immediately preceding the commencement of construction and demolition activities. If suitable breeding habitat for the light-footed clapper rail is identified, focused surveys will be conducted prior to any construction or demolition activities. Surveys are not required if no suitable habitat is present. If clapper rails are detected during the breeding season, the CPM, CDFW, and USFWS will be notified and the project owner will consult with the USFWS for incidental take authorization, if required.

VERIFICATION: The project owner shall provide notification to the CPM, CDFW, and USFWS at least 2 weeks prior to initiating the habitat assessment and any subsequent surveys for light-footed clapper rail; notification will include the name and resume of the biologist(s) conducting the habitat assessment and surveys and the timing of the surveys. Within ten (10) days of completion of the field work, the project owner shall provide the CPM, CDFW, and USFWS a -report describing the findings of the preconstruction nest surveys and the light-footed clapper rail habitat assessment and focused survey (if surveys were conducted), including a description and representative photographs of habitat in the marshes; the time, date, methods, and duration of the surveys; identity and qualifications of the surveyor(s); and a list of

species observed. If active nests are detected during the surveys, the reports shall include a map or aerial photo identifying the location of the nest(s) and shall depict the boundaries of the proposed no disturbance buffer zone around the nest(s). The CPM will consider any timely comments received from CDFW and USFWS in review of the -report. In the absence of comments within that timeframe, the CPM shall deem the report acceptable to USFWS and/or CDFW.

Additionally, the nest monitoring plan shall be submitted to the CPM for review and approval and to USFWS and CDFW for review and comment prior to any planned demolition or construction activities in the vicinity of any active nest. No such demolition or construction activities may proceed without CPM approval of the nest monitoring plan..If light-footed clapper rails are documented during the breeding season in Upper Magnolia or Magnolia Marshes, prior to any planned pile driving on the site or demolition or construction activities within 400 feet of the marsh boundary, the project owner will notify the CPM and will consult with the USFWS for incidental take authorization or a determination that no incidental take authorization is required. All impact avoidance and minimization measures related to nesting birds shall be included in the BRMIMP and implemented. In the absence of comments within that timeframe, the CPM shall deem the nest monitoring plan acceptable to USFWS and/or CDFW.

Implementation of the measures shall be reported in the monthly compliance reports by the Designated Biologist.

ATTACHMENT B – JULY 2014 COASTAL COMMISSION 30413(d) REPORT ON 12-AFC-02 HUNTINGTON BEACH ENERGY PROJECT

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Coastal Commission Report
to
California Energy Commission
on
Application for Certification 12-AFC-02
– AES Huntington Beach Energy Project –

Reviewed pursuant to
Coastal Act Section 30413(d)

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ATTACHMENTS

EXHIBITS

I. FINDINGS AND RECOMMENDED SPECIFIC PROVISIONS

A. PROJECT DESCRIPTION

The Huntington Beach power plant is an existing electrical generating facility located in the City of Huntington Beach (see **Exhibit 1 – Area Map**). It is owned and operated by AES Southland, LLC (hereafter, either "the applicant" or "AES"). The power plant site covers about 60 acres in the southeast portion of the City and borders the Pacific Coast Highway, the Magnolia Marsh wetlands, and a flood control channel (see **Exhibit 2 – Site Plan**). A switchyard within the site is owned and operated by Southern California Edison.

The existing facility includes five electrical generating units, four of which are currently operational. The facility's existing generating units are cooled using a "once-through cooling" process in which AES pumps in up to several hundred million gallons per day of seawater from an open intake located about 2500 feet offshore. As the seawater is pumped through the facility, it removes excess heat from the generating units and is then discharged back into the Pacific Ocean through an outfall pipe.

Proposed Huntington Beach Energy Project ("HBEP")
In June 2012, AES submitted its Application for Certification ("AFC") to the Energy Commission. AES is proposing to upgrade and expand the facility on about 28.6 acres of its site with new equipment that would produce about 936 MW of electrical power (see **Exhibit 3 – Conceptual Aerial View**). The proposed HBEP is more fully described in the CEC's Final Staff Assessment ("FSA"), available here: http://docketpublic.energy.ca.gov/PublicDocuments/12-AFC-02/TN202405_20140602T085620_Final_Staff_Assessment.pdf

The main project components include demolition of the existing generating units, and construction of two new power blocks, each capable of generating up to about 470 megawatts. The new facility will be air-cooled and will therefore no longer rely on using seawater for cooling. Visually, the new facility will have an overall lower profile than the existing facility – for example, the existing facility includes two boiler exhaust stacks about 200 feet high, while the proposed HBEP would have a maximum height of about 120 feet. AES has proposed a visual enhancement and screening plan that includes three surfboard sculptures leaning against the HBEP and a mesh screen around part of the facility that resembles a wave (see **Exhibits 4a and 4b – Proposed Visual Amenities**). In April 2014, the City adopted a resolution supporting these proposed visual enhancements.

AES proposes to construct the HBEP in stages by first demolishing some of the generating units to provide a footprint for one of the new power blocks, then demolishing some of the remaining units to allow for construction of the second power block, and then completing demolition of the existing generating units and support structures. During the construction period, AES proposes to locate its construction laydown area on about six acres of this site, along with about 16 acres of its Alamitos Generating Station, located about 15 miles north in the City of Long Beach. The CEC's review anticipates an expected construction period of about eight years and a power plant operating life of 30 years, which would extend to between 2050 and 2055.

B. REGULATORY FRAMEWORK AND STANDARD OF REVIEW

Pursuant to the Warren-Alquist Act, the CEC has exclusive siting authority over thermal electric power plants of 50 megawatts or greater capacity proposed to be built in California. According to section 25500 of the Warren-Alquist Act, "The issuance of a certificate by the [Energy] commission shall be in lieu of any permit, certificate, or similar document required by any state, local or regional agency, or federal agency to the extent permitted by federal law, for such use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law." Section 25523(a) of the Warren-Alquist Act additionally requires the CEC to assess the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety. Moreover, section 25523(d)(1) of that Act requires that the CEC make findings regarding the conformity of the proposed project with all applicable laws, including federal laws, such as the Coastal Zone Management Act.[1]

The CEC evaluates and makes its determination regarding proposed facilities through its Application for Certification (AFC) process. When the CEC is considering licensing a facility pursuant to its AFC process, it is the lead state agency for purposes of the California Environmental Quality Act (CEQA), and the FSA includes analyses similar to those normally provided in an Environmental Impact Report (EIR). The FSA provides the CEC staff analysis of the proposed project, examines engineering, environmental, public health, and safety aspects of the facility, and includes proposed conditions of certification, which are similar to mitigation measures identified in an EIR.

While the CEC has exclusive jurisdiction over siting proposed power plants as described above, both the Coastal Act and the Warren-Alquist Act provide a role for the Coastal Commission to play in the CEC's review of power plants proposed to be located in the coastal zone. Both Acts include mechanisms authorizing the Coastal Commission to evaluate whether the proposal conforms to Coastal Act policies and to inform the CEC of the results of this evaluation. Section 30413(d) of the Coastal Act requires the Coastal Commission to 1) "participate in proceedings" that the CEC undertakes pursuant to its siting authority "with respect to any thermal powerplant…to be located…within the coastal zone," and 2) submit to the CEC a report (hereinafter, the "30413(d) report") on the proposed project's conformity with the Coastal Act's resource protection and use policies, and the policies and implementing ordinances of the certified local coastal program ("LCP") (in this case, the certified LCP of the City of Huntington Beach). Additionally, Warren-Alquist Act Section 25523(b) requires the CEC to include in its decision on the AFC any "specific provisions" provided by the Coastal Commission in its 30413(d) report to bring the proposed project into conformity with the policies of the Coastal Act. That section also establishes that the CEC may omit the specific provisions of the Coastal Commission's report only if the CEC finds that adopting the provisions would result in greater adverse impact on the environment or that such provisions would not be feasible. Staff of the two Commissions have prepared a Memorandum of Agreement that describes the manner in

[1] The CEC does not review or issue NPDES permits, and the power plant operator must still obtain those permits from the State or Regional Water Quality Control Boards, as the federal Environmental Protection Agency delegated that authority to just those Boards.

which the two Commissions will coordinate their respective reviews and identifies the process for the CEC to consider the Coastal Commission's findings and recommended specific provisions (see **Attachment B – Memorandum of Agreement**).

Coastal Act section 30413(d) directs that the Coastal Commission's report consider and make findings regarding the following:

> *(1) The compatibility of the proposed site and related facilities with the goal of protecting coastal resources.*
>
> *(2) The degree to which the proposed site and related facilities would conflict with other existing or planned coastal-dependent land uses at or near the site.*
>
> *(3) The potential adverse effects that the proposed site and related facilities would have on aesthetic values.*
>
> *(4) The potential adverse environmental effects on fish and wildlife and their habitats.*
>
> *(5) The conformance of the proposed site and related facilities with certified local coastal programs in those jurisdictions, which would be affected by any such development.*
>
> *(6) The degree to which the proposed site and related facilities could reasonably be modified so as to mitigate potential adverse effects on coastal resources, minimize conflict with existing or planned coastal-dependent uses at or near the site, and promote the policies of this division.*
>
> *(7) Such other matters as the commission deems appropriate and necessary to carry out this division.*

This report is the Coastal Commission's analysis of the proposed project's conformity with the Chapter 3 policies of the Coastal Act and the certified LCP. For this proposed project, the Coastal Commission has focused on the following issue areas: (1) land use, (2) wetlands and environmentally sensitive habitat areas (ESHA), (3) flood, tsunami, and sea level rise, (4) geologic hazards, and (5) public access and recreation. The Coastal Commission's analysis relies largely on the information contained in the CEC staff's Final Staff Assessment ("FSA"), the evidentiary record of this AFC proceeding that has been compiled thus far, and on information identified in the Substantive File Documents described in Attachment A to this report.

C. LAND USE AND ALTERNATIVES

AES proposes to construct the HBEP on part of its existing power plant site. As noted in the FSA's Land Use Section (page 4.5-7), the City's LCP and Land Use Element designate the site as "Public," with allowable uses including public utilities and infrastructure. The site is also within the City's "Subarea 4G – Edison Plant" designation, which allows utility uses and wetland conservation. The FSA's Alternatives Section (at pages 6-7 and 6-8) further identifies the site and adjacent areas as being designated by both the Energy Commission and Coastal Commission as suitable for energy facility expansion.

That designation results from studies and mapping conducted by the two Commissions to identify areas within the state's coastal zone that were unsuitable for locating or expanding power plants due to the presence of sensitive coastal resources.[2] Those studies and mapping effort also identified areas that were suitable for reasonable expansion of existing power plants. For this Huntington Beach site, the identified expansion area includes the entirety of the power plant site as well as the adjacent Plains America Tank Farm.

Despite this designation, AES is currently proposing to use only a portion of the area designated for the HBEP's expansion. Of the approximately 58 acres of the AES power plant site, all of which is within the designated area, the proposed expansion would use only 28.6 acres. Approximately 10 acres are occupied by the existing Southern California Edison substation, which will remain, but there is at least one on-site area, along with the above-mentioned Plains America Tank Farm area that are within the designated expansion area, that appear to be at least partially available for the proposed project and that, if used, could help reduce project-related adverse impacts:

- The AES site includes an 11-acre former tank farm area. AES stated in its AFC application that it intends to lease this area to Poseidon Water for construction of a desalination facility; however, it is unclear when this might occur, and it appears that at least part of this site may be available for at least short-term use during the approximately eight years of planned project construction.

  Part of this tank farm site consisted of wetlands that AES removed without benefit of a coastal development permit, which is the subject of a Coastal Commission staff investigation of a potential violation.[3] Commission staff estimated that the wetlands covered about 3.5 acres of the site; however, it appears that some of the remainder of this site could be used for the power plant expansion.

[2] See Coastal Commission, *Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976*, adopted September 1978, revised 1984, re-adopted December 1985, San Francisco, CA, and Energy Commission, *Opportunities to Expand Coastal Power Plants in California*, Staff Report P700-80-001, June 1980, Sacramento, CA.

[3] See Commission staff's August 3, 2012, Data Adequacy letter for 12-AFC-02 and Commission staff report for Poseidon Water – Appeal #A-5-HNB-10-225 and Application No.: E-06-007, November 2013, available at: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

- Across the flood channel adjacent to the AES site is the Plains America Tank Farm, an approximately 32-acre site that is within the area designated as suitable for power plant expansion. AES is proposing to use about 1.9 acres of that site for construction parking, but similar to the AES tank farm site above, much more of the Plains America site may be available for use for the proposed expansion project, which would likely reduce expected project impacts.

Instead of fully using these areas designated for expansion, AES is proposing to locate several project components offsite and outside the designated area. These include locating three of its five proposed construction parking sites outside the area and locating about 16 acres of project staging at AES's Alamitos Energy Facility about 15 miles north of the expansion site. This approach frustrates the intent of designating the facility site and the surrounding area for consolidation and expansion of energy facilities. It also increases the proposed project's adverse impacts on public access to the shoreline by increasing project-related traffic along 15 miles of coastal highway and using up to 225 parking spaces the City established to provide beach access (see additional discussion in this report's Section I.G – Public Access). This approach will also result in increased adverse effects and potential spills to wetlands adjacent to the Alamitos site and the Pacific Coast Highway route, which include Los Cerritos, the Seal Beach National Wildlife Refuge, Bolsa Chica, and the Huntington Beach wetland complex.

Project-related adverse effects could be avoided or substantially reduced if AES was able to use more of the adjacent areas designated for energy facility expansion. To more fully use the two sites mentioned above, AES may have to remove all or some of the several decommissioned fuel oil storage tanks and associated pipelines; however, the cost and effort of removing this equipment is well within the scope of the project and is similar to work done as part of other AFC proceedings.

Coastal Commission Recommended Specific Provisions

Based on the information available in the AFC record, use of all or part of these areas appears to provide a feasible method to potentially reduce project-related impacts. The Commission therefore recommends the following Specific Provisions to allow Coastal Act and LCP conformity:

- First, CEC staff should determine the availability of these sites for the proposed project by reviewing documentation showing the legal status of the AES and Plains America Tank Farm sites. If all or part of the sites are available for use during this project, CEC staff should prepare a modified staff assessment that identifies whether use of one or both sites will reduce the project's overall expected adverse impacts. The modified assessment should evaluate whether using all or part of the sites for construction staging or parking would reduce the project's expected adverse impacts, including reducing adverse effects on traffic and public access to the shoreline along the 15 miles between HBEP and Alamitos. The assessment should also consider whether use of all or part of either site may be limited due to land use or other conflicts with relevant LCP policies as described below in Section I.D – Wetlands and Environmentally Sensitive Habitat Areas (ESHA).

- Next, should this modified assessment show that all or part of the two sites are available and their use would reduce project-related impacts, we recommend the CEC provide additional opportunity for public review and comment on the modified assessment and possible new or modified conditions.

Conclusion
The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

D. WETLANDS AND ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)

Coastal Act Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Coastal Act Section 30240 states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 6.1.4 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain organisms and for the protection of human health shall be maintained and, where feasible, restored.*

LCP Policy C 6.1.20 states:

> *Limit diking dredging, and filling of coastal waters, wetlands, and estuaries to the specific activities outlined in Policy 30233 and 30607.1 of the Coastal Act and to those activities required for the restoration, maintenance, and/or repair of the Municipal Pier and marina docks. Conduct any diking dredging and filling activities in a manner consistent with Section 30233 and 30607.1 of the Coastal Act.*

LCP Policy C 7.1.2 states, in relevant part:

> *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values…*

LCP Policy C 7.1.3 states:

> *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 7.1.4 states:

> *Require that new development contiguous to wetlands or environmentally sensitive habitat areas include buffer zones. Buffer zones shall be a minimum of one hundred feet setback from the landward edge of the wetland, with the exception of the following:*
>
> *A lesser buffer may be permitted if existing development or site configuration precludes a 100 feet buffer, or conversely, a greater buffer zone may be required if substantial development or significantly increased human impacts are anticipated. In either case, the following factors shall be considered when determining whether a lesser or wider buffer zone is warranted. Reduced buffer zone areas shall be reviewed by the Department of Fish and Game prior to implementation.*
>
> *a) Biological significance of adjacent lands: The buffer should be sufficiently wide to protect the functional relationship between the wetland and adjacent upland.*
> *b) Sensitivity of species to disturbance: The buffer should be sufficiently wide to ensure that the most sensitive species will not be disturbed significantly by permitted development, based on habitat requirements of both resident and migratory species and the short and long term adaptability of various species to human disturbance.*
> *c) Susceptibility of parcel to erosion: The buffer should be sufficiently wide to allow for interception of any additional material eroded as a result of the proposed development based on soil and vegetative characteristics, slope and runoff characteristics, and impervious surface coverage.*
> *d) Use existing cultural features to locate buffer zones: The buffer zones should be contiguous with the environmentally sensitive habitat areas and make use of existing features such as roads, dikes, irrigation canals, and flood control channels where feasible.*

LCP Policy C 7.1.5 states, in relevant part:

> *Notify County, State and Federal agencies having regulatory authority in wetlands and other environmentally sensitive habitats when development projects in and adjacent to such areas are submitted to the City.*

LCP Policy C 7.2.7 states:

> *Any areas that constituted wetlands or ESHA that have been removed, altered, filled or degraded as the result of activities carried out without compliance with Coastal Act requirements shall be protected as required by the policies in this Land Use Plan.*

LCP Policy I-C 8(c) states, in relevant part:

> *For proposed projects within the Coastal Zone, utilize the development review/environmental review process to accomplish the following:*
>
> 1. *Examine each development's potential to affect habitat. To the maximum extent feasible project impacts on habitat shall be minimized through avoidance. In the event mitigation is necessary, mitigation shall be provided on-site if feasible or within the general vicinity if on-site mitigation is not feasible. Determine the necessity for Mitigation Agreements or other coordination with the California Department of Fish and Game, California Coastal Commission and/or federal agencies to obtain necessary permits for developments that appear to affect habitat.*
> 2. *Permit resource dependent and incidental public service related land uses within wetlands and environmentally sensitive habitat areas only if consistent with the following Coastal Act policies: Section 30233 and Section 30240.*
> 3. *Require improving the natural biological value, integrity and function of coastal wetlands and dunes through native vegetation restoration, control of alien plants and animal,* [sic] *landscape buffering and development setbacks.*
> 4. …
> 5. *Review any development proposed for non-wetland areas to ensure that appropriate setbacks and buffers are maintained between development and environmentally sensitive areas to protect habitat quality…*

The findings below separately assess two types of project-related impacts – first, direct wetland impacts within the potential project footprint, and then indirect impacts to adjacent wetlands and ESHA that are likely to occur during facility construction and operations. Both the Coastal Act and the City's LCP include policies requiring the protection of biological productivity in wetlands and environmentally sensitive habitat areas. The policies require that development adjacent to environmentally sensitive areas be sited and designed to prevent impacts which would significantly degrade those areas. The LCP requires buffer zones be established around wetlands to protect them from proposed development.

Direct Wetland Impacts

The FSA states that there are no wetlands within the proposed project footprint, which appears to accurately reflect current conditions within the proposed site. However, as noted above in this report's Section I.C – Land Use and Alternatives, the Commission recommends that CEC staff evaluate whether other areas within or adjacent to the power plant site are available for the proposed project and whether the use of these areas might reduce project-related impacts to coastal resources. These areas include the 11-acre AES tank farm within the power plant site and the adjacent 32-acre Plains America Tank Farm, of which AES plans to use approximately 1.9 acres.

Regarding the AES tank farm area, we understand that it is currently devoid of wetland characteristics; however, as noted above, AES's removal of wetland vegetation in that area several years ago is the subject of a Commission staff investigation of a potential violation. Pursuant to LCP Policy C7.2.7, the areas formerly containing wetlands remain subject to the LCP's wetland and ESHA protection policies.[4] The adjacent Plains America Tank Farm area appears to have similar wetland characteristics within part of its 32 acres, and may have similar limitations on its use. As stated in the previous section, we recommend that the CEC staff evaluation assess the effect of these policies on the potential use of these sites, and that the evaluation be provided for additional public review and comment as part of this AFC proceeding.

Indirect Impacts to Wetlands and ESHA

Several components of the project as currently proposed are inconsistent with LCP Policy C7.1.4, which requires new development to be located at least 100 feet from wetlands.[5] Additionally, project construction and operations are expected to cause adverse indirect impacts to nearby wetlands and ESHA due to dewatering, noise, and vibration. These impacts are described below, along with recommended conditions to ensure the project avoids and minimizes these impacts to the extent feasible, as required by relevant LCP and Coastal Act provisions.

[4] For a more complete description of site characteristics and Commission jurisdiction, see the November 2013 Coastal Commission staff report, available here: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

[5] "Development," as defined in Section 30106 of the Coastal Act and in the LCP, means "on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (commencing with Section 4511).

As used in this section, "structure" includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line."

Background
The HBEP site is part of an extensive area of coastal wetlands and dunes that formerly extended for several miles along this area of the coast. The project site is adjacent to the Magnolia Marsh, which provides a mix of wetlands and environmentally sensitive habitat areas (see **Exhibit 5 – Huntington Beach Wetlands Conservancy Site Plan**). Similar habitat extends onto the HBEP site adjacent to the flood control channel.

Much of this habitat complex is being restored and protected by the Huntington Beach Wetlands Conservancy, including restoration of the adjacent Magnolia Marsh starting in 2009. One of the main goals of the Conservancy's restoration plan is to "maximize salt marsh/tidal habitats with no net harm to threatened and endangered (T&E) species existing on site such as the Belding's Savannah Sparrow." The Magnolia Marsh and other nearby wetland areas provide known or potential habitat for at least several dozen listed sensitive species.[6] The habitat types within and immediately adjacent to the project site include coastal scrub and salt panne, which is noted as particularly important to the endangered Belding's Savannah Sparrow (see **Exhibit 6 – Huntington Beach Wetlands: Vegetation Communities** and **Exhibit 7 – Sensitive Species Habitats**). Although the Magnolia Marsh area has been identified as being subject to significant negative stressors due to nearby industrial uses,[7] a 2010 survey identified 26 separate sparrow territories in the Magnolia Marsh, which represents about 25% of the territories in the full Huntington Beach wetland complex.[8] The Magnolia Marsh restoration project is expected to provide suitable breeding habitat for the endangered Light-footed Clapper Rail, which also breed nearby.[9]

Required Buffer
LCP Policy C7.1.4 requires a minimum 100-foot buffer between new development and ESHA/wetland areas. The proposed project layout includes locating structures and development activities within 100 feet of nearby ESHA and wetlands, which results in non-conformity to this LCP policy. The proximity of these activities and the habitat areas also exacerbates some of the other indirect adverse impacts described below, including potential dewatering of wetland habitat during project construction, and adverse effects of noise, vibration, and project lighting on listed sensitive species known or potentially occurring in those areas during both construction and operations. The FSA includes proposed **Condition BIO-7**, which identifies a number of

[6] From Moffatt & Nichol, *Huntington Beach Wetlands: Habitats and Sensitive Species*, August, 2004. See also California Energy Commission, *Final Staff Assessment for 12-AFC-02 – Biological Resources, Table 2*, May 2014.

[7] See Solek, Christopher, and Eric Stein, *An Evaluation of Wetland Restoration Projects in Southern California using the California Rapid Assessment Model (CRAM): A Final Report to the Southern California Wetlands Recovery Project*, Technical Report 659, February 2012.

[8] See Zembal, Richard, and Susan Hoffman, *A Survey of the Belding's Savannah Sparrow (Passerculus sandwichensis beldingi) in California – Final Report to California Department of Fish and Game, South Coast Region*, September 2010.

[9] See September 12, 2012 USFWS comment letter regarding potential adverse effects of proposed AES power plant replacement, California Energy Commission Application For Certification No. 12-AFC-02.

measures that, if implemented, will reduce the project's indirect impacts on nearby wetlands (see FSA, pp. 4.2-62 to 4.2-65).

Coastal Commission Recommended Specific Provision

- To ensure the project conforms to the extent feasible with LCP Policy C7.1.4, we recommend the Energy Commission modify **Condition BIO-7** to require that AES move all project-related development to be at least 100 feet, and further, if feasible, from nearby areas that meet the Coastal Commission's definition of wetlands or ESHA. We also recommend that the project plans required pursuant to **Condition GEN-2** reflect this change in the project layout.

  This recommended modification would also require AES to submit a revised project plan showing that all project-related development is at least 100 feet from those areas. From the proposed project layout presented in the AFC, it appears this would require moving a few structures and development activities no more than a few dozen feet further inward on the site, which appears feasible based on the amount of space available within the project site.

Avoiding Effects of Construction Dewatering on Adjacent ESHA/Wetland Areas
Groundwater levels beneath both the HBEP and the adjacent wetlands are within a few feet of the ground surface. Results from groundwater monitoring wells on the HBEP site indicate that groundwater levels fluctuate with tidal levels in the adjacent flood control channel and show that the site's groundwater is responsive to and directly connected to groundwater in nearby areas, including the adjacent wetlands. The FSA notes that excavation needed to construct project foundations will likely require dewatering and removal of liquefiable soils, though it does not identify the expected depths, amounts, or possible adverse impacts of these activities.

Analyses conducted by Commission staff for the adjacent proposed Poseidon project site, which has similar groundwater and liquefaction characteristics, show that liquefiable soils extend to a depth of about 20 feet below grade. The dewatering volumes needed to excavate those soils to construct two of that project's proposed structures were estimated at 740,000 gallons per day and 1.28 million gallons per day, respectively, which would occur over several months and total about 84 million gallons. Site geotechnical data provided by Poseidon showed that the radius of influence from its expected dewatering operations – that is, the distance within which groundwater levels would be reduced – would be up to 225 feet from the dewatering locations and would encompass parts of the adjacent ESHA/wetland areas. Based on these analyses, Commission staff recommended conditions for the proposed Poseidon project that required additional geotechnical investigations and implementation of dewatering methods that avoided potential drawdown in those habitat areas. The HBEP site's similar characteristics make it likely to have similar drawdown potential, though it is unclear from documentation provided in the AFC review where the dewatering would occur and what drawdown levels to expect.

Coastal Commission Recommended Specific Provisions

Drawdown that affects nearby ESHA/wetland areas would be inconsistent with LCP Policies 6.1.4, 7.1.2, and 7.1.3, which require that habitat values be maintained and

protected. To ensure project dewatering is done in a manner consistent with these policies, the Commission recommends the CEC modify FSA **Condition GEO-1** to require AES to conduct a geotechnical investigation that identifies expected dewatering volumes and the spatial extent of drawdown expected from that dewatering. If the investigation shows potential drawdown effects to nearby ESHA/wetland areas, the Condition would also require AES to identify and implement methods to avoid those effects, such as installing sheet piles, slurry walls, or other similar barriers, or conduct alternative dewatering methods that would avoid drawing down groundwater in these sensitive areas. The Commission also recommends that these structural mitigation methods be included on any relevant final design plans required pursuant to FSA **Condition GEN-2**. These modifications provide a feasible method to avoid potential adverse dewatering impacts to adjacent habitat areas.

Reducing Effects of Project Noise and Vibration on Adjacent ESHA/Wetland Areas
The FSA (see page 4.2-34, Biological Resources, Table 3) identifies expected construction noise levels at several locations within nearby ESHA/wetland areas. At the closest locations within the adjacent Magnolia Marsh, noise levels from project construction are expected to range from the mid-60 dBA level to greater than 70 dBA. It notes that the loudest of the construction activities would be pile driving, with levels of 104 dBA at 50 feet, 86 dBA at 375 feet, and 73-78 dBA at more than 1000 feet.[10]

The FSA notes that these noise levels during project construction could discourage sensitive species from using nearby habitat areas and adversely affect their breeding or nesting behavior, and that chronic exposure to excessive noise has been demonstrated to adversely affect foraging behavior, reproductive success, population density, and community structure. Although avian species may be more sensitive to noise during breeding and nesting season, several types of "take" or harm identified above could occur any time of year due to the relatively high noise levels expected from both project construction and operation.

Commission staff contacted staff of the California Department of Fish and Wildlife (CDFW) regarding guidance on acceptable noise levels and mitigation measures for construction projects near habitat areas used by sensitive avian species.[11] Both CDFW and the U.S. Fish and Wildlife Service have developed and implemented recommended measures on a number of such projects, and the agencies' work with CalTrans has resulted in a more detailed set of thresholds than the above-referenced "typical noise threshold," for use in identifying potential "take" or harm to sensitive species.[12] These thresholds range from "hearing damage" to "masking," which is a level preventing or reducing communication among individuals, and can result from proximity to construction equipment like that being used for this project.

[10] dBA is a measure of the relative loudness of sounds through the air, in decibels. Decibels describe the intensity of sound, and are logarithmic – for example a 60 dBA sound is perceived as twice as loud as a 50 dBA sound. Typical sound levels include 30-35 dBA in quiet, rural areas, 70-75 dBA for freeways from about 50 feet away, and 100 dBA for a jet taking off from 1000 feet away.

[11] Commission staff personal communication with CDFW staff, September 19 and October 18, 2013.

[12] See, for example, Dooling, Robert, and Arthur Popper, *The Effects of Highway Noise on Birds*, prepared for California Department of Transportation, September 2007.

The conclusions and recommendations of CDFW and USFWS essentially identify potential harm or "take" when noise levels are above ambient and greater than about 60 dBA. These sound levels are considered harmful to avian species and could result in "take" of special status species that use these ESHA/wetland areas, such as Belding's Savannah Sparrow, California Least Tern, and Light-footed Clapper Rail. Mitigation measures employed by both CDFW and USFWS generally require that applicants conduct monitoring to ensure sound levels remain below thresholds known to result in take and conduct nesting surveys and ongoing monitoring to identify and avoid potential adverse effects to nesting birds. The USFWS has recommended several mitigation measures be implemented for the project, including considering which will generate construction-related noise at levels similar to Poseidon's project, including considering the entire wetlands area adjacent to that project a sensitive receptor and that the project include design features that maintain noise levels at or below ambient conditions.[13]

CDFW has also identified several bird species as being particularly sensitive to vibration, including the Light-footed Clapper Rail, and CDFW specifically prohibits pile driving during their nesting season due to its relatively high levels of both noise and vibration.[14]
While the FSA describes the expected decibel levels from pile driving, it does not identify the expected increase in groundborne noise and vibration levels (VdB) that would occur in the ESHA/wetland areas during project operations, particularly during pile driving.[15]
To reduce noise effects on nearby avian species, the FSA's proposed **Condition BIO-9** would require AES to implement a Noise Monitoring Plan during breeding and nesting season (February 1 to August 31 each year). The Plan would require continuous noise monitoring at three specified locations and would require noise levels not exceed 8 dBA above ambient levels or 60 dBA, whichever is greater. It would also require that monitoring devices be reviewed daily during any construction occurring within 400 feet of the project's fenceline with the Magnolia Marsh areas and during any pile-driving activities. If construction noise exceeds these levels, AES would be required to implement noise-reduction measures, such as installing temporary sound walls or other similar barriers, moving noise-generating activities further from the ESHA/wetland areas, and avoiding pile driving or confining pile driving to project areas furthest from the Marsh areas.

Coastal Commission Recommended Specific Provisions

We generally concur with the FSA's proposed approach to avoiding and reducing noise-related effects in the nearby ESHA/wetland areas. However, we recommend two modifications to **Condition BIO-9** to ensure consistency with LCP provisions requiring protection of these habitat areas and to be consistent with previous City and Coastal Commission determinations regarding noise impacts on wildlife.

[13] See September 10, 2012 letter from USFWS to California Energy Commission regarding Application for Certification 12-AFC-02.

[14] Commission staff personal communication with CDFW staff, October 18, 2013.

[15] Groundborne noise and vibration is measured using "VdB," or vibration decibel levels, to distinguish it from airborne sound. Very low VdB levels can be imperceptible, but levels of around 100 VdB and higher can cause structural damage.

- **Recommended modified noise threshold:** First, we recommend the **Condition BIO-9** allowable noise threshold be modified as follows:

  "The project owner shall prepare and implement a Wildlife Noise Monitoring Plan throughout construction and demolition activities taking place during the bird breeding season (February 1 to August 31). Sound levels in Upper Magnolia and Magnolia marshes shall not exceed 8 dBA above ambient levels or 60 dBA (hourly average Leq), whichever is greater. **In addition, sound levels within the marshes and within 100 feet of active nests (as identified during the nesting surveys required pursuant to Condition BIO-8) shall not exceed 65 dBA.**"

This would be consistent with the City's approach in other nearby projects where the City has cited the 60 dBA threshold as causing adverse impacts to avian species and where it has prohibited noise- and disturbance-generating construction activities adjacent to the Magnolia Marsh during the Belding's Savannah Sparrow breeding season (see, for example, City of Huntington Beach CDPs #2006-005 and #PW-08-003, both for nearby construction projects). It would also be consistent with conditions of the Commission's recent approval of a bridge construction project in the nearby Bolsa Chica Wetlands requiring that noise levels not exceed 65 dBA within 100 feet of any active nests (see the Commission's May 2013 approval of CDP 5-12-191). This recommended condition appears feasible, given that it has been implemented in similar construction projects in and near nearby ESHA/wetland areas.

- **Recommended prohibition on pile driving during nesting season:** Regarding vibration effects, we recommend that **Condition BIO-9** be modified to require AES schedule and conduct all pile driving activities outside the February 1 through August 31 breeding and nesting season. **Condition BIO-9** currently lists pile driving avoidance as one of several feasible noise reduction techniques that AES could implement if its activities exceed the noise threshold; however, as noted above, the FSA already anticipates that expected noise levels will exceed that threshold. Additionally, pile driving is expected to cause substantial vibration levels (VdB), in the nearby marsh areas, though the FSA does not identify those expected levels. Given the expected threshold exceedance and the additional unquantified but likely significant vibration-related effects, this modification would further reduce expected adverse project-related effects on nearby ESHA and wetland areas.

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

E. FLOOD, TSUNAMI, AND SEA LEVEL RISE HAZARDS

Coastal Act Section 30253 states, in relevant part:

> *New development shall do all of the following:*
> *(a)Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

LCP Policy I-C.20, Environmental Hazards Element, states:

> *Enforce and implement the policies and programs of the Environmental Hazards Element of the General Plan to the extent that these programs and policies are not inconsistent with the City's Local Coastal Program.*

The relevant and applicable policies and programs of the above-cited Environmental Hazards Element are listed below. [Figures in parentheses at the end of each Environmental Hazards Policy refer to the Implementation Program applicable to each Policy.]

> Environmental Hazards Policy 5.1.1 states: *Identify tsunami and seiche susceptible areas, and require that specific measures be taken by the developer, builder, or property owner, during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety (see Figure EH-8). (I-EH 1 and I-EH 4)*
>
> Environmental Hazards Program I-EH 4, Development Review or Environmental Review Process, states: *During development review (site plan, tract map, etc.) and/or environmental review, require:*
>
> *a. building structures proposed in liquefaction, unstable soil/slope conditions, flood prone areas, high water tables, peat or other geologic hazards prone areas to determine potential problems and to require mitigation measures;*
> *b. a potential seismic/geologic damage assessment to be conducted for essential public utilities (gas, water, electricity, communications, sewer) and require that appropriate mitigation measures be incorporated;*
> *c. critical or sensitive facilities and uses to be located in areas where utility services and continuous road access can be maintained in the event of an earthquake;*
> …
> *g. that proposed critical, essential, and high-occupancy facilities be subject to seismic review, including detailed site investigations for faulting, liquefaction, ground motion characteristics, and slope stability, and application of the most current professional standards for seismic design;*
> *h. that proposed projects located in the tsunami hazard areas (Figure EH-9):*
> - *are designed to minimize beach/bluff erosion and the need for sand replenishment along city beaches; and*

- *consider design options which reduce the potential for damage to private property and threats to public safety, i.e., raised foundations, ground floor parking with upper level uses.*

LCP Coastal Element Hazards Section C10.1.19 states:

> *Identify tsunami and seiche susceptible areas (Figure C-30), and require that specific measures be taken by the developer, builder or property owner during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety. Development permitted in tsunami and seiche susceptible areas shall be designed and sited to minimize this hazard and shall be conditioned to prohibit a shoreline protective device.*

The HBEP site is subject to adverse effects from floods, tsunamis, and sea level rise. These hazards are described separately below, along with recommended Specific Provisions to allow consistency with relevant Coastal Act and LCP policies.

Sea Level Rise

The project site is within an area of the Orange County coastline that has been singled out as being particularly susceptible to sea level rise. It has a wide range of critical infrastructure, including the existing proposed power plant and proposed HBEP, that will be affected unless significant effort is taken to protect, replace, or remove it. A recent study found that the Orange County coastline has structures worth more than $17 billion (in 2000 dollars), including the power plant, that are vulnerable to a 4.5-foot rise in sea level, which is a level expected before the end of this century.[16] Another recent study found a more immediate danger in the area of the HBEP site where up to 5,000 nearby homes are at risk due to sea level rise by 2020.[17]

California has adopted the 2013 *State of California Sea-Level Rise Guidance Document* ("*State Guidance Document*), based on guidance from the 2012 NRC Report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*.[18] These documents, considered the current best-available science on sea level rise projections, anticipate sea level rise of up to two feet by 2050 and up to 5.5 feet by 2100 along this part of the Orange County shoreline. These projections are also consistent with the Commission staff's recently published draft guidance for incorporating sea level rise hazards and projections into LCP and coastal development permit review.

[16] Heberger, Matthew, et al., *The Impacts of Sea-Level Rise on the California Coast*, prepared by the Pacific Institute for the California Climate Change Center – California Energy Commission, California Environmental Protection Agency, Metropolitan Transportation Commission, California Department of Transportation, the California Ocean Protection Council, March 2009.

[17] See Climate Central, *Surging Seas: Sea Level Rise Analysis*, June 2013.

[18] For more information on the NRC Report, go to http://www.nap.edu/catalog.php?record_id=13389 and on the OPC Guidance, go to: http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf .

The *State Guidance Document* cautions that its sea level rise projections likely underestimate the amount of increase and that uncertainties about these projections increase as planning timeframes increase – i.e., they are likely more accurate for the immediate couple of decades and less so for subsequent decades. It notes that the rate of sea level rise is not expected to be linear and that it is likely to rise faster later in this century. The *State Guidance Document* recommends that state agencies during project evaluation consider the projected lifespan of the facility, its cost, and the impact or consequence of damage or loss of the facility. It also recommends that consideration be given to the project's adaptive capacity, impacts, and risk tolerance for projects with an expected timeframe beyond 2050.[19]

Importantly, and as noted in the *State Guidance Document*, the expected increase in water levels are likely to occur not just at some point several decades in the future, but also during shorter-term events in the very near future, such as storm waves, or during recurring events like El Nino. The *State Guidance Document* notes that, "[w]here feasible, consideration should be given to scenarios that combine extreme oceanographic conditions on top of the highest water levels projected to result from SLR over the expected life of a project." It also states that water levels during these large, short-term events along some parts of the coast have already exceeded sea level rise levels projected for 2030 and have reached levels projected for 2050.

The FSA evaluates the proposed project based on a 30-year operating life, which would extend until between approximately 2045 and 2055, depending on the eventual project construction schedule. This would subject the facility to hazards associated with a sea level rise of up to about two feet, which is expected by about 2050. As illustrated in **Exhibit 8 – Predicted Sea Level Rise**, a two-foot water level increase could result in the facility becoming an "island" separated from nearby inland areas during high tides, floods, storm surges, or other similar events. The increase in sea level will also alter shoreline processes, such as the rate and location of beach erosion, though the extent of these changes has not yet been determined. Additionally, the site is already subject to tidally-influenced high groundwater tables, with monitoring wells having shown groundwater at or above the existing grade.[20] Groundwater levels are expected to rise with those of sea level, with the higher groundwater table affecting the facility's foundations, and increasing its susceptibility to hazards such as liquefaction and lateral spread. The facility would also likely be subject to other secondary or indirect effects, such as salt water intrusion into foundations, changes in the flood channel hydraulics, potential increased sedimentation in the flood channel with an associated loss of flood conveyance, and others. As discussed below, although site elevations are above most expected flood and tsunami runup levels, those levels and the associated risks will increase with sea level rise. Therefore, although the project site is about one-half mile from the current shoreline, site conditions and its location make it likely that, unless mitigated, the facility will be affected by the predicted higher water levels during its operating life.

[19] See also California Emergency Management Agency, California Natural Resources Agency, and Federal Emergency Management Agency, *California Adaption Planning Guide: Planning For Adaptive Communities*, September 2012.

Flooding

The FSA describes the proposed project as having final grades of between 12 and 16 feet above sea level. It notes that the project site is within an area classified as "Zone X" by the Federal Emergency Management Agency (FEMA), a designation describing an area that is protected by levees from the 100-year flood but is still within the 500-year flood zone. The City's Environmental Hazards Chapter, completed in 1996, additionally identifies the project site as being within a City-designated Flood Zone (see FSA, Soil and Water Resources, Figure 2 – Huntington Beach Flood Zones (FEMA, 2009).

The HBEP site is within an area that has been subjected to numerous severe floods. It is adjacent to the Huntington Beach Flood Control Channel, which was built in the 1960s in response to local flooding and is managed by the Orange County Flood Control District. The District recently upgraded a section of the Flood Channel near the project site to handle projected 100-year flood events. The site is also within the Prado Dam Failure Inundation Zone (see **Exhibit 9 – Prado Dam Failure Inundation Zone**), which the City established in recognition of the potential failure of the Prado Dam, an earthen structure in the upper Santa Ana River watershed built before modern seismic-resistant designs. Failure of the dam would flood over 100,000 acres, including most of the area of Huntington Beach surrounding the proposed project, with an inundation area of up to 15 miles wide and water levels of greater than 30 feet in some areas. Maximum water levels at the HBEP site from that event are estimated to reach elevations of between 10 and 15 feet.

For structures such as the HBEP that are proposed to be located in flood-prone areas, the LCP's Environmental Hazards Program I-EH 4 requires, during development or environmental review, that potential problems in flood-prone areas be identified and mitigation measures be required. The City has also developed several planning documents to help implement the Environmental Hazards Chapter of its LCP. These include the City's FEMA-approved Flood Management Plan, which describes the policies and actions the City is to implement to ensure its eligibility for FEMA flood insurance and other similar programs. FEMA has established that planning and siting for "critical facilities," which include police and fire stations, hospitals, and electrical facilities such as the proposed project, be based on avoiding risks from the 500-year flood event.[21] The City has also adopted the Huntington Beach/Fountain Valley Hazard Mitigation Plan, which identifies the power plant as a critical facility.[22]

The site and proposed facility are subject to three different types of flood risks. First, although the site is protected from the 100-year flood event by sheet piling on the adjacent flood control channel, those structures are not designed to resist the area's seismic forces. The site and facility could experience a 100-year flood event if those structures are damaged. Second, the project site is within the 500-year flood zone, and, as noted above, a critical facility such as the power plant is to be protected from the 500-year flood elevation and its risk assessment is to be based on that

[21] See, for example, *Design Guide for Improving Critical Facility Safety from Flooding and High Winds*, FEMA Publication 543, January 2007, as well as CalEMA criteria described at: http://hazardmitigation.calema.ca.gov/plan/local_hazard_mitigation_plan_lhmp

[22] Available at: http://hazardmitigation.calema.ca.gov/docs/lhmp/Huntington_Beach_Fountain_Valley_Cities_of_LHMP.pdf

500-year event. These events and their associated risks are reasonably foreseeable, since during the project's eight years of construction and its 30-year operating life, it would have about a 1 in 3 chance of experiencing the 100-year flood and a 1 in 14 chance of experiencing the 500-year flood event.[23] Finally, as noted above, the facility is within the Prado Dam Inundation Zone, which would result in flood elevations of between 10 and 15 feet at the HBEP site.

Commission staff used data from the adjacent flood control channel and from a hydrologic analysis of the adjacent Huntington Beach wetlands that show a 100-year flood elevation of between about 9 to 10.2 feet in a nearby portion of the flood channel.[24] Data were not available for the 500-year flood event from the City or provided in the FSA, though it is presumably higher. Adding the two feet of projected increase in sea level rise puts the 100-year flood elevation at between 12 and 13 feet, which is in the same range as expected tsunami elevations described below and somewhat lower than inundation from a Prado Dam failure.

Flooding from any of these events could cause significant adverse impacts. For example, below grade facility components could be subject to complete inundation, potentially resulting in plant outages. Additionally, debris carried by a flood could damage above-grade components of the facility, or conversely, structural debris from the facility could damage nearby structures or property. Potential and likely risks include temporary or permanent loss of electricity production to the area, damage to adjacent properties, and increased public costs to provide measures that would protect the facility from these flood events. These flood risks will increase with the expected increase in sea level rise during the project's operating life. The degree of flood protection provided at the site is already influenced by the tides – that is, flood waters are released more slowly during a high tide than during a low tide and back up into the channel and surrounding areas during a high tide – and this effect will increase with sea level rise.

Tsunami Hazards

Although the site is located about one-half mile inland from the shoreline, it is subject to significant tsunami hazards. The site sits within a Tsunami Runup Zone the City designated in 1996 that extends about a mile inland from the shoreline (see **Exhibit 10 –Tsunami Runup Zone**).[25] At the time of that designation, the City identified expected tsunami elevations of up to five feet for a 100-year event and up to 7.5 feet for a 500-year event. More recent data and updated studies show the site is subject to higher runup levels and more severe tsunami risks. The 2009 California Geological Survey *Tsunami Inundation Map* for the Huntington Beach area shows the site within a tsunami runup zone in this part of the City that extends more than two miles inland, with expected water levels within parts of that zone of up to 16 feet above mean sea

[23] The calculation used to determine these probabilities is $r = 1-(1- 1/T)^N$, with T = the return period (i.e., the 100- or 500-year event), N = the expected life of the facility (i.e., eight years construction and 30 years operation), with r equal to the probability that the event will occur at least once in N years. During a 38-year facility life, there is about a 32% probability it would experience a 100-year event and about a 7% probability it would experience a 500-year event.

[24] See Federal Emergency Management Agency, *Flood Profiles, Huntington Beach Channel (D01)*, December 15, 2009, and Moffatt & Nichol, *Hydrologic and Hydraulic Baseline Report*, prepared for Huntington Beach Wetlands Conservancy, August 18, 2004.

[25] This map is the Figure C-30 referenced in LCP Policy C 10.1.19 above.

level (see FSA Soil and Water Resources, Figure 3 – 2009 Tsunami Inundation Map for Huntington Beach).[26]

This 2009 Map is based not on 100- or 500-year probabilities, but on the maximum expected inundation an area could experience from either far-field tsunamis (i.e. those tsunamis that are generated far from Huntington Beach) and from locally generated or near-field events.[27] For each mapped area of the coast, the CGS identified expected inundation levels for every 30-meter grid within the modeled runup zone. The site's tsunami risk and its expected tsunami runup elevations are also based in part on nearby seafloor bathymetry and other characteristics offshore of Huntington Beach that create a tsunami amplification area.[28]

The City's LCP requires that proposed projects within its designated Tsunami Runup Zone be evaluated for consistency with several of the Environmental Hazards policies identified above. In addition, Coastal Element section C10.1.19 requires that development located in tsunami or seiche susceptible areas be designed to prevent or reduce damage from these events. This LCP policy also prohibits the installation of shoreline protective devices as mitigation against tsunamis or seiches.

As noted in the FSA, the CGS modeling used to develop the tsunami runup maps shows a projected runup elevation at the power plant site of approximately 11 feet above mean sea level (msl). This elevation would result from at least two events – a magnitude 7.6 earthquake on the nearby offshore Catalina fault or a magnitude 9.2 event in Alaska's Aleutian Islands. With up to two feet of sea level rise expected during the project life, the maximum expected runup elevation would increase to about 13 feet above mean sea level. Final grades of the proposed project would have elevations ranging from about 12 to 16 feet above mean sea level; however, several important facility components and foundations will be below grade. The site may also be subject to seiches running up the flood control channel, though modeling for those events is apparently not available.[29]

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[26] A more recent study suggests even greater inundation levels at or near the site. A September 2013 report, *Science Application for Risk Reduction (SAFRR) Tsunami Scenario*, published by the California Natural Resources Agency, Department of Conservation, and California Geological Survey and the United States Geological Survey and Department of Interior, describes a tsunami scenario for the California coast that would result from a 9.1 earthquake in the Aleutians. The modeled tsunami would inundate large areas of the coastline, including areas with significant economic and infrastructure importance. This study used multiple coarse- and fine-grained models to identify likely inundation depths and water velocities, which were used to determine likely levels of damage along key parts of the coast, such as the Ports of Long Beach and Los Angeles. The study did not identify specific runup elevations along the Huntington Beach shoreline, but noted that in nearby Newport Beach, tsunami elevations could reach up to about 20 feet above msl with velocities of up to about 60 feet per second (or roughly 45 miles per hour).

[27] Tsunami inundation analyses used in land use planning often refer to 100-year and 500-year events, based on FEMA's methods for floodplain mapping. For several reasons, however, determining tsunami probabilities is significantly more difficult than predicting flood events. Tsunamis occur less frequently than floods, their historic and prehistoric records are often less exact, and the events that generate them can occur over a much larger area.

[28] See Legg, Borrero, and Synolakis, *Evaluation of Tsunami Risk to Southern California Coastal Cities*, Federal Emergency Management Agency and Earthquake Engineering Research Institute, January 2003.

[29] A seiche is a wave generated by the same types of events that cause a tsunami, but that occurs within an enclosed water body such as a bay, reservoir, or, in this case, a flood control channel.

As evidenced by recent tsunami events worldwide and in California, an 11- to 13-foot tsunami can cause significant adverse impacts. At this site, it would result in partial inundation and possible damage to below-grade facility components. It is also likely that damaged structural components could contribute structural debris to the tsunami and worsen the damage at the facility and at nearby structures and properties. Smaller tsunamis can also prove damaging – for example, the Orange County Multi-Hazard Mitigation Plan describes a one- to three-foot tsunami as being highly destructive[30] – and at this site, a smaller tsunami could create the same "island" effect as described in the flood hazard discussion above.

Tsunami mitigation

Other than locating proposed facilities outside of tsunami runup areas, the simplest approach to preventing or reducing tsunami-related hazards is to elevate structures above expected runup levels. However, elevating the facility's proposed structures would require significant amounts of fill and would likely redirect tsunami energy away from the facility and towards other nearby structures and properties, including the adjacent flood control levees. Additional fill could also be used to create berms around the structures while keeping the structures at the same proposed elevation; however, this approach would similarly redirect tsunami energy towards other nearby properties.

Either of these approaches would likely increase tsunami-related damage and safety risks and would therefore not conform to the LCP's Environmental Hazards Policy 5.1.1. Additional fill would also involve increased truck traffic, with the associated adverse effects on public access and air quality. The additional fill could also affect the groundwater regime beneath the project site and in the adjacent wetlands and flood control channel.

Other possible mitigation approaches include incorporating tsunami-resistant design features into structures that are subject to inundation. These features include enclosing below-grade structures within reinforced concrete walls to resist tsunami forces, protecting tanks against uplift due to tsunami buoyant forces, and others.[31] Another standard approach for facilities in tsunami-prone areas is to develop and implement a safety plan that includes on-site signage, training for facility personnel to know how to recognize tsunami watches and warnings that may be issued, and identifying an evacuation site.

Coastal Commission Recommended Specific Provisions to Avoid and Reduce Flood- and Tsunami-related Effects

To address these hazards and their associated risks to the proposed facility, and to allow consistency with relevant provisions of the Coastal Act and LCP, the Commission recommends the CEC include the new and modified conditions shown below as part of any approval of the AFC. Proposed **Condition Soil&Water8** will ensure that the proposed critical facility is sited to be protected from both the current and future predicted 500-year flood elevation. Proposed **Condition GEO-3** is meant to allow

[30] See the Municipal Water District of Orange County, *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan*, February 2012.

[31] See, for example, the 2008 Federal Emergency Management Agency's (FEMA's) *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*.

consistency with the health, public safety, and damage prevention components of Environmental Hazard Policy EH 5.1.1 and Environmental Hazards Program I-EH 4 by requiring AES to submit a Facility Hazard Emergency Response Plan prepared in coordination with other nearby property owners and government entities that identifies the hazards to the facility and to nearby structures owned by others, and that identifies measures that will be implemented to avoid or reduce these hazards. This recommended Condition also requires AES to provide documentation from these other nearby landowners and government entities that the plan accurately reflects expected hazards. It further requires AES provide documentation from the City that the proposed project is consistent with the goals and objectives of the City's Flood Management Plan, which is meant to help the City implement its LCP's Environmental Hazards Chapter. To address specific tsunami-related LCP policies, proposed **Condition GEO-3** also ensures the facility includes adequate life safety measures, as required by LCP Policy I-EH 4(g). **Condition GEO-3** also requires AES to submit for CPM approval a project design approved by a structural engineer identifying structural elements that allow project personnel to immediately remove themselves to one or more locations that will not be subject to tsunami inundation or that will be safe from inundation. Finally, recommended **Condition GEN-9** prohibits the project owner from constructing a shoreline protection device, as required pursuant to the LCP's Coastal Elements Hazards Section C10.1.19.

- **Recommended New Condition SOIL&WATER8: Flood Damage Prevention. Prior to the start of construction, AES shall submit for CPM review and approval, certification from a licensed engineer that the proposed facility is elevated above, or protected from, a 500-year flood event at the project site that includes an additional 24 inches of sea level rise. The engineer's determination shall describe the methods and include the calculations used to determine the elevation of the current 500-year flood event at the site and those used to determine the elevation of a future 500-year flood event with the additional 24 inches of sea level rise expected during the facility's thirty year operating life.**

  The elevations and proposed changes to the facility design shall be incorporated into the final project design submittals required pursuant to Condition GEN-2.

- **Recommended New Condition GEO-3: Flood and Tsunami Hazard Mitigation Planning. Prior to the start of construction, AES shall submit for CPM review and approval, a Facility Hazard Emergency Response Plan developed in coordination with the City of Huntington Beach, Southern California Edison, and the Orange County Flood Control District. The Facility Hazard Emergency Response Plan shall include, at a minimum:**

  1. **Results of hydraulic and hydrodynamic modeling using methods approved by the Federal Emergency Management Agency (FEMA) or the National Oceanic and Atmospheric Administration (NOAA) showing the effects of the facility's proposed structures on other nearby structures**

(including, but not limited to, structures associated with the existing adjacent power plant, the on-site Southern California Edison substation, and the Orange County Flood Control Channel) during: (1) a tsunami runup of 11 feet above mean sea level with an additional two feet of sea level rise (for a total runup of 13 feet above mean sea level); (2) the 100-year flood event with an additional two feet of sea level rise; and (3) the 500-year flood events as determined pursuant to Condition SOIL&WATER8.

2. **Concurrence from Southern California Edison and the Orange County Flood Control District that the modeling efforts accurately reflect expected hazard levels at these nearby structures, and concurrence from the City of Huntington Beach that the Plan is consistent with the City's most recent Hazard Mitigation Plan and Multi-Hazard Mitigation Plan prepared pursuant to California Government Code Sections 8685.9 and 65302.6 and 44 CFR 201.6 et. seq.**

3. **Structural and non-structural measures AES will implement to avoid, or if infeasible to avoid, to reduce any identified adverse effects of tsunami and flood events and to ensure human safety. Structural measures shall include either those that allow facility personnel immediate vertical evacuation to safe areas above tsunami runup elevations or those that allow facility personnel to remain inside structures that are not subject to inundation. The structural measures identified and required by this Plan shall be determined by a licensed structural engineer to be fully tsunami-resistant.**

Changes to the facility resulting from the above analyses shall be incorporated into the final project design submittals required pursuant to Condition GEN-2.

- **Recommended new Condition GEN-9: No Shoreline Protective Device. In the event that the approved development, including any future improvements, is threatened with damage or destruction from coastal hazards, or is damaged or destroyed by coastal hazards, protective structures (including but not limited to seawalls, revetments, groins, deep piers/caissons, etc.) shall be prohibited. By acceptance of the CEC approval, the project owner waives any right to construct such protective structures, including any that may exist under Public Resources Code Section 30235.**

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

F. GEOLOGIC HAZARDS

Coastal Act Section 30253 states, in relevant part:

> *New development shall do all of the following:*
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

LCP Policy C1.1 states:

> *Ensure that adverse impacts associated with coastal zone development are mitigated or minimized to the greatest extent feasible.*

LCP Policy C 10.1.3 states:

> *Require seismic/geologic assessment prior to construction in the Alquist-Priolo Earthquake Fault Zone as shown in Figure C-28.*

LCP Policy C 10.1.4 states:

> *Require appropriate engineering and building practices for all new structures to withstand ground shaking and liquefaction such as those stated in the Uniform Building Code.*

LCP Policy I-C.20, Environmental Hazards Element, states:

> *Enforce and implement the policies and programs of the Environmental Hazards Element of the General Plan to the extent that these programs and policies are not inconsistent with the City's Local Coastal Program.*

The relevant and applicable policies and programs of the above-cited Environmental Hazards Element are listed below. Figures in parentheses at the end of each Environmental Hazards Policy refer to the Implementation Program applicable to each Policy.

> Environmental Hazards Policy 1.1.4 states: *Evaluate the levels of risk based on the nature of the hazards and assess acceptable risk based on the human, property, and social structure damage compared to the cost of corrective measures to mitigate or prevent damage. (I-EH 3 and I-EH 4)*

> Environmental Hazards Policy 1.2.1 states: *Require appropriate engineering and building practices for all new structures to withstand groundshaking and liquefaction such as stated in the Uniform Building Code (UBC). (I-EH 5)*

Environmental Hazards Program I-EH-1, Studies/Mapping/Master Plans, states, in relevant part:

a. Conduct, prepare and/or update the following as funding permits:

...

- *an assessment of potential damage to essential utility and transportation infrastructure and public service facilities due to geologic/seismic hazards. The findings of the assessment should be utilized in the review of proposed development projects, and used for maintaining and updating emergency preparedness plans;*

Environmental Hazards Program I-EH-3, Alquist-Priolo Earthquake Fault Zone, states:

a. Continue to implement the Alquist-Priolo Earthquake Fault Zone requirements.
b. Implement the fault classification system suggested by Leighton & Associates (April 17, 1986) with regard to faults in the City susceptible to fault rupture, and establish a study requirement based on risk and structure importance.

Environmental Hazards Program I-EH 4, Development Review or Environmental Review Process, states:

During development review (site plan, tract map, etc.) and/or environmental review, require:
d. building structures proposed in liquefaction, unstable soil/slope conditions, flood prone areas, high water tables, peat or other geologic hazards prone areas to determine potential problems and to require mitigation measures;
e. a potential seismic/geologic damage assessment to be conducted for essential public utilities (gas, water, electricity, communications, sewer) and require that appropriate mitigation measures be incorporated;
f. critical or sensitive facilities and uses to be located in areas where utility services and continuous road access can be maintained in the event of an earthquake;
…
i. that proposed critical, essential, and high-occupancy facilities be subject to seismic review, including detailed site investigations for faulting, liquefaction, ground motion characteristics, and slope stability, and application of the most current professional standards for seismic design;

Environmental Hazards Program I-EH-5 – Ordinances:

a. Enforce the most current Uniform Building code adopted by the State of California.
b. *Prepare ordinances prohibiting the location of critical or sensitive facilities or high occupancy facilities within a predetermined distance of an active or potentially active fault.*

The proposed HBEP site and vicinity is subject to several types of relatively severe geologic hazards, including surface fault rupture, ground shaking, liquefaction, and lateral spread. The analysis provided below shows that there is a significant probability that the project would experience one or more of these hazards during its expected operating life. In addition, the expected increase in sea level described above will increase the risk from some of these hazards during the project's operating life. The site's seismic setting and its specific seismic hazards are briefly described below, followed by several recommended conditions to allow the proposed facility to more fully conform to relevant Coastal Act and LCP policies.

Seismic setting

The proposed facility is located within a seismically-active region that includes the underlying Newport-Inglewood Fault Zone (NIFZ), which extends about 50 miles from Newport Beach to Los Angeles. It consists of a series of known faults, and geologists believe there are additional unknown faults in a zone that ranges up to somewhat more than a mile wide. The NIFZ is generally thought to be contiguous with the Rose Canyon Fault Zone which underlies parts of San Diego, trends offshore at La Jolla, and continues north to meet the NIFZ. Just offshore of the facility site is the epicenter of the geologically recent 1933 Long Beach earthquake, which was a magnitude 6.3 event on the NIFZ that resulted in significant loss of life and extensive property damage.

The City's 1996 Environmental Hazards Chapter states that faults within the NIFZ have an expected maximum earthquake of magnitude 7, an expected maximum ground acceleration of up to 1g, and potential surface fault rupture of more than ten feet in earthquakes of between magnitude 6.0 and 7.5. Other more recent reports calculate that the NIRC fault could generate a quake of up to magnitude 7.5[32] or an offshore magnitude 7.4 earthquake.[33] Various entities consider the entire NIRC fault zone as active.[34] Within that NIFZ, the California Geological Survey (CGS) has designated several specific fault segments as being within an Alquist-Priolo Earthquake Fault Zone, including a portion of the NIFZ's North Branch Fault about one-half mile from the HBEP site.[35]

[32] See *City of Huntington Beach Draft Hazard Mitigation Plan*, 2011.

[33] Grant, L., and Shearer, P., *Activity of the Offshore Newport-Inglewood Rose Canyon Fault Zone, Coastal Southern California*, from Relocated Microseismicity, Bulletin of the Seismological Society of America, Vol., 94, No. 2, pp. 747-752, April 2004.

[34] See, for example, Pischke, Gary, *Earthquakes and Folds on the Rose Canyon Fault Zone*, in *The Seismic Risk in the San Diego Region: Special Focus on the Rose Canyon Fault System*, edited by Glenn Roquemore, the Southern California Earthquake Preparedness Project, 1989.

[35] Section 1613A.2 of the California Building Code defines an "active earthquake fault" as "a fault that has been the source of earthquakes or is recognized as a potential source of earthquakes, including those that have exhibited surface displacement within Holocene time (about 11,000 years) as determined by California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act , those included as type A or type B faults for the U.S. Geological Survey (USGS) National Seismic Hazard Maps, and faults considered to have been active in Holocene time by an authoritative source, federal, state or local governmental agency."

The HBEP would be located within a few hundred feet of the NIFZ's South Branch Fault (see **Exhibit 11 – Mapped South Branch Fault Beneath Project Site**). The South Branch Fault is less well understood than some other segments of the NIFZ, due in part to the extensive development and areas of fill existing along the fault route, both of which tend to mask surface expressions of faulting and make investigations at depth more difficult. A 1981 study noted that the NIFZ in the immediate project area had not been designated as active mainly because of the difficulty in identifying evidence for faulting.[36] When investigating the NIFZ for designation within an Alquist-Priolo Earthquake Fault Zone, the CGS found sufficient evidence to designate just the above-referenced segment of the NIFZ's North Branch near the proposed project site. Results of geodetic studies published in 2001 found evidence suggesting that the South Branch may be active.[37] Additionally, a 2007 study of another nearby project's potential pipeline routes described the South Branch Fault as "potentially active."[38]

More recently, the City noted that additional studies of the South Branch and other fault traces could result in Alquist-Priolo Earthquake Fault Zone designations. The City had already classified the South Branch Fault as a "Category C" fault, which requires special studies and subsurface investigation for nearby proposed developments. In 2010, the City's *Beach and Edinger Corridor Specific Plan EIR*, which is a planning document for an area of the City near the HBEP site, discussed the hazards associated with the South Branch Fault and acknowledged the potential for surface fault rupture.[39] The City's 2011 Hazard Mitigation Plan describes the South Branch Fault as "active," and identifies critical infrastructure near that fault that may be subject to damage from seismic activity.

In addition to the NIFZ, the site and facility are subject to potential seismic events and significant hazards from other regional faults, including the Compton-Los Angeles Blind Thrust Fault, the Elysian Park Blind Thrust Fault, and the Palos Verdes, Whittier-Elsinore, Serra Madre-Cucamonga, and San Andreas fault systems and others.[40] For example, the project site has been

[36] See Guptill, Paul, and Edward Heath, *Surface Faulting Along the Newport-Inglewood Zone of Deformation*, California Geology, July 1981, referencing Hart, E. W., *Fault hazard zones in California: California Division of Mines and Geology Special Publication 42 Revised Edition*, 1980.

[37] See Bender, E., et. al, *Surface Motion Detection from a Small Aperture Geodetic Network, Southern Los Angeles Basin*, from 97th Annual Meeting of Pacific Section American Association of Petroleum Geologists, 2001. The report explains that geodetic stations installed across a potential restraining bend along the south branch of the Newport-Inglewood fault zone appeared to be converging at a high rate. Assuming that surface motions accurately depict subsurface conditions, this may indicate that strain is accumulating at depth, which could indicate the South Branch Fault is active.

[38] See ENSR Corporation, *Topic Report 6 – Geological Resources*, for Woodside Natural Gas, Inc., OceanWay Secure Energy, August 2007.

[39] The EIR states, "[t]his does not mean there is no threat of surface rupture along the other fault traces [including the South Branch]: only that the current state of our knowledge about them does not indicate whether a threat is present." It further states that "it is prudent to consider the possibility of surface rupture in the design and construction of development in the Specific Plan Area south of Ellis Avenue," an area that includes the South Branch Fault.

[40] See Magorian, D. Scott, *Preliminary Review of Geotechnical Constraints and Geologic Hazards Poseidon Resources Orange County Desalination Project – North and West Tank Options*, September 7, 2002, and Municipal

identified as subject to "Very Heavy" damage from a magnitude 6.9 earthquake on the Newport-Inglewood Fault, "Moderate to Heavy" damage from a magnitude 6.6 earthquake on the San Joaquin Fault (which is approximately 2.2 miles from the site), and "Moderate" damage from earthquakes on any of several other faults, including a magnitude 6.8 earthquake on the Peralta Hills fault (about 10 miles distant), a magnitude 7.5 earthquake on the Puente Hills fault (19.5 miles distant), and a magnitude 6.8 earthquake on the Whittier fault (20.7 miles distant).[41]

Site Seismic Hazards

The HBEP site is subject to several types of seismic hazards, as described below.

Surface Fault Rupture

The FSA notes that the proposed HBEP site is likely not subject to surface fault rupture. However, AES's July 2012 site assessment identified the above-referenced South Branch Fault trace as being located below the northeast corner of the power plant site, and stated it was proposing to locate its new generating units to provide a 500-foot buffer from the mapped fault and the location of potential surface fault rupture.

As noted in the Land Use and Alternatives discussion above, the Commission recommends that Energy Commission staff evaluate whether that part of the power plant site could be used for construction staging or parking that would reduce the project's effects on offsite coastal resources. That evaluation should include consideration of potential surface fault rupture and geologic stability.

Ground Shaking

The FSA identifies a range of potential ground motions at the site expected from several different seismic events and based on different modeling approaches.[42] They range from 0.598 g up to 2.4 g, which is a relatively severe level of ground movement. Structural measures needed to respond to ground motions at the upper end of this range could require substantial alterations to the facility as it is currently proposed.

Liquefaction and Lateral Spread

Liquefaction occurs in certain soils during seismic events. It results in the soil losing its strength and acting similar to a liquid, often resulting in collapse or damage to overlying structures. Lateral spread occurs when soils that are on flat to gently sloping surfaces above liquefiable soils and adjacent to an unsupported slope move in response to a seismic event – it is essentially a landslide that occurs on nearly flat ground.

Water District of Orange County, *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan, Orange County*, California, February 1, 2012.

[41] See the 2012 *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan*.

[42] See FSA's Geology & Paleontology Section, page 5.2-20, Table 3.

The proposed project site is within an area the City has designated as having "Very High" liquefaction potential (see **Exhibit 12 – Map of Liquefaction Potential in Huntington Beach**). The FSA notes that conditions within the power plant site are likely conducive to liquefaction, though less so for lateral spread. As noted above, the power plant site's liquefaction and lateral spread hazards are likely to be exacerbated by the increased surface and groundwater levels associated with predicted sea level rise during the HBEP facility life. The City additionally notes in its Environmental Hazards Chapter that earthquake intensities are likely to be higher in liquefaction-prone areas than in nearby non-liquefaction prone areas. It is not clear whether the range of ground motions noted above incorporate this potential for higher intensities.

Initial geotechnical investigations conducted at the adjoining AES Tank Farm for the proposed Poseidon project showed that site to be underlain by liquefiable soils extending to about 20 feet below the ground surface.[43] Those investigations also concluded that the site had a high potential for lateral spread, due to its soil characteristics, high groundwater levels, and its location along several hundred feet of the sloping sides of the adjacent flood control channel that were not designed to resist lateral spread.[44] Poseidon considered several methods to reduce liquefaction and lateral spread effects, including building the facility on stone columns, constructing below-grade buttress walls, and over-excavating soils subject to liquefaction, and the SEIR for that project required Poseidon to conduct additional geotechnical investigations prior to constructing the facility.

The FSA includes several proposed conditions to address the above-identified risks. Proposed **Condition GEO-1** would require AES to conduct geotechnical engineering analyses and prepare an engineering report that more specifically describes the site's seismicity and anticipated geologic hazards. **Condition GEO-1** also requires that report to include recommended measures to respond to the identified hazards. Proposed **Condition GEN-1** requires AES to design and construct its facility consistent with the requirements of the state's Building Codes, and proposed **Condition GEN-5** requires AES to use licensed engineers, engineering geologists, and other similarly accredited personnel to review the various geotechnical analyses, design the facility plans, and consult as needed during construction. This approach is largely consistent with relevant Coastal Act and LCP policies listed above. However, we are recommending several modifications to these proposed conditions to allow fuller conformity to those policies.

Coastal Commission Recommended Specific Provision

As noted above, it is not yet clear whether the upcoming geotechnical investigations and the resulting proposed mitigation measures will require substantial changes to the facility and cause additional and as-of-yet unknown and unquantified adverse effects on coastal resources. For example, if conditions beneath the HBEP footprint are similar to those beneath the adjacent AES tank farm site, the project could require significant dewatering,

[43] See SEIR, Appendix C – *Updated Preliminary Review of Geological Constraints and Geologic Hazards*, page 13.

[44] See Magorian, D. Scott, *Preliminary Review of Geotechnical Constraints and Geologic Hazards Poseidon Resources Orange County Desalination Project – North and West Tank Options*, September 7, 2002, and Magorien, D. Scott, *Updated Preliminary Review of Geotechnical Constraints and Geologic Hazards, Poseidon Resources Seawater Desalination Project, Huntington Beach, California*, February 2, 2010.

construction of stone columns or buttresses, placement of sheet piles, excavation, as well as other measures, any of which could change the project's anticipated coastal resource effects and its conformity to Coastal Act and LCP policies. Placement of buttress walls, for instance, could alter or reduce groundwater flow beneath the site and affect nearby wetlands, while extensive excavation could require significantly increased truck traffic and adversely affect public access to the shoreline. Additionally, given the site's potential for relatively severe ground motion, results of the upcoming studies could show that the facility will require extraordinary means of construction to ensure its stability. We are therefore recommending the following modifications, as shown in strikethrough/bold underline below:

- In recognition that hazards to the site and proposed facility are not yet fully identified, the Commission expects that some of the current evaluation regarding project effects on coastal resources may be understated and may require additional review to determine the project's conformity to relevant Coastal Act and LCP provisions. We recommend that project changes resulting from the upcoming studies undergo additional public review, if those changes are likely to increase adverse coastal resource effects or reduce the project's conformity to relevant Coastal Act and LCP provisions. We recommend the following modification to the FSA's proposed Condition GEO-1:

  "A Soils Engineering Report as required by Section 1803 of the California Building Code (CBC 2013), shall specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils; and tsunami. In accordance with CBC 2013, the report should also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. **If the analyses or recommendations show that the project will cause greater or more significant adverse effects to coastal resources than identified and evaluated in the Presiding Member's Final Decision for this AFC, the project owner shall submit the analyses and recommendations for additional public review to be conducted by the CEC staff.**

  Verification: The project owner shall include in the application for a grading permit a copy of the Soils Engineering Report which addresses the potential for strong seismic shaking; liquefaction; dynamic compaction; settlement due to compressible soils; corrosive soils; and tsunami, and a summary of how the results of the analyses were incorporated into the project foundation and grading plan design for review and comment by the Chief Building Official (CBO). A copy of the Soils Engineering Report, application for grading permit and any comments by the CBO are to be provided to the CPM at least 30 days prior to grading."

Site Seismic Hazards – Coastal and Geologic Hazards and Risks to a Critical Facility

LCP Environmental Hazards Policy 1.1.4 requires evaluating the risk to the proposed project from the above-described hazards. It also requires evaluating the risk of human, property, and social structure damage resulting from these hazards, identifying a level of "acceptable" risk, and comparing the risks to the costs of corrective measures to mitigate or prevent these damages. These analyses are particularly important for this proposed critical facility that, despite its location on a relatively hazardous site, is meant to support regional electrical grid reliability.

The City has not conducted a facility-specific risk assessment for the project; however, it has developed several hazard mitigation plans that address hazards and risks to critical infrastructure in the City. The findings of these hazard mitigation plans can be applied to the proposed project to determine the project's consistency with the hazard planning and risk assessment required pursuant to the above LCP policies.

Pursuant to state and federal requirements, local jurisdictions prepare Hazard Mitigation Plans to identify the suite of natural hazards known or expected to affect a community, identify actions that will reduce losses from those hazards, and establish a coordinated process for implementing the plan and these actions.[45] These requirements also require the Plans be in place for local jurisdictions to be eligible for certain disaster recovery funding. The above-cited FEMA guidance states that these Plans are to describe how a local government will integrate the mitigation elements identified in its Plan into that government's local land use decisions.

The Plans are to include:

- A risk assessment of the type, location, and extent of all natural hazards that can affect the local jurisdiction, along with a description of previous occurrences and the probability of future occurrences.
- A description of the local jurisdiction's vulnerability to these hazards, including the type and number of critical facilities and infrastructure located in hazard areas and an estimate of potential costs should these facilities be lost or damaged due to these hazards.
- Mitigation measures needed to avoid or reduce hazards and potential effects of the loss of critical facilities.
- A description of land uses and development in the local jurisdiction to allow the Plan's mitigation options to be considered as part of land use decisions.

The City has prepared three plans that address these concerns – the aforementioned Flood Management Plan, prepared pursuant to FEMA requirements and meant to help implement the City's Environmental Hazards Element of its LCP, a 2012 Hazard Mitigation Plan, and a Multi-Hazard Mitigation Plan [n.d.] prepared with the neighboring City of Fountain Valley. The Plans identify a number of hazards at the project site, including those described above – flooding, tsunami, seismic events, and others.

[45] See guidance from the California Emergency Management Agency regarding compliance with AB 2140 at http://hazardmitigation.calema.ca.gov/docs/AB2140_Letter_to_Local_Government.pdf , and Federal Emergency Management Agency, pursuant to 44 CFR 201 *et. seq*. regarding Federal Emergency Management Agency requirements.

Additionally, and given the number of site hazards, it is highly probable that the facility will experience one or more of the identified hazards during its operating life. Considering only those hazards with an expected recurrence interval or return period – e.g., a "100-year flood" – the site and facility have the following probabilities of any one of these hazards occurring during the project's expected 30-year operating life:

Hazard:	**Probability:**[46]
100-year flood:	**26%** (approximately 1 in 4 chance).
100-year tsunami:	**26%** (approximately 1 in 4 chance).
500-year tsunami:	**6%** (approximately 1 in 14 chance).
500-year flood:	**6%** (approximately 1 in 14 chance).

However, because the site and the proposed facility are subject to multiple hazards, the probability is much greater that they will experience not just one hazard – i.e., just a 100-year flood – but any one of the several hazards. For example, the probability that the site will experience either a 100-year tsunami or a 100-year flood is about twice as high than if the site was subject to just one or the other of those events. Looking at just the above four events, there is a greater than even chance that the site would experience at least any one of them during its operating life – that is, the probability that the site will experience a 100-year flood or a 500-year flood or a 100-year tsunami or a 500-year tsunami is somewhat greater than 50%.[47] The actual probability is somewhat higher, as the list above does not include all the site hazards for which recurrence intervals can be developed – for example, any damaging seismic events resulting from the above-referenced regional faults for which recurrence intervals have been calculated. Risks from damage to the facility that result from these hazards include short- or long-term disruption of electrical power from the facility, loss of grid support provided by the facility, release of chemicals or structural debris to nearby properties and habitats, and others.

While the FSA's proposed conditions reduce the facility's risk, the site's hazards still make the facility highly vulnerable to damage and result in risks that must be addressed pursuant to Environmental Hazards Policy 1.1.4. Additionally, addressing the risks associated with some of the hazards will require coordination with multiple nearby landowners and local governments – for example, the site's flood protection relies on levees and sheet piles constructed and managed by the Orange County Flood Control District; however, as noted above, those structures are not designed to withstand the area's seismic forces, so the facility's reliability is dependent on ongoing system improvements made by the Flood Control District.

[46] The calculation used is $r = 1-(1- 1/T)^N$, with T = the return period (e.g., a 100-year event), N = the expected operating life of the facility (i.e., 30 years), and r = the probability that the event will occur at least once in N years.

[47] This combined probability is the sum of the individual probabilities minus the probabilities of the site experiencing more than one of the hazards during its operating life. The calculation is ((0.26 + 0.26 + 0.06 + 0.06 - (0.26 * 0.26) – (0.26 – 0.06) – (0.26 * 0.06) - (0.06 * 0.06)) = .5376, or just over 50% probability.

Coastal Commission Recommended Specific Provision

To allow conformity to the LCP's Environmental Hazards Policy 1.1.4, the Commission recommends the following additional condition:

"**Condition GEO-4: Prior to issuance of the project grading permit, the project owner shall provide to the CPM documentation from the City of Huntington Beach showing that the project is consistent with the City's most recent Flood Management Plan, Hazard Mitigation Plan, and Multi-Hazard Mitigation Plan prepared pursuant to California Government Code Sections 8685.9 and 65302.6 and 44 CFR 201.6 et seq.**"

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

G. PUBLIC ACCESS

LCP Policy C 2.5 states:

> *Maintain and enhance, where feasible, existing shoreline and coastal resource access sites.*

Coastal Act Section 30211 states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

The proposed facility is to be built within an industrial site about one-half mile from the shoreline where public access is not available and not warranted. However, the project, as proposed, would cause two main types of adverse effects on public access. First, AES proposes to use over 200 parking spaces near the shoreline that are typically used for public access to the beach. Second, it would increase and interrupt traffic on streets used for public access to the shoreline in this area of Huntington Beach and along about 15 miles of the Pacific Coast Highway between the HBEP site and AES's Alamitos Power Plant site. These two adverse effects and the Commission's proposed mitigation measures are described below.

Beach Access Parking

AES expects a maximum of 331 workers on-site during the peak construction period. AES has proposed using one onsite and four offsite parking areas, and is planning to provide shuttle service to transport workers between the offsite areas and the project site (see **Exhibit 13 – Proposed HBEP Construction Parking**). The proposed parking areas, which are listed below, would provide more than three times the expected parking needed for the project.

Parking Area Location	Parking Area Size	Number of Spaces (approximate)
Onsite at HBEP	1.5 acres	130
Plains All-American Tank Farm, adjacent to HBEP	1.9 acres	170
Graded area west of HBEP on Newland Street	3 acres	300
Graded area at PCH and Beach Street	2.5 acres	215
Huntington Beach City Parking Area at PCH and Beach Street	N/A	225
Total Number of Spaces:		**1040**

The Huntington Beach City Parking Area described in the AES proposal is located about one-half mile from the power plant site and is used extensively by beachgoers. The 225 spaces AES proposes to use at this location would reduce parking that is meant to provide public access to the shoreline along this stretch of the coast.

The FSA's proposed **Condition TRANS-3** would require AES to prepare a Traffic Control Plan to address the project's traffic- and parking-related impacts. The required Plan would include a Parking/Staging Plan that is to ensure all project-related parking during construction and operation be either on-site or in the designated off-site parking areas. However, **Condition TRANS-3** does not yet ensure conformity to the City's LCP to the extent feasible.

Coastal Commission Recommended Specific Provision:
As noted above, LCP Policy C2.5 requires that existing shoreline access sites be maintained and enhanced, where feasible. The Commission therefore recommends that **Condition TRANS-3** be modified to delete the Huntington Beach City Parking Area from the project's parking plans. This feasible modification ensures continued availability of beach parking, allows AES to still have more than three times the expected parking needed, and would allow conformity to LCP Policy C 2.5.[48]

Additionally, and as described above in the Land Use and Alternatives section of this report, the Commission recommends the CEC evaluate whether additional space is available for short- or long-term use at the on-site AES Tank Farm or at the adjacent Plains America Tank Farms. Each of these tank farm areas is larger than the total of all five of AES's currently proposed parking area, and using all or some of the tank farm space could further reduce the project's cumulative and off-site impacts.

[48] Alternatively, Condition TRANS-3 could be modified to require that the Parking/Staging Plan specify that the Huntington Beach City Parking Area be used only if there is insufficient parking space available in the other four proposed parking areas.

Project-Related Traffic

Project-related traffic during approximately eight years of demolition, remediation, and construction activities at the facility site will occur along several thoroughfares, all of which provide access to the shoreline. These include the Pacific Coast Highway (PCH), Newland Avenue, Brookhurst Street, Magnolia Street, and Beach Boulevard. Because AES proposes to stage some of its equipment at its Alamitos Power Plant site, located about 15 miles north of Huntington Beach, the traffic effects would extend along that entire stretch of the PCH. AES also expects to require up to 112 "oversize" trips to transport the largest power plant components from the Port of Long Beach to the project site. AES expects its average daily construction traffic to include about 734 one-way trips, with most (662) due to the workers' commutes and the remainder due to deliveries (48 delivery/haul trucks and 72 cars or trucks that would accompany the deliveries).

The FSA identifies relatively minor reductions of no more than a few seconds delay in the Traffic Levels of Service (LOS) at nearby intersections during peak construction and peak traffic times.[49] However, at least two of the studied intersections are already at LOS E and LOS F, and the City's Circulation Element Policy CE2.1.1 requires a minimum LOS standard at peak hours to be no lower than LOS D. To address this issue, the FSA includes **Condition TRANS-3**, which would require AES to prepare a Traffic Control Plan in consultation with the City and with other agencies, noting that AES would need to monitor the affected intersections and use alternate routes during construction.

Coastal Commission Recommended Specific Provision

To ensure compatibility with LCP Policy C2.5, the Commission recommends that **Condition TRANS-3** be modified to require that project-related traffic needing to use any alternative routes at least maintain existing levels of public access to the shoreline.

We also recommend a modification to the traffic analysis presented in the FSA. The FSA evaluated cumulative traffic impacts expected to result from this project and 26 other projects that are proposed, under review, or approved in the area between the power plant site and the Alamitos Power Plant staging area. However, that analysis does not appear to include two projects – the proposed Poseidon desalination facility and the Ascon Landfill cleanup – that are immediately adjacent to the HBEP site and could involve significant amounts of traffic. The Poseidon project is expected to generate up to about 225 trips per day and would use the same power plant access points and several of the same roads that AES plans to use for its project. The Ascon Landfill cleanup, which the FSA analysis mentions but does not include in its traffic analysis, is expected to involve up to about 200 truck trips per day for about a year starting in 2015.[50] Traffic associated with either of these projects could substantially change the FSA's analysis and further decrease the Levels of Service on nearby roads.

[49] The Level of Service refers to a method used to quantify existing baseline traffic conditions and the level of traffic congestion that may be present at certain times of day or under certain conditions. Levels of Service range from Level A, which allows the free flow of traffic, to Level F, which produces jammed conditions and significant delays.

[50] See DTSC's Ascon Landfill Draft EIR at: http://www.dtsc.ca.gov/SiteCleanup/Projects/Ascon.cfm

To ensure the AES project and these other projects do not create unanticipated cumulative traffic impacts, we also recommend the Traffic Control Plan required pursuant to **Condition TRANS-3** incorporate traffic that may be generated by these two projects, either or both of which could occur concurrently with the AES project.

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

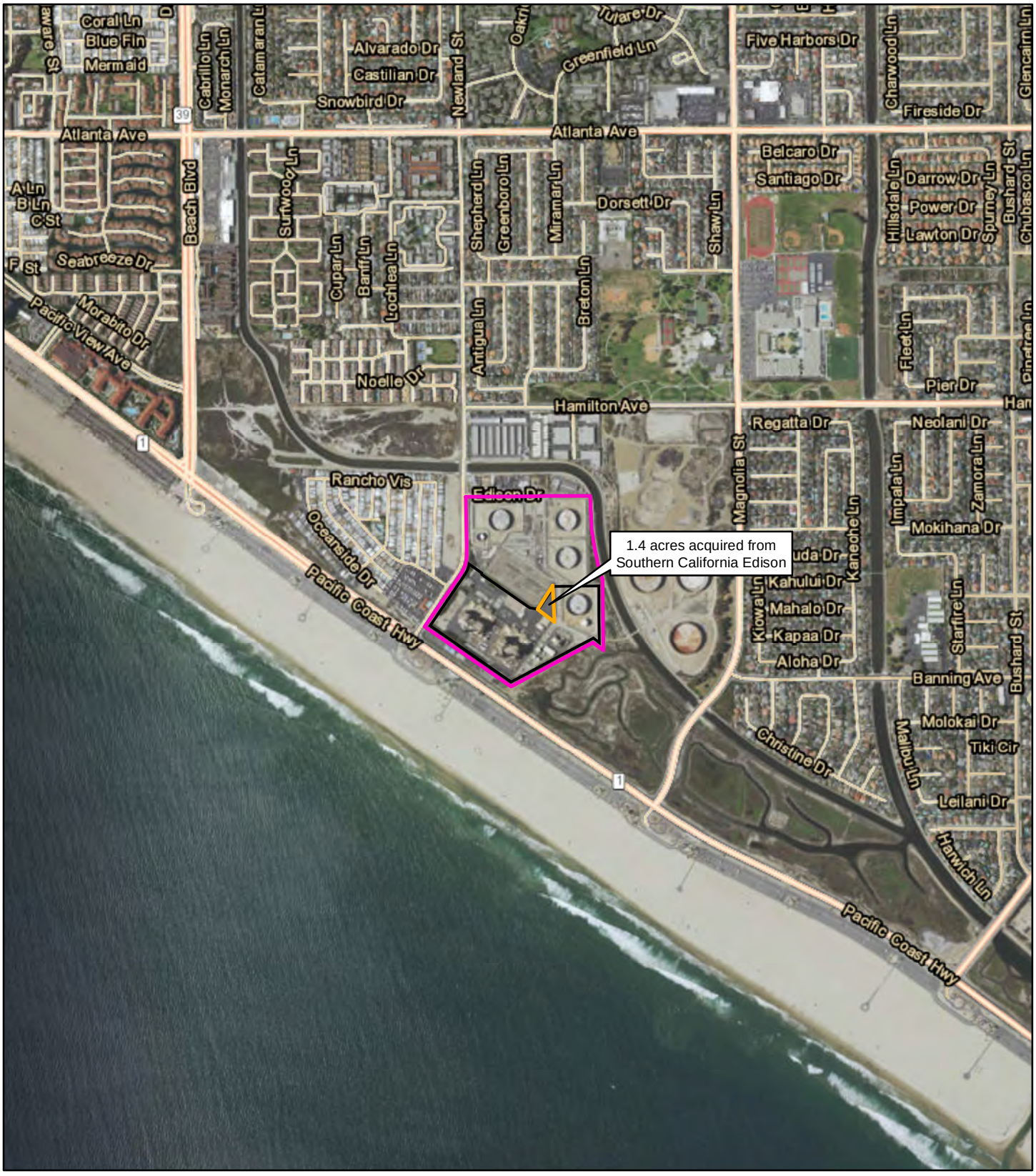
ATTACHMENT A – SUBSTANTIVE FILE DOCUMENTS

Coastal Commission, *Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976*, adopted September 1978, revised 1984, re-adopted December 1985, San Francisco, CA

Coastal Commission, staff report for Poseidon Water Huntington Beach Desalination Facility – Appeal #A-5-HNB-10-225 and Application No.: E-06-007, November 2013, available at: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

Energy Commission, *Opportunities to Expand Coastal Power Plants in California*, Staff Report P700-80-001, June 1980, Sacramento, CA.

Energy Commission, Final Staff Assessment and associated docketed documents for 12-AFC-02, Application for Certification for AES Southland, LLC Huntington Beach Energy Project, filed prior to June 2014.



Legend

- AES Huntington Beach Generating Station
- AES Amended Huntington Beach Energy Project

N

0 0.25

Miles

Basemap Source: ESRI

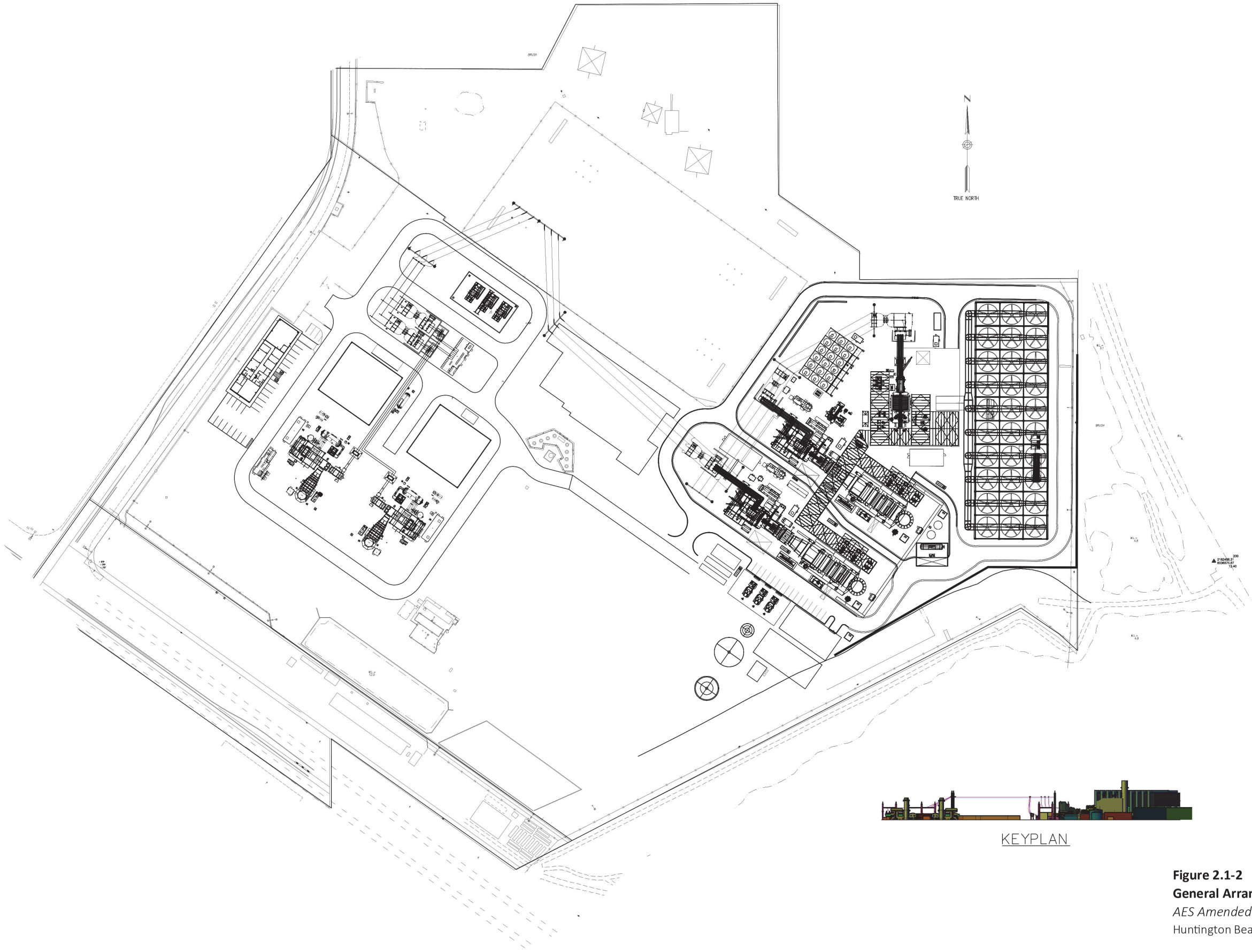
EXHIBIT 1

Figure 2.1-1. HBEP Project Location
AES Amended Huntington Beach Energy Project
Huntington Beach, California

ch2m

\\yosemite\proj\AESCorp\491232DiscPhaseRep\AFC_Archive\HBGS\GIS\AES\MapFiles\Huntington_beach\Project\PTA\Huntington_Expanded_Area.mxd

EXHIBIT 2

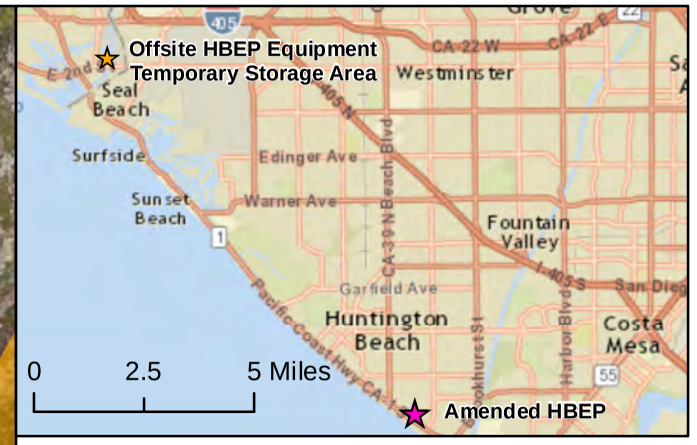


KEYPLAN

Figure 2.1-2
General Arrangement/Site Plan
AES Amended Huntington Beach Energy Project
Huntington Beach, California

Exhibit 3a

Exhibit 3b



Legend

- AES Huntington Beach Generating Station
- AES Amended Huntington Beach Energy Project
- 250-Foot Radius From Project Site

Wetland Type

- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

Sources:
1. ESRI
2. U.S. Fish and Wildlife Service, NWI (2015)

N

0 200 400
Feet

Exhibit 4

Figure 5.2-2a. Sheet 01 of 02
National Wetlands Inventory
AES Amended Huntington Beach Energy Project
Huntington Beach, California

ch2m

\\yosemite\proj\AESCorp\491232DiscPhaseRep\AFC_Archive\HBGS\GIS\AES\MapFiles\Huntington_beach\Biological\PTA\Huntington_wetland_delineation.mxd

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January 3, 2013

VIA EMAIL

Ms. Felicia Miller, Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Huntington Beach Energy Project (12-AFC-02
Applicant's Supplemental Response to Data Request #27 (Biological Resources)

Dear Ms. Miller:

On behalf of Applicant AES Southland Development, LLC, please find enclosed herewith for docketing Applicant's supplemental response to Staff's Data Request #27 (Biological Resources).

Respectfully submitted,

Melissa A. Foster

MAF:jmw
Enclosure
cc: Proof of Service List

Huntington Beach Energy Project

(12-AFC-02)

Supplemental Data Response, DR27

Submitted to

California Energy Commission

Submitted by

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

January 3, 2013

Exhibit 5

Supplemental Data Response to Biological Resources DR27

DATA REQUEST

27. Please provide a wetland delineation using the guidelines of the USACE (1987 USACE Wetlands Delineation Manual) and guidelines of the Cal. Code Regs., tit. 14, § 13577 to assess any direct or indirect temporary impacts to wetlands adjacent to the power plant site and laydown areas.

Response: Applicant incorporates by reference herein the response provided by Applicant to Data Request DR27 on November 2, 2012. In addition to the information provided in response to DR27 on November 2, 2012, Applicant provides the following information:

The California Energy Commission (CEC) biologist, Anwar Ali, made an additional request during the Huntington Beach Energy Project (HBEP) workshop on November 14, 2012, that the Applicant complete an Arid West Region wetland determination data form for one soil pit within the fuel oil tank containment basin (the data form available in USACE, 2008). The completed Arid West Regional data form and photo log (showing the one soil pit) are included is this supplemental response. As documented in the attached data form and photo log completed by Melissa Fowler, Biologist, CH2M HILL, Inc., none of the three wetland indicators set forth in Section 13577 (hydrophytic vegetation, hydric soil, and/or wetland hydrology) is present within the fuel oil tank containment basin on the HBEP site (SP-01).

Reference:

United States Army Corps of Engineers (USACE). 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Available online at: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046489.pdf

Attachment DR27-1
Arid West Regional Data Form and Photo Log

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: HUNTINGTON BEACH ENERGY MARKET City/County: HUNTINGTON BEACH / ORANGE COUNTY Sampling Date: 30 NOV 2017

Applicant/Owner: AES State: CA Sampling Point: SP-01

Investigator(s): MELISSA FOWLER Section, Township, Range: SECTION 13, TOWNSHIP 06 SOUTH, RANGE 11 WEST

Landform (hillslope, terrace, etc.): DEPRESSION Local relief (concave, convex, none): SLIGHTLY CONCAVE Slope (%): 3%

Subregion (LRR): MEDITERRANEAN CA (LRR C) Lat: 33° 38' 41.43" N Long: 117° 58' 33.99" W Datum: WGS 84

Soil Map Unit Name: TIDAL FLATS (ZII) NWI classification: PUBFx AND PUSCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
FUEL OIL TANK CONTAINMENT BASIN

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
NO VEGETATION PRESENT, ACTIVELY MANAGED FUEL OIL TANK CONTAINMENT BASIN.

SOIL

Sampling Point: SP-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2.5	5YR 4/3	100					SANDY LOAM	
2.5-4	10YR 5/4	95					SANDY LOAM	SLIGHT MOISTURE
		5						ROCKS
4-12"	10YR 5/4	100					SAND	NO MOISTURE
BOTTOM OF PIT								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

MOISTNESS IS PRESENT 0-5" FROM RAINFALL

VERY LIGHT DAMPNESS

Huntington Beach Energy Project

Fuel Oil Tank Containment Basin: Soil Pit (SP-01)

Photo 1: Location of soil pit prior to excavation.

Photo 2: Soil pit.

Photo 3: Soil sample.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE HUNTINGTON BEACH ENERGY PROJECT

Docket No. 12-AFC-02
PROOF OF SERVICE
(Revised 12/24/12)

SERVICE LIST:

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COMMISSION DOCKET UNIT
California Energy Commission – Docket Unit
Attn: Docket No. 12-AFC-02
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.ca.gov

OTHER ENERGY COMMISSION PARTICIPANTS (LISTED FOR CONVENIENCE ONLY):

After docketing, the Docket Unit will provide a copy to the persons listed below. Do not send copies of documents to these persons unless specifically directed to do so.

ANDREW McALLISTER
Commissioner and Presiding Member

KAREN DOUGLAS
Commissioner and Associate Member

*indicates change

Raoul Renaud
Hearing Adviser

OTHER ENERGY COMMISSION PARTICIPANTS (LISTED FOR CONVENIENCE ONLY) (cont.):

Eileen Allen
Commissioners' Technical
Adviser for Facility Siting

David Hungerford
Adviser to Commissioner McAllister

Patrick Saxton
Adviser to Commissioner McAllister

Galen Lemei
Adviser to Commissioner Douglas

Jennifer Nelson
Adviser to Commissioner Douglas

Felicia Miller
Project Manager

Kevin W. Bell
Staff Counsel

DECLARATION OF SERVICE

I, Judith M. Warmuth, declare that on January 3, 2013, I served and filed copies of the attached **Applicant's Supplemental Response to Data Request #27 (Biological Resources)** dated January 3, 2013. This document is accompanied by the most recent Proof of Service list, which I copied from the web page for this project at:
http://www.energy.ca.gov/sitingcases/huntington_beach_energy/index.html.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, as appropriate, in the following manner:

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

☒ I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those parties noted above as "hard copy required"; **OR**

☐ Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: January 3, 2013

Judith M. Warmuth

PROJECT DESCRIPTION - FIGURE 2
Amended Huntington Beach Energy Project - Construction / Laydown Parking Areas

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: CH2M - Figure 2.3-3 (Rev 1)

Exhibit 6

Exhibit 7

Exhibit 8 **– Recommended New BIO Condition**

Wetland Mitigation Plan

PRIOR TO STARTING PROJECT CONSTRUCTION, AES shall submit for review and written approval of the CPM a Wetland Mitigation Plan for all direct wetland impacts resulting from the proposed project. The Plan shall be developed by a qualified wetland or restoration ecologist in consultation with the California Coastal Commission, the California Department of Fish & Wildlife, and U.S. Fish & Wildlife Service. AES shall undertake development in conformance with the approved final Plan.

The Plan, at a minimum, shall include:

Site Plan

1. A detailed final site plan of the selected coastal wetland mitigation site including both the proposed restoration area and the surrounding buffer areas. The site plan shall include existing and proposed hydrologic, soil and vegetative conditions of the site, engineering/ grading plans and schedule, erosion control plans and schedule, weeding plans and schedule, planting plans and schedule, short- and long-term irrigation needs, on-going maintenance and management plans, and a monitoring plan as described below.

2. A description of how the site will meet success criteria consisting of at least 90% coverage of native vegetation within five years and natural hydrology sufficient to support the native vegetation at the site.

3. The final design and construction methods that will be used to ensure the site achieves the above success criteria.

4. Provisions for submittal, within 30 days of completion of initial restoration work, of "as built" plans demonstrating that the wetland mitigation site has been established in accordance with the approved design and construction methods.

5. Provisions for submittal of a wetland delineation of the mitigation site at the end of five years to confirm total acreage mitigated.

6. If the selected site will be subject to sea level rise, the wetland mitigation plan should consider various projected sea level rise scenarios that could occur over the life of the approved project to anticipate any direct and indirect environmental changes to the mitigation site from sea level rise or other climatic changes, and should provide liberal buffer zone and "habitat migration corridors" to allow sensitive habitat and species to migrate inland or upland as sea level rises in the event that the most extreme sea level rise projections are realized. The final mitigation site plan shall analyze potential impacts from sea level rise, such as changes to the area or extent of the mitigation site, potential barriers to inland migration of the wetland mitigation site, impacts of increased salinity on wetland type and function, and how the project would address these impacts to ensure that the mitigation site can adapt, persist and maintain hydrologic and ecological

functions over time. The plan should require that additional habitat be restored when the development allowed by this permit blocks necessary upland migration due to sea level rise. The mitigation design should incorporate flexibility to allow for project changes or modifications if sea level rise is greater than anticipated in the initial design.

Monitoring

7. Provisions for monitoring consistent with final approved monitoring requirements as described below. The monitoring, at a minimum, shall include the following:
    a. A baseline assessment, including photographs, of the current physical and ecological condition of the proposed mitigation site, including as appropriate, a wetland delineation conducted according to the definitions in the Coastal Act and the Coastal Commission's Regulations, a detailed site description and map showing the area and distribution of vegetation types and site topography, and a map showing the distribution and abundance of sensitive species that includes the footprint of the proposed mitigation.
    b. Projected sea level rise scenarios for life of the mitigation project consistent with the life of the approved development project. Sea level rise scenarios should be used to perform an impact analysis that quantifies total projected erosion rates and changes in sediment flows and other physical properties and which projects future flood elevations, surface drainage, runoff groundwater depth and salinity and changes to wetland extent. If applicable, the location of any species or habitats sensitive to change or reduced vigor from inundation, saltwater intrusion or other impacts associated with sea level rise or climate change should be mapped along with any barriers to inland migration.
    c. A description of the mitigation goals, including, as appropriate, any changes to site topography, hydrology, vegetation types, presence or abundance of sensitive species, and wildlife usage, as well as any anticipated measures for and adaptive management in response to sea level rise or other climatic changes. The description shall include:
        i. Planned site preparation and invasive plant removal;
        ii. Grading and land contouring needed to remove any natural barriers to inland migration with sea level rise and to maintain hydrologic function, where applicable.
        iii. The planting palette (seed mix and container plants), planting design, source of plant material, methods and timing of plant installation, erosion control measures, duration and use of irrigation, and measures for remediation if success criteria (performance standards) are not met. The planting palette shall be made up exclusively of native plants that are appropriate to the habitat and region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used.
        iv. Methods to document and report the physical and biological "as-built" condition of the restoration or mitigation site within 30 days of completion of the initial restoration activities. This "as-built" report is to describe the field implementation of the approved Plan in narrative and photographs,

report any problems in the implementation and their resolution, and include any recommendations for future adaptive management. The "as built" report shall be completed by a qualified biologist, who is independent of the installation contractor.

v. Methods to conduct interim monitoring and maintenance of the site meant to ensure that the site will meet success criteria within five years, including interim performance standards, sampling design, number and frequency of sampling, and sampling methods; and adaptive management measures that may be implemented to ensure success criteria are met.

d. Provision for submission of annual reports of monitoring results to the CPM for the duration of the required monitoring period, beginning the first year after submission of the "as-built" report. Each report shall be cumulative and shall summarize all previous results. Each report shall document the condition of the restoration with photographs taken from the same fixed points in the same directions. Each report shall also include a "Performance Evaluation" section where information and results from the monitoring plan are used to evaluate the status of the restoration project in relation to the interim performance standards and final success criteria.

e. Description for each habitat type within the site that includes total ground cover of all vegetation and of native vegetation, vegetative cover of dominant species, wildlife usage including types and frequency of wildlife species, hydrology, including timing, duration and location of water movement, and presence and abundance of sensitive species or other individual "target" species.

f. Provisions for submission of a final monitoring report to the CPM at the end of the final monitoring period. The final report must be prepared by a qualified restoration ecologist. The report must evaluate whether the restoration site conforms to the success criteria set forth in the approved final mitigation plan. The report must address all of the monitoring data collected over the monitoring period.

8. If the final report indicates that the mitigation has been unsuccessful, in part or in whole, based on the approved success criteria, the applicant shall submit within 90 days a revised or supplemental mitigation program to compensate for those portions of the original program that did not meet the approved success criteria.

BIOLOGICAL RESOURCES

BIO-1 APPOINTMENT AND QUALIFICATIONS OF DESIGNATED BIOLOGIST

The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval and to the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) for review and comment.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least one year of field experience with biological resources found in or near the project area.

Current or prior possession of USFWS 10(a)(1)(A) permit and/or CDFW scientific collecting permit is preferred, but not required.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

The designated biologist may be replaced by submitting the required resume, references and contact information to the CPM for review and approval and to CDFW and USFWS for review and comment.

VERIFICATION: The project owner shall submit the specified information at least 75 days prior to the start of site mobilization or construction-related ground disturbance activities. No pre-construction site mobilization or construction related activities shall commence until a Designated Biologist has been approved by the CPM.

The project owner may replace a Designated Biologist by submitting the required resume, references and contact information to the CPM for review and approval and to the CDFW and USFWS for review and comment, at least ten working days prior to the

termination or release of the then-current Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

The CPM may withhold approval of a Designated Biologist based upon proof that a proposed Designated Biologist has repeatedly failed to comply with the conditions of any Energy Commission license as they pertain to biological resources. The CPM shall meet and confer with the project owner regarding the need to replace a Designated Biologist. Removal may occur if the CPM can establish that the Designated Biologist has repeatedly failed to comply with the conditions of the HBEP license that pertain to biological resources.

In the absence of comments, the CPM shall deem the Designated Biologist acceptable to USFWS and/or CDFW.

BIO-2 DUTIES OF DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR(S)

The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, demolition, and construction activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner and CPM. The Designated Biologist Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) (Condition of Certification BIO-6) to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

5. Inspect or direct the site personnel how to inspect active construction areas where animals may have become trapped prior to construction commencing each day. Inspect or direct the site personnel how to inspect the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way**.** Inspect soil or spoil stockpiles and dust abatement watering for compliance with Condition of Certification **BIO-7**. Inspect erosion control materials (e.g., hay bales) to confirm weed-free certification. Inspect weed infestations and monitor eradication measures to determine success. Inspect trash receptacles, monitor site personnel compliance with trash handling, pet prohibitions, and all other WEAP components (Condition of Certification **BIO-5**);

6. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;

7. Respond directly to inquiries of the CPM regarding biological resource issues;

8. Maintain written records of the tasks specified above and those included in the BRMIMP;

9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and

10. Maintain the ability to be in regular, direct communication with representatives of CDFW, USFWS, and CPM, including notifying these agencies of dead or injured listed species and reporting special status species observations to the California Natural Diversity Database.

VERIFICATION: The Designated Biologist shall notify the CPM of any non-compliance or special-status species injury or mortality within one (1) working day of the incident. The Designated Biologist shall submit in the MCR to the CPM copies of all written reports and summaries that document construction activities that have the potential to affect biological resources. The Designated Biologist's written records will be made available for the CPM's inspection on request at any time during normal business hours. During project operation, the Designated Biologist(s) shall submit

record summaries in the annual compliance report unless their duties cease, as approved by the CPM.

BIO-3 APPOINTMENT AND QUALIFICATIONS OF BIOLOGICAL MONITOR

The project owner shall submit the resume, at least three references, and contact information of the proposed Biological Monitor**(**s**)** to the CPM for approval. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

The project owner may replace a Biological Monitor by submitting the required resume, references and contact information to the CPM for review and approval and to CDFW and USFWS for review and comment,, at least ten working days prior to the termination or release of the then-current Biological Monitor. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Biological Monitor is proposed to the CPM for consideration.

VERIFICATION: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any project-related site disturbance activities. Within 10 days of completion of training, the Designated Biologist shall submit a written statement to CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIO-4 POWERS OF DESIGNATED BIOLOGIST/BIOLOGICAL MONITOR(S)

The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification.

If required by the Designated Biologist or Biological Monitor(s), the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner and the construction/operation manager when to resume activities;

3. Notify the CPM if there is a halt of any activities and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage; and

4. The CPM, in coordination with CDFW or USFWS as appropriate, will determine if corrective action has been effective and will direct the project owner to take further corrective action as needed.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

VERIFICATION: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem within one (1) working day of initiating the corrective action.

Whenever corrective action is taken by the project owner, a determination of success or failure would be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

BIO-5 BIOLOGICAL RESOURCES WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

The project owner shall develop and implement an HBEP-specific Worker Environmental Awareness Program (WEAP). and submit the WEAP to the CPM for review and approval and to the USFWS and CDFW for review and comment. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, and subcontractors. The

WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting electronic media and written material is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, explain the reasons for protecting these resources, and the function of flagging in designating sensitive resources and authorized work areas;
3. Discuss federal and state laws afforded to protect the sensitive species and explain penalties for violation of applicable laws, ordinances, regulations, and standards (e.g., federal, and state endangered species acts);
4. Place special emphasis on the light-footed clapper rail, western snowy plover, California least tern and Belding's savannah sparrow, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection and status, penalties for violations, reporting requirements, and protection measures;
5. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
6. Include a discussion of the biological resources conditions of certification;
7. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
8. Include a training acknowledgment form to be signed by each worker indicating that they received the WEAP training and shall abide by the guidelines.

The specific WEAP shall be administered by a competent individual(s) acceptable to the Designated Biologist.

VERIFICATION: At least 45 days prior to the start of any planned project-related site disturbance activities, the project owner shall provide to the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program. The Notice to Proceed will not be issued until the WEAP has been approved by the CPM.

The project owner shall provide in the monthly compliance reports the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date.

Throughout the life of the project, WEAP shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attend the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CMP upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate indicating that they have completed the required training.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the completion of all project construction activities. During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

In the absence of comments, the CPM shall deem the WEAP acceptable to USFWS and/or CDFW.

BIO-6 BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN (BRMIMP)

The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the CPM for review and approval and to CDFW and USFWS for review and comment and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include the following:

1. All biological resource mitigation, monitoring, and compliance measures proposed and whether the project owner has agreed to the proposed measures;

2. All biological resource conditions of certification identified in the Commission Decision as necessary to avoid or mitigate impacts;

3. All biological resource mitigation, monitoring, and compliance measures required in other state agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit;

4. A list or tabulation of all sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;

5. All required mitigation measures for each sensitive biological resource;

6. A detailed description of measures that shall be taken to avoid or mitigate disturbances from construction and demolition activities;

7. All locations, shown on a map at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

8. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities prior to any site or related facilities mobilization disturbance, for comparison with aerial photographs at the same scale to be provided and subsequent to completion of project construction (see Verification).

9. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

10. Performance standards from each biological resource condition of certification to determine if mitigation and conditions are or are not successful;

11. Remedial measures to be implemented if performance standards are not met;

12. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s);

13. A process for proposing BRMIMP modifications to the CPM and appropriate agencies for review and approval; and

14. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database (CNDDB) per CDFW requirements.

VERIFICATION: No fewer than 45 days prior to planned start of construction, the project owner will submit a draft BRMIMP to the CPM for review and approval and to CDFW and USFWS for review and comment. The Notice to Proceed will not be issued until the BRMIMP has been approved by the CPM. In the absence of comments, the CPM shall deem the BRMIMP acceptable to USFWS and/or CDFW.

If the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit or any other permits has not have not yet been received when the BRMIMP is first submitted, those permits shall be submitted to the CPM, the CDFW, and USFWS within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit conditions, if any.

Prior to implementing any changes to the approved BRMIMP, the project owner shall provide a draft of the proposed modification to the CPM for review and approval and to CDFW and USFWS for review and comment. No modification shall be implemented until approved by the CPM. In the absence of comments, the CPM shall deem the modification to the BRMIMP acceptable to USFWS and/or CDFW.

Implementation of all BRMIMP measures shall be reported in the monthly compliance reports by the Designated Biologist (i.e., survey results, construction activities that were monitored, species observed). Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction closure report identifying which items of the BRMIMP have been completed; a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases; and which mitigation and monitoring items are still outstanding. The Construction Closure Report will include a set of aerial photographs of the site at an approved scale for comparison with the pre-construction set (Item 8 above).

BIO-7 GENERAL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project owner shall implement the following measures during site mobilization, construction, operation, and closure to manage their project site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to demolition or construction activities in consultation with the Designated Biologist. Spoils shall be stockpiled in disturbed areas which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

2. At the end of each work day, the Designated Biologist or Biological Monitor, shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they will immediately notify the Designated Biologist and/or Biological Monitor. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the animal to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

3. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* (APLIC 2012) to reduce the likelihood of large bird electrocutions and collisions.

4. Spoils shall not be stockpiled adjacent to the southeastern fence line to minimize potential for spoils to enter into adjacent wetlands.

5. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

6. To the extent feasible, FAA visibility lighting shall employ only strobed, strobe-like or blinking incandescent lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" duel strobes are preferred, and no steady burning lights (e.g., L-810s) shall be used.

7. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract California least tern predators to construction sites. During construction, site personnel shall patrol these areas to ensure water does not puddle and attract crows and other wildlife to the site, and shall take appropriate action to reduce water application rates where necessary.

8. During construction, each employee shall report on-site deaths, including road kill, and injuries of special-status species to the Designated Biologist or Biological Monitor immediately upon discovery. The Designated Biologist or Biological Monitor shall remove the carcass or injured animal promptly. The Designated Biologist or Biological Monitor shall immediately report any dead or injured special-status species to CDFW and/or USFWS and the CPM, and the project owner shall follow instructions that are provided by CDFW or USFWS. The Designation Biologist shall maintain a record of all dead or injured special-status species, including species name, physical characteristics of the animal (sex, age class, length, weight), disposition of the animal, and other pertinent information and shall include this information in the MCR.

   During operations, each employee shall report all deaths, including road kill, and injuries of special-status species to the Project Environmental Compliance Monitor immediately upon discovery. shall be notified. The Project Environmental Compliance Monitor shall remove the carcass or injured animal promptly. The Project

Environmental Compliance Monitor shall immediately report any dead or injured special-status species to CDFW and/or USFWS and the CPM, and the project owner shall follow instructions that are provided by CDFW or USFWS. The Project Environmental Compliance Monitor shall maintain a record of all dead or injured special-status species, including species name, physical characteristics of the animal (sex, age class, length, weight), disposition of the animal, and other pertinent information.

9. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan (see Condition of Certification **HAZ-2**). Hazardous spills shall be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Any on-site servicing of vehicles or construction equipment shall take place only at a designated area approved by the Designated Biologist. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

10. During construction all trash and food-related waste shall be placed in self-closing containers and removed weekly or more frequently from the site. Workers shall not feed wildlife or bring pets to the project site.

11. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

12. The project owner shall implement the following measures during construction and operation to prevent the spread and propagation of nonnative, invasive weeds:

    a**.** Limit the size of any vegetation and/or ground disturbance to the minimum area needed for safe completion of project activities, and limit ingress and egress to defined routes;

    b**.** Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations. Invasive non-native species shall not be used in landscaping plans and erosion control.

Monitor and rapidly implement control measures to ensure early detection and eradication of weed invasions.

13.. During construction and operation, the project owner shall conduct pesticide management in accordance with standard BMPs. The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. Herbicide applications must follow EPA label instructions. Minimize use of rodenticides and herbicides in the project area and prohibit the use of chemicals and pesticides known to cause harm to non-target plants and wildlife. The project owner shall only use pesticides for which a "no effect" determination has been issued by the EPA's Endangered Species Protection Program for any species likely to occur within the project area or adjacent wetlands. If rodent control must be conducted, zinc phosphide or an equivalent product shall be used.

VERIFICATION: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the monthly compliance reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written Construction Completion Report identifying how measures have been completed (see Condition of Certification **BIO-6** verification).

Monthly and annual compliance reports will include results of all regular inspections by the Designated Biologist and Biological Monitor(s), including but not limited to the requirements cited above and in Condition of Certification BIO-2.

The project owner must maintain written records of vehicle and equipment inspection and maintenance, and provide summaries in each monthly and annual compliance report. The complete written vehicle maintenance record will be available for the CPM's inspection during normal business hours.

The BRMIMP (Condition of Certification **BIO-6**) must include affirmation by the project owner that:

- All electrical component design conforms to applicable APLIC guidelines; and
- All soil binders conform to the requirements stated above.

BIO-8 PRE-CONSTRUCTION NEST SURVEYS AND IMPACT MINIMIZATION MEASURES FOR BREEDING BIRDS

Pre-construction nest surveys shall be conducted if construction or demolition activities will occur from February 1 through August 31. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat and substrate within the project site and areas surrounding the project site within 300 feet of the project boundary.

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 14 days prior to initiation of construction activity. One survey needs to be conducted within the 3-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks during February 1 through August 31 in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

3. If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. Specific buffer distances are provided below for applicable avian groups (Biological Resources Table 1); these buffers may be modified with the CPM's approval. For special-status species, if an active nest is identified, the size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM (in coordination with CDFW and USFWS). Nest locations shall be mapped using GPS technology.

Biological Resources Table 1
HBEP Construction and Demolition Buffers for Active Nests

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Bitterns and herons	Black-crowned night heron, great blue heron, great egret, green heron, snowy egret	250
Cormorants	Double-crested cormorant	100
Doves	Mourning dove	25
Geese and ducks	American widgeon, blue-winged teal, cinnamon teal, Canada goose, gadwall, mallard, northern pintail, ruddy duck	100
Grebes	Clark's grebe, eared grebe, horned grebe, pied-billed grebe, western grebe	100
Hummingbirds	Allen's hummingbird, Anna's hummingbird, black-chinned hummingbird	25
Plovers	Black-bellied plover, killdeer	50
Raptors (Category 1)	American kestrel, barn owl, red-tailed hawk	50
Raptors (Category 2)	Cooper's hawk, red-shouldered hawk, sharp-shinned hawk	150

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Raptors (Category 3)	Northern harrier, white-tailed kite	These are special-status species; buffer determined in consultation with CPM
Stilts and Avocets	American avocet, black-necked stilt	150
Terns	Elegant tern, Forster's tern, royal tern	100
Passerines (cavity and crevice nesters)	House wren, Say's phoebe, western bluebird	25
Passerines (bridge, culvert, and building nesters)	Black phoebe, cliff swallow, house finch, Say's phoebe	25
Passerines (ground nesters, open habitats)	Horned lark	100

Avian Group	Species Potentially Nesting in the Project Vicinity	Buffer for Construction and Demolition Activities (feet)
Passerines (understory and thicket nesters)	American goldfinch, blue-gray gnatcatcher, bushtit, California towhee, common yellowthroat, red-winged blackbird, song sparrow, Swainson's thrush	25
Passerines (scrub and tree nesters)	American crow, American goldfinch, American robin, blue-gray gnatcatcher, Bullock's oriole, bushtit, Cassin's kingbird, common raven, hooded oriole, house finch, lesser goldfinch, northern mockingbird	25
Passerines (tower nesters)	Common raven, house finch	25
Passerines (marsh nesters)	Common yellowthroat, red-winged blackbird	25
Species not covered under MBTA	Domestic waterfowl, including domesticated mallards, feral (rock) pigeon, European starling, and house sparrow	N/A

4. If active nests are detected during the survey, the Designated Biologist or Biological Monitor shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the

Designated Biologist or Biological Monitor shall immediately implement adaptive measures to reduce disturbance in coordination with the CPM. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity.

5. If active nests are detected during the survey, the Designated Biologist shall prepare a Nest Monitoring Plan. The Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist or Biological Monitor, disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made.

6. A qualified biologist shall conduct a habitat assessment for light-footed clapper rail shall be conducted in Magnolia and Upper Magnolia Marshes during the breeding season (March 1 to August 1) immediately preceding the commencement of construction and demolition activities. If suitable breeding habitat for the light-footed clapper rail is identified, focused surveys will be conducted prior to any construction or demolition activities. Surveys are not required if no suitable habitat is present. If clapper rails are detected during the breeding season, the CPM, CDFW, and USFWS will be notified and the project owner will consult with the USFWS for incidental take authorization, if required.

VERIFICATION: The project owner shall provide notification to the CPM, CDFW, and USFWS at least 2 weeks prior to initiating the habitat assessment and any subsequent surveys for light-footed clapper rail; notification will include the name and resume of the biologist(s) conducting the habitat assessment and surveys and the timing of the surveys. Within ten (10) days of completion of the field work, the project owner shall provide the CPM, CDFW, and USFWS a -report describing the findings of the preconstruction nest surveys and the light-footed clapper rail habitat assessment and focused survey (if surveys were conducted), including a description and representative photographs of habitat in the marshes; the time, date, methods, and duration of the surveys; identity and qualifications of the surveyor(s); and a list of

species observed. If active nests are detected during the surveys, the reports shall include a map or aerial photo identifying the location of the nest(s) and shall depict the boundaries of the proposed no disturbance buffer zone around the nest(s). The CPM will consider any timely comments received from CDFW and USFWS in review of the -report. In the absence of comments within that timeframe, the CPM shall deem the report acceptable to USFWS and/or CDFW.

Additionally, the nest monitoring plan shall be submitted to the CPM for review and approval and to USFWS and CDFW for review and comment prior to any planned demolition or construction activities in the vicinity of any active nest. No such demolition or construction activities may proceed without CPM approval of the nest monitoring plan..If light-footed clapper rails are documented during the breeding season in Upper Magnolia or Magnolia Marshes, prior to any planned pile driving on the site or demolition or construction activities within 400 feet of the marsh boundary, the project owner will notify the CPM and will consult with the USFWS for incidental take authorization or a determination that no incidental take authorization is required. All impact avoidance and minimization measures related to nesting birds shall be included in the BRMIMP and implemented. In the absence of comments within that timeframe, the CPM shall deem the nest monitoring plan acceptable to USFWS and/or CDFW.

Implementation of the measures shall be reported in the monthly compliance reports by the Designated Biologist.

ATTACHMENT B – JULY 2014 COASTAL COMMISSION 30413(d) REPORT ON 12-AFC-02 HUNTINGTON BEACH ENERGY PROJECT

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Coastal Commission Report
to
California Energy Commission
on
Application for Certification 12-AFC-02
– AES Huntington Beach Energy Project –

Reviewed pursuant to
Coastal Act Section 30413(d)

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ATTACHMENTS

EXHIBITS

I. FINDINGS AND RECOMMENDED SPECIFIC PROVISIONS

A. PROJECT DESCRIPTION

The Huntington Beach power plant is an existing electrical generating facility located in the City of Huntington Beach (see **Exhibit 1 – Area Map**). It is owned and operated by AES Southland, LLC (hereafter, either "the applicant" or "AES"). The power plant site covers about 60 acres in the southeast portion of the City and borders the Pacific Coast Highway, the Magnolia Marsh wetlands, and a flood control channel (see **Exhibit 2 – Site Plan**). A switchyard within the site is owned and operated by Southern California Edison.

The existing facility includes five electrical generating units, four of which are currently operational. The facility's existing generating units are cooled using a "once-through cooling" process in which AES pumps in up to several hundred million gallons per day of seawater from an open intake located about 2500 feet offshore. As the seawater is pumped through the facility, it removes excess heat from the generating units and is then discharged back into the Pacific Ocean through an outfall pipe.

Proposed Huntington Beach Energy Project ("HBEP")
In June 2012, AES submitted its Application for Certification ("AFC") to the Energy Commission. AES is proposing to upgrade and expand the facility on about 28.6 acres of its site with new equipment that would produce about 936 MW of electrical power (see **Exhibit 3 – Conceptual Aerial View**). The proposed HBEP is more fully described in the CEC's Final Staff Assessment ("FSA"), available here: http://docketpublic.energy.ca.gov/PublicDocuments/12-AFC-02/TN202405_20140602T085620_Final_Staff_Assessment.pdf

The main project components include demolition of the existing generating units, and construction of two new power blocks, each capable of generating up to about 470 megawatts. The new facility will be air-cooled and will therefore no longer rely on using seawater for cooling. Visually, the new facility will have an overall lower profile than the existing facility – for example, the existing facility includes two boiler exhaust stacks about 200 feet high, while the proposed HBEP would have a maximum height of about 120 feet. AES has proposed a visual enhancement and screening plan that includes three surfboard sculptures leaning against the HBEP and a mesh screen around part of the facility that resembles a wave (see **Exhibits 4a and 4b – Proposed Visual Amenities**). In April 2014, the City adopted a resolution supporting these proposed visual enhancements.

AES proposes to construct the HBEP in stages by first demolishing some of the generating units to provide a footprint for one of the new power blocks, then demolishing some of the remaining units to allow for construction of the second power block, and then completing demolition of the existing generating units and support structures. During the construction period, AES proposes to locate its construction laydown area on about six acres of this site, along with about 16 acres of its Alamitos Generating Station, located about 15 miles north in the City of Long Beach. The CEC's review anticipates an expected construction period of about eight years and a power plant operating life of 30 years, which would extend to between 2050 and 2055.

B. REGULATORY FRAMEWORK AND STANDARD OF REVIEW

Pursuant to the Warren-Alquist Act, the CEC has exclusive siting authority over thermal electric power plants of 50 megawatts or greater capacity proposed to be built in California. According to section 25500 of the Warren-Alquist Act, "The issuance of a certificate by the [Energy] commission shall be in lieu of any permit, certificate, or similar document required by any state, local or regional agency, or federal agency to the extent permitted by federal law, for such use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law." Section 25523(a) of the Warren-Alquist Act additionally requires the CEC to assess the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety. Moreover, section 25523(d)(1) of that Act requires that the CEC make findings regarding the conformity of the proposed project with all applicable laws, including federal laws, such as the Coastal Zone Management Act.[1]

The CEC evaluates and makes its determination regarding proposed facilities through its Application for Certification (AFC) process. When the CEC is considering licensing a facility pursuant to its AFC process, it is the lead state agency for purposes of the California Environmental Quality Act (CEQA), and the FSA includes analyses similar to those normally provided in an Environmental Impact Report (EIR). The FSA provides the CEC staff analysis of the proposed project, examines engineering, environmental, public health, and safety aspects of the facility, and includes proposed conditions of certification, which are similar to mitigation measures identified in an EIR.

While the CEC has exclusive jurisdiction over siting proposed power plants as described above, both the Coastal Act and the Warren-Alquist Act provide a role for the Coastal Commission to play in the CEC's review of power plants proposed to be located in the coastal zone. Both Acts include mechanisms authorizing the Coastal Commission to evaluate whether the proposal conforms to Coastal Act policies and to inform the CEC of the results of this evaluation. Section 30413(d) of the Coastal Act requires the Coastal Commission to 1) "participate in proceedings" that the CEC undertakes pursuant to its siting authority "with respect to any thermal powerplant…to be located…within the coastal zone," and 2) submit to the CEC a report (hereinafter, the "30413(d) report") on the proposed project's conformity with the Coastal Act's resource protection and use policies, and the policies and implementing ordinances of the certified local coastal program ("LCP") (in this case, the certified LCP of the City of Huntington Beach). Additionally, Warren-Alquist Act Section 25523(b) requires the CEC to include in its decision on the AFC any "specific provisions" provided by the Coastal Commission in its 30413(d) report to bring the proposed project into conformity with the policies of the Coastal Act. That section also establishes that the CEC may omit the specific provisions of the Coastal Commission's report only if the CEC finds that adopting the provisions would result in greater adverse impact on the environment or that such provisions would not be feasible. Staff of the two Commissions have prepared a Memorandum of Agreement that describes the manner in

[1] The CEC does not review or issue NPDES permits, and the power plant operator must still obtain those permits from the State or Regional Water Quality Control Boards, as the federal Environmental Protection Agency delegated that authority to just those Boards.

which the two Commissions will coordinate their respective reviews and identifies the process for the CEC to consider the Coastal Commission's findings and recommended specific provisions (see **Attachment B – Memorandum of Agreement**).

Coastal Act section 30413(d) directs that the Coastal Commission's report consider and make findings regarding the following:

> *(1) The compatibility of the proposed site and related facilities with the goal of protecting coastal resources.*
>
> *(2) The degree to which the proposed site and related facilities would conflict with other existing or planned coastal-dependent land uses at or near the site.*
>
> *(3) The potential adverse effects that the proposed site and related facilities would have on aesthetic values.*
>
> *(4) The potential adverse environmental effects on fish and wildlife and their habitats.*
>
> *(5) The conformance of the proposed site and related facilities with certified local coastal programs in those jurisdictions, which would be affected by any such development.*
>
> *(6) The degree to which the proposed site and related facilities could reasonably be modified so as to mitigate potential adverse effects on coastal resources, minimize conflict with existing or planned coastal-dependent uses at or near the site, and promote the policies of this division.*
>
> *(7) Such other matters as the commission deems appropriate and necessary to carry out this division.*

This report is the Coastal Commission's analysis of the proposed project's conformity with the Chapter 3 policies of the Coastal Act and the certified LCP. For this proposed project, the Coastal Commission has focused on the following issue areas: (1) land use, (2) wetlands and environmentally sensitive habitat areas (ESHA), (3) flood, tsunami, and sea level rise, (4) geologic hazards, and (5) public access and recreation. The Coastal Commission's analysis relies largely on the information contained in the CEC staff's Final Staff Assessment ("FSA"), the evidentiary record of this AFC proceeding that has been compiled thus far, and on information identified in the Substantive File Documents described in Attachment A to this report.

C. LAND USE AND ALTERNATIVES

AES proposes to construct the HBEP on part of its existing power plant site. As noted in the FSA's Land Use Section (page 4.5-7), the City's LCP and Land Use Element designate the site as "Public," with allowable uses including public utilities and infrastructure. The site is also within the City's "Subarea 4G – Edison Plant" designation, which allows utility uses and wetland conservation. The FSA's Alternatives Section (at pages 6-7 and 6-8) further identifies the site and adjacent areas as being designated by both the Energy Commission and Coastal Commission as suitable for energy facility expansion.

That designation results from studies and mapping conducted by the two Commissions to identify areas within the state's coastal zone that were unsuitable for locating or expanding power plants due to the presence of sensitive coastal resources.[2] Those studies and mapping effort also identified areas that were suitable for reasonable expansion of existing power plants. For this Huntington Beach site, the identified expansion area includes the entirety of the power plant site as well as the adjacent Plains America Tank Farm.

Despite this designation, AES is currently proposing to use only a portion of the area designated for the HBEP's expansion. Of the approximately 58 acres of the AES power plant site, all of which is within the designated area, the proposed expansion would use only 28.6 acres. Approximately 10 acres are occupied by the existing Southern California Edison substation, which will remain, but there is at least one on-site area, along with the above-mentioned Plains America Tank Farm area that are within the designated expansion area, that appear to be at least partially available for the proposed project and that, if used, could help reduce project-related adverse impacts:

- The AES site includes an 11-acre former tank farm area. AES stated in its AFC application that it intends to lease this area to Poseidon Water for construction of a desalination facility; however, it is unclear when this might occur, and it appears that at least part of this site may be available for at least short-term use during the approximately eight years of planned project construction.

  Part of this tank farm site consisted of wetlands that AES removed without benefit of a coastal development permit, which is the subject of a Coastal Commission staff investigation of a potential violation.[3] Commission staff estimated that the wetlands covered about 3.5 acres of the site; however, it appears that some of the remainder of this site could be used for the power plant expansion.

[2] See Coastal Commission, *Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976*, adopted September 1978, revised 1984, re-adopted December 1985, San Francisco, CA, and Energy Commission, *Opportunities to Expand Coastal Power Plants in California*, Staff Report P700-80-001, June 1980, Sacramento, CA.

[3] See Commission staff's August 3, 2012, Data Adequacy letter for 12-AFC-02 and Commission staff report for Poseidon Water – Appeal #A-5-HNB-10-225 and Application No.: E-06-007, November 2013, available at: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

- Across the flood channel adjacent to the AES site is the Plains America Tank Farm, an approximately 32-acre site that is within the area designated as suitable for power plant expansion. AES is proposing to use about 1.9 acres of that site for construction parking, but similar to the AES tank farm site above, much more of the Plains America site may be available for use for the proposed expansion project, which would likely reduce expected project impacts.

Instead of fully using these areas designated for expansion, AES is proposing to locate several project components offsite and outside the designated area. These include locating three of its five proposed construction parking sites outside the area and locating about 16 acres of project staging at AES's Alamitos Energy Facility about 15 miles north of the expansion site. This approach frustrates the intent of designating the facility site and the surrounding area for consolidation and expansion of energy facilities. It also increases the proposed project's adverse impacts on public access to the shoreline by increasing project-related traffic along 15 miles of coastal highway and using up to 225 parking spaces the City established to provide beach access (see additional discussion in this report's Section I.G – Public Access). This approach will also result in increased adverse effects and potential spills to wetlands adjacent to the Alamitos site and the Pacific Coast Highway route, which include Los Cerritos, the Seal Beach National Wildlife Refuge, Bolsa Chica, and the Huntington Beach wetland complex.

Project-related adverse effects could be avoided or substantially reduced if AES was able to use more of the adjacent areas designated for energy facility expansion. To more fully use the two sites mentioned above, AES may have to remove all or some of the several decommissioned fuel oil storage tanks and associated pipelines; however, the cost and effort of removing this equipment is well within the scope of the project and is similar to work done as part of other AFC proceedings.

Coastal Commission Recommended Specific Provisions

Based on the information available in the AFC record, use of all or part of these areas appears to provide a feasible method to potentially reduce project-related impacts. The Commission therefore recommends the following Specific Provisions to allow Coastal Act and LCP conformity:

- First, CEC staff should determine the availability of these sites for the proposed project by reviewing documentation showing the legal status of the AES and Plains America Tank Farm sites. If all or part of the sites are available for use during this project, CEC staff should prepare a modified staff assessment that identifies whether use of one or both sites will reduce the project's overall expected adverse impacts. The modified assessment should evaluate whether using all or part of the sites for construction staging or parking would reduce the project's expected adverse impacts, including reducing adverse effects on traffic and public access to the shoreline along the 15 miles between HBEP and Alamitos. The assessment should also consider whether use of all or part of either site may be limited due to land use or other conflicts with relevant LCP policies as described below in Section I.D – Wetlands and Environmentally Sensitive Habitat Areas (ESHA).

- Next, should this modified assessment show that all or part of the two sites are available and their use would reduce project-related impacts, we recommend the CEC provide additional opportunity for public review and comment on the modified assessment and possible new or modified conditions.

Conclusion
The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

D. WETLANDS AND ENVIRONMENTALLY SENSITIVE HABITAT AREAS (ESHA)

Coastal Act Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Coastal Act Section 30240 states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 6.1.4 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain organisms and for the protection of human health shall be maintained and, where feasible, restored.*

LCP Policy C 6.1.20 states:

> *Limit diking dredging, and filling of coastal waters, wetlands, and estuaries to the specific activities outlined in Policy 30233 and 30607.1 of the Coastal Act and to those activities required for the restoration, maintenance, and/or repair of the Municipal Pier and marina docks. Conduct any diking dredging and filling activities in a manner consistent with Section 30233 and 30607.1 of the Coastal Act.*

LCP Policy C 7.1.2 states, in relevant part:

> *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values…*

LCP Policy C 7.1.3 states:

> *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

LCP Policy C 7.1.4 states:

> *Require that new development contiguous to wetlands or environmentally sensitive habitat areas include buffer zones. Buffer zones shall be a minimum of one hundred feet setback from the landward edge of the wetland, with the exception of the following:*
>
> *A lesser buffer may be permitted if existing development or site configuration precludes a 100 feet buffer, or conversely, a greater buffer zone may be required if substantial development or significantly increased human impacts are anticipated. In either case, the following factors shall be considered when determining whether a lesser or wider buffer zone is warranted. Reduced buffer zone areas shall be reviewed by the Department of Fish and Game prior to implementation.*
>
> *a) Biological significance of adjacent lands: The buffer should be sufficiently wide to protect the functional relationship between the wetland and adjacent upland.*
> *b) Sensitivity of species to disturbance: The buffer should be sufficiently wide to ensure that the most sensitive species will not be disturbed significantly by permitted development, based on habitat requirements of both resident and migratory species and the short and long term adaptability of various species to human disturbance.*
> *c) Susceptibility of parcel to erosion: The buffer should be sufficiently wide to allow for interception of any additional material eroded as a result of the proposed development based on soil and vegetative characteristics, slope and runoff characteristics, and impervious surface coverage.*
> *d) Use existing cultural features to locate buffer zones: The buffer zones should be contiguous with the environmentally sensitive habitat areas and make use of existing features such as roads, dikes, irrigation canals, and flood control channels where feasible.*

LCP Policy C 7.1.5 states, in relevant part:

> *Notify County, State and Federal agencies having regulatory authority in wetlands and other environmentally sensitive habitats when development projects in and adjacent to such areas are submitted to the City.*

LCP Policy C 7.2.7 states:

> *Any areas that constituted wetlands or ESHA that have been removed, altered, filled or degraded as the result of activities carried out without compliance with Coastal Act requirements shall be protected as required by the policies in this Land Use Plan.*

LCP Policy I-C 8(c) states, in relevant part:

> *For proposed projects within the Coastal Zone, utilize the development review/environmental review process to accomplish the following:*
>
> 1. *Examine each development's potential to affect habitat. To the maximum extent feasible project impacts on habitat shall be minimized through avoidance. In the event mitigation is necessary, mitigation shall be provided on-site if feasible or within the general vicinity if on-site mitigation is not feasible. Determine the necessity for Mitigation Agreements or other coordination with the California Department of Fish and Game, California Coastal Commission and/or federal agencies to obtain necessary permits for developments that appear to affect habitat.*
> 2. *Permit resource dependent and incidental public service related land uses within wetlands and environmentally sensitive habitat areas only if consistent with the following Coastal Act policies: Section 30233 and Section 30240.*
> 3. *Require improving the natural biological value, integrity and function of coastal wetlands and dunes through native vegetation restoration, control of alien plants and animal,* [sic] *landscape buffering and development setbacks.*
> 4. …
> 5. *Review any development proposed for non-wetland areas to ensure that appropriate setbacks and buffers are maintained between development and environmentally sensitive areas to protect habitat quality…*

The findings below separately assess two types of project-related impacts – first, direct wetland impacts within the potential project footprint, and then indirect impacts to adjacent wetlands and ESHA that are likely to occur during facility construction and operations. Both the Coastal Act and the City's LCP include policies requiring the protection of biological productivity in wetlands and environmentally sensitive habitat areas. The policies require that development adjacent to environmentally sensitive areas be sited and designed to prevent impacts which would significantly degrade those areas. The LCP requires buffer zones be established around wetlands to protect them from proposed development.

Direct Wetland Impacts

The FSA states that there are no wetlands within the proposed project footprint, which appears to accurately reflect current conditions within the proposed site. However, as noted above in this report's Section I.C – Land Use and Alternatives, the Commission recommends that CEC staff evaluate whether other areas within or adjacent to the power plant site are available for the proposed project and whether the use of these areas might reduce project-related impacts to coastal resources. These areas include the 11-acre AES tank farm within the power plant site and the adjacent 32-acre Plains America Tank Farm, of which AES plans to use approximately 1.9 acres.

Regarding the AES tank farm area, we understand that it is currently devoid of wetland characteristics; however, as noted above, AES's removal of wetland vegetation in that area several years ago is the subject of a Commission staff investigation of a potential violation. Pursuant to LCP Policy C7.2.7, the areas formerly containing wetlands remain subject to the LCP's wetland and ESHA protection policies.[4] The adjacent Plains America Tank Farm area appears to have similar wetland characteristics within part of its 32 acres, and may have similar limitations on its use. As stated in the previous section, we recommend that the CEC staff evaluation assess the effect of these policies on the potential use of these sites, and that the evaluation be provided for additional public review and comment as part of this AFC proceeding.

Indirect Impacts to Wetlands and ESHA

Several components of the project as currently proposed are inconsistent with LCP Policy C7.1.4, which requires new development to be located at least 100 feet from wetlands.[5] Additionally, project construction and operations are expected to cause adverse indirect impacts to nearby wetlands and ESHA due to dewatering, noise, and vibration. These impacts are described below, along with recommended conditions to ensure the project avoids and minimizes these impacts to the extent feasible, as required by relevant LCP and Coastal Act provisions.

[4] For a more complete description of site characteristics and Commission jurisdiction, see the November 2013 Coastal Commission staff report, available here: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

[5] "Development," as defined in Section 30106 of the Coastal Act and in the LCP, means "on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (commencing with Section 4511).

As used in this section, "structure" includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line."

Background
The HBEP site is part of an extensive area of coastal wetlands and dunes that formerly extended for several miles along this area of the coast. The project site is adjacent to the Magnolia Marsh, which provides a mix of wetlands and environmentally sensitive habitat areas (see **Exhibit 5 – Huntington Beach Wetlands Conservancy Site Plan**). Similar habitat extends onto the HBEP site adjacent to the flood control channel.

Much of this habitat complex is being restored and protected by the Huntington Beach Wetlands Conservancy, including restoration of the adjacent Magnolia Marsh starting in 2009. One of the main goals of the Conservancy's restoration plan is to "maximize salt marsh/tidal habitats with no net harm to threatened and endangered (T&E) species existing on site such as the Belding's Savannah Sparrow." The Magnolia Marsh and other nearby wetland areas provide known or potential habitat for at least several dozen listed sensitive species.[6] The habitat types within and immediately adjacent to the project site include coastal scrub and salt panne, which is noted as particularly important to the endangered Belding's Savannah Sparrow (see **Exhibit 6 – Huntington Beach Wetlands: Vegetation Communities** and **Exhibit 7 – Sensitive Species Habitats**). Although the Magnolia Marsh area has been identified as being subject to significant negative stressors due to nearby industrial uses,[7] a 2010 survey identified 26 separate sparrow territories in the Magnolia Marsh, which represents about 25% of the territories in the full Huntington Beach wetland complex.[8] The Magnolia Marsh restoration project is expected to provide suitable breeding habitat for the endangered Light-footed Clapper Rail, which also breed nearby.[9]

Required Buffer
LCP Policy C7.1.4 requires a minimum 100-foot buffer between new development and ESHA/wetland areas. The proposed project layout includes locating structures and development activities within 100 feet of nearby ESHA and wetlands, which results in non-conformity to this LCP policy. The proximity of these activities and the habitat areas also exacerbates some of the other indirect adverse impacts described below, including potential dewatering of wetland habitat during project construction, and adverse effects of noise, vibration, and project lighting on listed sensitive species known or potentially occurring in those areas during both construction and operations. The FSA includes proposed **Condition BIO-7**, which identifies a number of

[6] From Moffatt & Nichol, *Huntington Beach Wetlands: Habitats and Sensitive Species*, August, 2004. See also California Energy Commission, *Final Staff Assessment for 12-AFC-02 – Biological Resources, Table 2*, May 2014.

[7] See Solek, Christopher, and Eric Stein, *An Evaluation of Wetland Restoration Projects in Southern California using the California Rapid Assessment Model (CRAM): A Final Report to the Southern California Wetlands Recovery Project*, Technical Report 659, February 2012.

[8] See Zembal, Richard, and Susan Hoffman, *A Survey of the Belding's Savannah Sparrow (Passerculus sandwichensis beldingi) in California – Final Report to California Department of Fish and Game, South Coast Region*, September 2010.

[9] See September 12, 2012 USFWS comment letter regarding potential adverse effects of proposed AES power plant replacement, California Energy Commission Application For Certification No. 12-AFC-02.

measures that, if implemented, will reduce the project's indirect impacts on nearby wetlands (see FSA, pp. 4.2-62 to 4.2-65).

Coastal Commission Recommended Specific Provision

- To ensure the project conforms to the extent feasible with LCP Policy C7.1.4, we recommend the Energy Commission modify **Condition BIO-7** to require that AES move all project-related development to be at least 100 feet, and further, if feasible, from nearby areas that meet the Coastal Commission's definition of wetlands or ESHA. We also recommend that the project plans required pursuant to **Condition GEN-2** reflect this change in the project layout.

  This recommended modification would also require AES to submit a revised project plan showing that all project-related development is at least 100 feet from those areas. From the proposed project layout presented in the AFC, it appears this would require moving a few structures and development activities no more than a few dozen feet further inward on the site, which appears feasible based on the amount of space available within the project site.

Avoiding Effects of Construction Dewatering on Adjacent ESHA/Wetland Areas
Groundwater levels beneath both the HBEP and the adjacent wetlands are within a few feet of the ground surface. Results from groundwater monitoring wells on the HBEP site indicate that groundwater levels fluctuate with tidal levels in the adjacent flood control channel and show that the site's groundwater is responsive to and directly connected to groundwater in nearby areas, including the adjacent wetlands. The FSA notes that excavation needed to construct project foundations will likely require dewatering and removal of liquefiable soils, though it does not identify the expected depths, amounts, or possible adverse impacts of these activities.

Analyses conducted by Commission staff for the adjacent proposed Poseidon project site, which has similar groundwater and liquefaction characteristics, show that liquefiable soils extend to a depth of about 20 feet below grade. The dewatering volumes needed to excavate those soils to construct two of that project's proposed structures were estimated at 740,000 gallons per day and 1.28 million gallons per day, respectively, which would occur over several months and total about 84 million gallons. Site geotechnical data provided by Poseidon showed that the radius of influence from its expected dewatering operations – that is, the distance within which groundwater levels would be reduced – would be up to 225 feet from the dewatering locations and would encompass parts of the adjacent ESHA/wetland areas. Based on these analyses, Commission staff recommended conditions for the proposed Poseidon project that required additional geotechnical investigations and implementation of dewatering methods that avoided potential drawdown in those habitat areas. The HBEP site's similar characteristics make it likely to have similar drawdown potential, though it is unclear from documentation provided in the AFC review where the dewatering would occur and what drawdown levels to expect.

Coastal Commission Recommended Specific Provisions

Drawdown that affects nearby ESHA/wetland areas would be inconsistent with LCP Policies 6.1.4, 7.1.2, and 7.1.3, which require that habitat values be maintained and

protected. To ensure project dewatering is done in a manner consistent with these policies, the Commission recommends the CEC modify FSA **Condition GEO-1** to require AES to conduct a geotechnical investigation that identifies expected dewatering volumes and the spatial extent of drawdown expected from that dewatering. If the investigation shows potential drawdown effects to nearby ESHA/wetland areas, the Condition would also require AES to identify and implement methods to avoid those effects, such as installing sheet piles, slurry walls, or other similar barriers, or conduct alternative dewatering methods that would avoid drawing down groundwater in these sensitive areas. The Commission also recommends that these structural mitigation methods be included on any relevant final design plans required pursuant to FSA **Condition GEN-2**. These modifications provide a feasible method to avoid potential adverse dewatering impacts to adjacent habitat areas.

Reducing Effects of Project Noise and Vibration on Adjacent ESHA/Wetland Areas
The FSA (see page 4.2-34, Biological Resources, Table 3) identifies expected construction noise levels at several locations within nearby ESHA/wetland areas. At the closest locations within the adjacent Magnolia Marsh, noise levels from project construction are expected to range from the mid-60 dBA level to greater than 70 dBA. It notes that the loudest of the construction activities would be pile driving, with levels of 104 dBA at 50 feet, 86 dBA at 375 feet, and 73-78 dBA at more than 1000 feet.[10]

The FSA notes that these noise levels during project construction could discourage sensitive species from using nearby habitat areas and adversely affect their breeding or nesting behavior, and that chronic exposure to excessive noise has been demonstrated to adversely affect foraging behavior, reproductive success, population density, and community structure. Although avian species may be more sensitive to noise during breeding and nesting season, several types of "take" or harm identified above could occur any time of year due to the relatively high noise levels expected from both project construction and operation.

Commission staff contacted staff of the California Department of Fish and Wildlife (CDFW) regarding guidance on acceptable noise levels and mitigation measures for construction projects near habitat areas used by sensitive avian species.[11] Both CDFW and the U.S. Fish and Wildlife Service have developed and implemented recommended measures on a number of such projects, and the agencies' work with CalTrans has resulted in a more detailed set of thresholds than the above-referenced "typical noise threshold," for use in identifying potential "take" or harm to sensitive species.[12] These thresholds range from "hearing damage" to "masking," which is a level preventing or reducing communication among individuals, and can result from proximity to construction equipment like that being used for this project.

[10] dBA is a measure of the relative loudness of sounds through the air, in decibels. Decibels describe the intensity of sound, and are logarithmic – for example a 60 dBA sound is perceived as twice as loud as a 50 dBA sound. Typical sound levels include 30-35 dBA in quiet, rural areas, 70-75 dBA for freeways from about 50 feet away, and 100 dBA for a jet taking off from 1000 feet away.

[11] Commission staff personal communication with CDFW staff, September 19 and October 18, 2013.

[12] See, for example, Dooling, Robert, and Arthur Popper, *The Effects of Highway Noise on Birds*, prepared for California Department of Transportation, September 2007.

The conclusions and recommendations of CDFW and USFWS essentially identify potential harm or "take" when noise levels are above ambient and greater than about 60 dBA. These sound levels are considered harmful to avian species and could result in "take" of special status species that use these ESHA/wetland areas, such as Belding's Savannah Sparrow, California Least Tern, and Light-footed Clapper Rail. Mitigation measures employed by both CDFW and USFWS generally require that applicants conduct monitoring to ensure sound levels remain below thresholds known to result in take and conduct nesting surveys and ongoing monitoring to identify and avoid potential adverse effects to nesting birds. The USFWS has recommended several mitigation measures be implemented for the project, including considering which will generate construction-related noise at levels similar to Poseidon's project, including considering the entire wetlands area adjacent to that project a sensitive receptor and that the project include design features that maintain noise levels at or below ambient conditions.[13]

CDFW has also identified several bird species as being particularly sensitive to vibration, including the Light-footed Clapper Rail, and CDFW specifically prohibits pile driving during their nesting season due to its relatively high levels of both noise and vibration.[14]
While the FSA describes the expected decibel levels from pile driving, it does not identify the expected increase in groundborne noise and vibration levels (VdB) that would occur in the ESHA/wetland areas during project operations, particularly during pile driving.[15]
To reduce noise effects on nearby avian species, the FSA's proposed **Condition BIO-9** would require AES to implement a Noise Monitoring Plan during breeding and nesting season (February 1 to August 31 each year). The Plan would require continuous noise monitoring at three specified locations and would require noise levels not exceed 8 dBA above ambient levels or 60 dBA, whichever is greater. It would also require that monitoring devices be reviewed daily during any construction occurring within 400 feet of the project's fenceline with the Magnolia Marsh areas and during any pile-driving activities. If construction noise exceeds these levels, AES would be required to implement noise-reduction measures, such as installing temporary sound walls or other similar barriers, moving noise-generating activities further from the ESHA/wetland areas, and avoiding pile driving or confining pile driving to project areas furthest from the Marsh areas.

Coastal Commission Recommended Specific Provisions

We generally concur with the FSA's proposed approach to avoiding and reducing noise-related effects in the nearby ESHA/wetland areas. However, we recommend two modifications to **Condition BIO-9** to ensure consistency with LCP provisions requiring protection of these habitat areas and to be consistent with previous City and Coastal Commission determinations regarding noise impacts on wildlife.

[13] See September 10, 2012 letter from USFWS to California Energy Commission regarding Application for Certification 12-AFC-02.

[14] Commission staff personal communication with CDFW staff, October 18, 2013.

[15] Groundborne noise and vibration is measured using "VdB," or vibration decibel levels, to distinguish it from airborne sound. Very low VdB levels can be imperceptible, but levels of around 100 VdB and higher can cause structural damage.

- **Recommended modified noise threshold:** First, we recommend the **Condition BIO-9** allowable noise threshold be modified as follows:

  "The project owner shall prepare and implement a Wildlife Noise Monitoring Plan throughout construction and demolition activities taking place during the bird breeding season (February 1 to August 31). Sound levels in Upper Magnolia and Magnolia marshes shall not exceed 8 dBA above ambient levels or 60 dBA (hourly average Leq), whichever is greater. **In addition, sound levels within the marshes and within 100 feet of active nests (as identified during the nesting surveys required pursuant to Condition BIO-8) shall not exceed 65 dBA.**"

This would be consistent with the City's approach in other nearby projects where the City has cited the 60 dBA threshold as causing adverse impacts to avian species and where it has prohibited noise- and disturbance-generating construction activities adjacent to the Magnolia Marsh during the Belding's Savannah Sparrow breeding season (see, for example, City of Huntington Beach CDPs #2006-005 and #PW-08-003, both for nearby construction projects). It would also be consistent with conditions of the Commission's recent approval of a bridge construction project in the nearby Bolsa Chica Wetlands requiring that noise levels not exceed 65 dBA within 100 feet of any active nests (see the Commission's May 2013 approval of CDP 5-12-191). This recommended condition appears feasible, given that it has been implemented in similar construction projects in and near nearby ESHA/wetland areas.

- **Recommended prohibition on pile driving during nesting season:** Regarding vibration effects, we recommend that **Condition BIO-9** be modified to require AES schedule and conduct all pile driving activities outside the February 1 through August 31 breeding and nesting season. **Condition BIO-9** currently lists pile driving avoidance as one of several feasible noise reduction techniques that AES could implement if its activities exceed the noise threshold; however, as noted above, the FSA already anticipates that expected noise levels will exceed that threshold. Additionally, pile driving is expected to cause substantial vibration levels (VdB), in the nearby marsh areas, though the FSA does not identify those expected levels. Given the expected threshold exceedance and the additional unquantified but likely significant vibration-related effects, this modification would further reduce expected adverse project-related effects on nearby ESHA and wetland areas.

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

E. FLOOD, TSUNAMI, AND SEA LEVEL RISE HAZARDS

Coastal Act Section 30253 states, in relevant part:

> *New development shall do all of the following:*
> *(a)Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

LCP Policy I-C.20, Environmental Hazards Element, states:

> *Enforce and implement the policies and programs of the Environmental Hazards Element of the General Plan to the extent that these programs and policies are not inconsistent with the City's Local Coastal Program.*

The relevant and applicable policies and programs of the above-cited Environmental Hazards Element are listed below. [Figures in parentheses at the end of each Environmental Hazards Policy refer to the Implementation Program applicable to each Policy.]

> Environmental Hazards Policy 5.1.1 states: *Identify tsunami and seiche susceptible areas, and require that specific measures be taken by the developer, builder, or property owner, during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety (see Figure EH-8). (I-EH 1 and I-EH 4)*
>
> Environmental Hazards Program I-EH 4, Development Review or Environmental Review Process, states: *During development review (site plan, tract map, etc.) and/or environmental review, require:*
>
> *a. building structures proposed in liquefaction, unstable soil/slope conditions, flood prone areas, high water tables, peat or other geologic hazards prone areas to determine potential problems and to require mitigation measures;*
> *b. a potential seismic/geologic damage assessment to be conducted for essential public utilities (gas, water, electricity, communications, sewer) and require that appropriate mitigation measures be incorporated;*
> *c. critical or sensitive facilities and uses to be located in areas where utility services and continuous road access can be maintained in the event of an earthquake;*
> …
> *g. that proposed critical, essential, and high-occupancy facilities be subject to seismic review, including detailed site investigations for faulting, liquefaction, ground motion characteristics, and slope stability, and application of the most current professional standards for seismic design;*
> *h. that proposed projects located in the tsunami hazard areas (Figure EH-9):*
> - *are designed to minimize beach/bluff erosion and the need for sand replenishment along city beaches; and*

- *consider design options which reduce the potential for damage to private property and threats to public safety, i.e., raised foundations, ground floor parking with upper level uses.*

LCP Coastal Element Hazards Section C10.1.19 states:

> *Identify tsunami and seiche susceptible areas (Figure C-30), and require that specific measures be taken by the developer, builder or property owner during major redevelopment or initial construction, to prevent or reduce damage from these hazards and the risks upon human safety. Development permitted in tsunami and seiche susceptible areas shall be designed and sited to minimize this hazard and shall be conditioned to prohibit a shoreline protective device.*

The HBEP site is subject to adverse effects from floods, tsunamis, and sea level rise. These hazards are described separately below, along with recommended Specific Provisions to allow consistency with relevant Coastal Act and LCP policies.

Sea Level Rise

The project site is within an area of the Orange County coastline that has been singled out as being particularly susceptible to sea level rise. It has a wide range of critical infrastructure, including the existing proposed power plant and proposed HBEP, that will be affected unless significant effort is taken to protect, replace, or remove it. A recent study found that the Orange County coastline has structures worth more than $17 billion (in 2000 dollars), including the power plant, that are vulnerable to a 4.5-foot rise in sea level, which is a level expected before the end of this century.[16] Another recent study found a more immediate danger in the area of the HBEP site where up to 5,000 nearby homes are at risk due to sea level rise by 2020.[17]

California has adopted the 2013 *State of California Sea-Level Rise Guidance Document* ("*State Guidance Document*), based on guidance from the 2012 NRC Report, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*.[18] These documents, considered the current best-available science on sea level rise projections, anticipate sea level rise of up to two feet by 2050 and up to 5.5 feet by 2100 along this part of the Orange County shoreline. These projections are also consistent with the Commission staff's recently published draft guidance for incorporating sea level rise hazards and projections into LCP and coastal development permit review.

[16] Heberger, Matthew, et al., *The Impacts of Sea-Level Rise on the California Coast*, prepared by the Pacific Institute for the California Climate Change Center – California Energy Commission, California Environmental Protection Agency, Metropolitan Transportation Commission, California Department of Transportation, the California Ocean Protection Council, March 2009.

[17] See Climate Central, *Surging Seas: Sea Level Rise Analysis*, June 2013.

[18] For more information on the NRC Report, go to http://www.nap.edu/catalog.php?record_id=13389 and on the OPC Guidance, go to: http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf .

The *State Guidance Document* cautions that its sea level rise projections likely underestimate the amount of increase and that uncertainties about these projections increase as planning timeframes increase – i.e., they are likely more accurate for the immediate couple of decades and less so for subsequent decades. It notes that the rate of sea level rise is not expected to be linear and that it is likely to rise faster later in this century. The *State Guidance Document* recommends that state agencies during project evaluation consider the projected lifespan of the facility, its cost, and the impact or consequence of damage or loss of the facility. It also recommends that consideration be given to the project's adaptive capacity, impacts, and risk tolerance for projects with an expected timeframe beyond 2050.[19]

Importantly, and as noted in the *State Guidance Document*, the expected increase in water levels are likely to occur not just at some point several decades in the future, but also during shorter-term events in the very near future, such as storm waves, or during recurring events like El Nino. The *State Guidance Document* notes that, "[w]here feasible, consideration should be given to scenarios that combine extreme oceanographic conditions on top of the highest water levels projected to result from SLR over the expected life of a project." It also states that water levels during these large, short-term events along some parts of the coast have already exceeded sea level rise levels projected for 2030 and have reached levels projected for 2050.

The FSA evaluates the proposed project based on a 30-year operating life, which would extend until between approximately 2045 and 2055, depending on the eventual project construction schedule. This would subject the facility to hazards associated with a sea level rise of up to about two feet, which is expected by about 2050. As illustrated in **Exhibit 8 – Predicted Sea Level Rise**, a two-foot water level increase could result in the facility becoming an "island" separated from nearby inland areas during high tides, floods, storm surges, or other similar events. The increase in sea level will also alter shoreline processes, such as the rate and location of beach erosion, though the extent of these changes has not yet been determined. Additionally, the site is already subject to tidally-influenced high groundwater tables, with monitoring wells having shown groundwater at or above the existing grade.[20] Groundwater levels are expected to rise with those of sea level, with the higher groundwater table affecting the facility's foundations, and increasing its susceptibility to hazards such as liquefaction and lateral spread. The facility would also likely be subject to other secondary or indirect effects, such as salt water intrusion into foundations, changes in the flood channel hydraulics, potential increased sedimentation in the flood channel with an associated loss of flood conveyance, and others. As discussed below, although site elevations are above most expected flood and tsunami runup levels, those levels and the associated risks will increase with sea level rise. Therefore, although the project site is about one-half mile from the current shoreline, site conditions and its location make it likely that, unless mitigated, the facility will be affected by the predicted higher water levels during its operating life.

[19] See also California Emergency Management Agency, California Natural Resources Agency, and Federal Emergency Management Agency, *California Adaption Planning Guide: Planning For Adaptive Communities*, September 2012.

Flooding

The FSA describes the proposed project as having final grades of between 12 and 16 feet above sea level. It notes that the project site is within an area classified as "Zone X" by the Federal Emergency Management Agency (FEMA), a designation describing an area that is protected by levees from the 100-year flood but is still within the 500-year flood zone. The City's Environmental Hazards Chapter, completed in 1996, additionally identifies the project site as being within a City-designated Flood Zone (see FSA, Soil and Water Resources, Figure 2 – Huntington Beach Flood Zones (FEMA, 2009).

The HBEP site is within an area that has been subjected to numerous severe floods. It is adjacent to the Huntington Beach Flood Control Channel, which was built in the 1960s in response to local flooding and is managed by the Orange County Flood Control District. The District recently upgraded a section of the Flood Channel near the project site to handle projected 100-year flood events. The site is also within the Prado Dam Failure Inundation Zone (see **Exhibit 9 – Prado Dam Failure Inundation Zone**), which the City established in recognition of the potential failure of the Prado Dam, an earthen structure in the upper Santa Ana River watershed built before modern seismic-resistant designs. Failure of the dam would flood over 100,000 acres, including most of the area of Huntington Beach surrounding the proposed project, with an inundation area of up to 15 miles wide and water levels of greater than 30 feet in some areas. Maximum water levels at the HBEP site from that event are estimated to reach elevations of between 10 and 15 feet.

For structures such as the HBEP that are proposed to be located in flood-prone areas, the LCP's Environmental Hazards Program I-EH 4 requires, during development or environmental review, that potential problems in flood-prone areas be identified and mitigation measures be required. The City has also developed several planning documents to help implement the Environmental Hazards Chapter of its LCP. These include the City's FEMA-approved Flood Management Plan, which describes the policies and actions the City is to implement to ensure its eligibility for FEMA flood insurance and other similar programs. FEMA has established that planning and siting for "critical facilities," which include police and fire stations, hospitals, and electrical facilities such as the proposed project, be based on avoiding risks from the 500-year flood event.[21] The City has also adopted the Huntington Beach/Fountain Valley Hazard Mitigation Plan, which identifies the power plant as a critical facility.[22]

The site and proposed facility are subject to three different types of flood risks. First, although the site is protected from the 100-year flood event by sheet piling on the adjacent flood control channel, those structures are not designed to resist the area's seismic forces. The site and facility could experience a 100-year flood event if those structures are damaged. Second, the project site is within the 500-year flood zone, and, as noted above, a critical facility such as the power plant is to be protected from the 500-year flood elevation and its risk assessment is to be based on that

[21] See, for example, *Design Guide for Improving Critical Facility Safety from Flooding and High Winds*, FEMA Publication 543, January 2007, as well as CalEMA criteria described at: http://hazardmitigation.calema.ca.gov/plan/local_hazard_mitigation_plan_lhmp

[22] Available at: http://hazardmitigation.calema.ca.gov/docs/lhmp/Huntington_Beach_Fountain_Valley_Cities_of_LHMP.pdf

500-year event. These events and their associated risks are reasonably foreseeable, since during the project's eight years of construction and its 30-year operating life, it would have about a 1 in 3 chance of experiencing the 100-year flood and a 1 in 14 chance of experiencing the 500-year flood event.[23] Finally, as noted above, the facility is within the Prado Dam Inundation Zone, which would result in flood elevations of between 10 and 15 feet at the HBEP site.

Commission staff used data from the adjacent flood control channel and from a hydrologic analysis of the adjacent Huntington Beach wetlands that show a 100-year flood elevation of between about 9 to 10.2 feet in a nearby portion of the flood channel.[24] Data were not available for the 500-year flood event from the City or provided in the FSA, though it is presumably higher. Adding the two feet of projected increase in sea level rise puts the 100-year flood elevation at between 12 and 13 feet, which is in the same range as expected tsunami elevations described below and somewhat lower than inundation from a Prado Dam failure.

Flooding from any of these events could cause significant adverse impacts. For example, below grade facility components could be subject to complete inundation, potentially resulting in plant outages. Additionally, debris carried by a flood could damage above-grade components of the facility, or conversely, structural debris from the facility could damage nearby structures or property. Potential and likely risks include temporary or permanent loss of electricity production to the area, damage to adjacent properties, and increased public costs to provide measures that would protect the facility from these flood events. These flood risks will increase with the expected increase in sea level rise during the project's operating life. The degree of flood protection provided at the site is already influenced by the tides – that is, flood waters are released more slowly during a high tide than during a low tide and back up into the channel and surrounding areas during a high tide – and this effect will increase with sea level rise.

Tsunami Hazards

Although the site is located about one-half mile inland from the shoreline, it is subject to significant tsunami hazards. The site sits within a Tsunami Runup Zone the City designated in 1996 that extends about a mile inland from the shoreline (see **Exhibit 10 –Tsunami Runup Zone**).[25] At the time of that designation, the City identified expected tsunami elevations of up to five feet for a 100-year event and up to 7.5 feet for a 500-year event. More recent data and updated studies show the site is subject to higher runup levels and more severe tsunami risks. The 2009 California Geological Survey *Tsunami Inundation Map* for the Huntington Beach area shows the site within a tsunami runup zone in this part of the City that extends more than two miles inland, with expected water levels within parts of that zone of up to 16 feet above mean sea

[23] The calculation used to determine these probabilities is $r = 1-(1- 1/T)^N$, with T = the return period (i.e., the 100- or 500-year event), N = the expected life of the facility (i.e., eight years construction and 30 years operation), with r equal to the probability that the event will occur at least once in N years. During a 38-year facility life, there is about a 32% probability it would experience a 100-year event and about a 7% probability it would experience a 500-year event.

[24] See Federal Emergency Management Agency, *Flood Profiles, Huntington Beach Channel (D01)*, December 15, 2009, and Moffatt & Nichol, *Hydrologic and Hydraulic Baseline Report*, prepared for Huntington Beach Wetlands Conservancy, August 18, 2004.

[25] This map is the Figure C-30 referenced in LCP Policy C 10.1.19 above.

level (see FSA Soil and Water Resources, Figure 3 – 2009 Tsunami Inundation Map for Huntington Beach).[26]

This 2009 Map is based not on 100- or 500-year probabilities, but on the maximum expected inundation an area could experience from either far-field tsunamis (i.e. those tsunamis that are generated far from Huntington Beach) and from locally generated or near-field events.[27] For each mapped area of the coast, the CGS identified expected inundation levels for every 30-meter grid within the modeled runup zone. The site's tsunami risk and its expected tsunami runup elevations are also based in part on nearby seafloor bathymetry and other characteristics offshore of Huntington Beach that create a tsunami amplification area.[28]

The City's LCP requires that proposed projects within its designated Tsunami Runup Zone be evaluated for consistency with several of the Environmental Hazards policies identified above. In addition, Coastal Element section C10.1.19 requires that development located in tsunami or seiche susceptible areas be designed to prevent or reduce damage from these events. This LCP policy also prohibits the installation of shoreline protective devices as mitigation against tsunamis or seiches.

As noted in the FSA, the CGS modeling used to develop the tsunami runup maps shows a projected runup elevation at the power plant site of approximately 11 feet above mean sea level (msl). This elevation would result from at least two events – a magnitude 7.6 earthquake on the nearby offshore Catalina fault or a magnitude 9.2 event in Alaska's Aleutian Islands. With up to two feet of sea level rise expected during the project life, the maximum expected runup elevation would increase to about 13 feet above mean sea level. Final grades of the proposed project would have elevations ranging from about 12 to 16 feet above mean sea level; however, several important facility components and foundations will be below grade. The site may also be subject to seiches running up the flood control channel, though modeling for those events is apparently not available.[29]

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[26] A more recent study suggests even greater inundation levels at or near the site. A September 2013 report, *Science Application for Risk Reduction (SAFRR) Tsunami Scenario*, published by the California Natural Resources Agency, Department of Conservation, and California Geological Survey and the United States Geological Survey and Department of Interior, describes a tsunami scenario for the California coast that would result from a 9.1 earthquake in the Aleutians. The modeled tsunami would inundate large areas of the coastline, including areas with significant economic and infrastructure importance. This study used multiple coarse- and fine-grained models to identify likely inundation depths and water velocities, which were used to determine likely levels of damage along key parts of the coast, such as the Ports of Long Beach and Los Angeles. The study did not identify specific runup elevations along the Huntington Beach shoreline, but noted that in nearby Newport Beach, tsunami elevations could reach up to about 20 feet above msl with velocities of up to about 60 feet per second (or roughly 45 miles per hour).

[27] Tsunami inundation analyses used in land use planning often refer to 100-year and 500-year events, based on FEMA's methods for floodplain mapping. For several reasons, however, determining tsunami probabilities is significantly more difficult than predicting flood events. Tsunamis occur less frequently than floods, their historic and prehistoric records are often less exact, and the events that generate them can occur over a much larger area.

[28] See Legg, Borrero, and Synolakis, *Evaluation of Tsunami Risk to Southern California Coastal Cities*, Federal Emergency Management Agency and Earthquake Engineering Research Institute, January 2003.

[29] A seiche is a wave generated by the same types of events that cause a tsunami, but that occurs within an enclosed water body such as a bay, reservoir, or, in this case, a flood control channel.

As evidenced by recent tsunami events worldwide and in California, an 11- to 13-foot tsunami can cause significant adverse impacts. At this site, it would result in partial inundation and possible damage to below-grade facility components. It is also likely that damaged structural components could contribute structural debris to the tsunami and worsen the damage at the facility and at nearby structures and properties. Smaller tsunamis can also prove damaging – for example, the Orange County Multi-Hazard Mitigation Plan describes a one- to three-foot tsunami as being highly destructive[30] – and at this site, a smaller tsunami could create the same "island" effect as described in the flood hazard discussion above.

Tsunami mitigation

Other than locating proposed facilities outside of tsunami runup areas, the simplest approach to preventing or reducing tsunami-related hazards is to elevate structures above expected runup levels. However, elevating the facility's proposed structures would require significant amounts of fill and would likely redirect tsunami energy away from the facility and towards other nearby structures and properties, including the adjacent flood control levees. Additional fill could also be used to create berms around the structures while keeping the structures at the same proposed elevation; however, this approach would similarly redirect tsunami energy towards other nearby properties.

Either of these approaches would likely increase tsunami-related damage and safety risks and would therefore not conform to the LCP's Environmental Hazards Policy 5.1.1. Additional fill would also involve increased truck traffic, with the associated adverse effects on public access and air quality. The additional fill could also affect the groundwater regime beneath the project site and in the adjacent wetlands and flood control channel.

Other possible mitigation approaches include incorporating tsunami-resistant design features into structures that are subject to inundation. These features include enclosing below-grade structures within reinforced concrete walls to resist tsunami forces, protecting tanks against uplift due to tsunami buoyant forces, and others.[31] Another standard approach for facilities in tsunami-prone areas is to develop and implement a safety plan that includes on-site signage, training for facility personnel to know how to recognize tsunami watches and warnings that may be issued, and identifying an evacuation site.

Coastal Commission Recommended Specific Provisions to Avoid and Reduce Flood- and Tsunami-related Effects

To address these hazards and their associated risks to the proposed facility, and to allow consistency with relevant provisions of the Coastal Act and LCP, the Commission recommends the CEC include the new and modified conditions shown below as part of any approval of the AFC. Proposed **Condition Soil&Water8** will ensure that the proposed critical facility is sited to be protected from both the current and future predicted 500-year flood elevation. Proposed **Condition GEO-3** is meant to allow

[30] See the Municipal Water District of Orange County, *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan*, February 2012.

[31] See, for example, the 2008 Federal Emergency Management Agency's (FEMA's) *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*.

consistency with the health, public safety, and damage prevention components of Environmental Hazard Policy EH 5.1.1 and Environmental Hazards Program I-EH 4 by requiring AES to submit a Facility Hazard Emergency Response Plan prepared in coordination with other nearby property owners and government entities that identifies the hazards to the facility and to nearby structures owned by others, and that identifies measures that will be implemented to avoid or reduce these hazards. This recommended Condition also requires AES to provide documentation from these other nearby landowners and government entities that the plan accurately reflects expected hazards. It further requires AES provide documentation from the City that the proposed project is consistent with the goals and objectives of the City's Flood Management Plan, which is meant to help the City implement its LCP's Environmental Hazards Chapter. To address specific tsunami-related LCP policies, proposed **Condition GEO-3** also ensures the facility includes adequate life safety measures, as required by LCP Policy I-EH 4(g). **Condition GEO-3** also requires AES to submit for CPM approval a project design approved by a structural engineer identifying structural elements that allow project personnel to immediately remove themselves to one or more locations that will not be subject to tsunami inundation or that will be safe from inundation. Finally, recommended **Condition GEN-9** prohibits the project owner from constructing a shoreline protection device, as required pursuant to the LCP's Coastal Elements Hazards Section C10.1.19.

- **Recommended New Condition SOIL&WATER8: Flood Damage Prevention. Prior to the start of construction, AES shall submit for CPM review and approval, certification from a licensed engineer that the proposed facility is elevated above, or protected from, a 500-year flood event at the project site that includes an additional 24 inches of sea level rise. The engineer's determination shall describe the methods and include the calculations used to determine the elevation of the current 500-year flood event at the site and those used to determine the elevation of a future 500-year flood event with the additional 24 inches of sea level rise expected during the facility's thirty year operating life.**

  The elevations and proposed changes to the facility design shall be incorporated into the final project design submittals required pursuant to Condition GEN-2.

- **Recommended New Condition GEO-3: Flood and Tsunami Hazard Mitigation Planning. Prior to the start of construction, AES shall submit for CPM review and approval, a Facility Hazard Emergency Response Plan developed in coordination with the City of Huntington Beach, Southern California Edison, and the Orange County Flood Control District. The Facility Hazard Emergency Response Plan shall include, at a minimum:**

  1. **Results of hydraulic and hydrodynamic modeling using methods approved by the Federal Emergency Management Agency (FEMA) or the National Oceanic and Atmospheric Administration (NOAA) showing the effects of the facility's proposed structures on other nearby structures**

(including, but not limited to, structures associated with the existing adjacent power plant, the on-site Southern California Edison substation, and the Orange County Flood Control Channel) during: (1) a tsunami runup of 11 feet above mean sea level with an additional two feet of sea level rise (for a total runup of 13 feet above mean sea level); (2) the 100-year flood event with an additional two feet of sea level rise; and (3) the 500-year flood events as determined pursuant to Condition SOIL&WATER8.

2. **Concurrence from Southern California Edison and the Orange County Flood Control District that the modeling efforts accurately reflect expected hazard levels at these nearby structures, and concurrence from the City of Huntington Beach that the Plan is consistent with the City's most recent Hazard Mitigation Plan and Multi-Hazard Mitigation Plan prepared pursuant to California Government Code Sections 8685.9 and 65302.6 and 44 CFR 201.6 et. seq.**

3. **Structural and non-structural measures AES will implement to avoid, or if infeasible to avoid, to reduce any identified adverse effects of tsunami and flood events and to ensure human safety. Structural measures shall include either those that allow facility personnel immediate vertical evacuation to safe areas above tsunami runup elevations or those that allow facility personnel to remain inside structures that are not subject to inundation. The structural measures identified and required by this Plan shall be determined by a licensed structural engineer to be fully tsunami-resistant.**

Changes to the facility resulting from the above analyses shall be incorporated into the final project design submittals required pursuant to Condition GEN-2.

- **Recommended new Condition GEN-9: No Shoreline Protective Device. In the event that the approved development, including any future improvements, is threatened with damage or destruction from coastal hazards, or is damaged or destroyed by coastal hazards, protective structures (including but not limited to seawalls, revetments, groins, deep piers/caissons, etc.) shall be prohibited. By acceptance of the CEC approval, the project owner waives any right to construct such protective structures, including any that may exist under Public Resources Code Section 30235.**

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

F. GEOLOGIC HAZARDS

Coastal Act Section 30253 states, in relevant part:

> *New development shall do all of the following:*
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

LCP Policy C1.1 states:

> *Ensure that adverse impacts associated with coastal zone development are mitigated or minimized to the greatest extent feasible.*

LCP Policy C 10.1.3 states:

> *Require seismic/geologic assessment prior to construction in the Alquist-Priolo Earthquake Fault Zone as shown in Figure C-28.*

LCP Policy C 10.1.4 states:

> *Require appropriate engineering and building practices for all new structures to withstand ground shaking and liquefaction such as those stated in the Uniform Building Code.*

LCP Policy I-C.20, Environmental Hazards Element, states:

> *Enforce and implement the policies and programs of the Environmental Hazards Element of the General Plan to the extent that these programs and policies are not inconsistent with the City's Local Coastal Program.*

The relevant and applicable policies and programs of the above-cited Environmental Hazards Element are listed below. Figures in parentheses at the end of each Environmental Hazards Policy refer to the Implementation Program applicable to each Policy.

> Environmental Hazards Policy 1.1.4 states: *Evaluate the levels of risk based on the nature of the hazards and assess acceptable risk based on the human, property, and social structure damage compared to the cost of corrective measures to mitigate or prevent damage. (I-EH 3 and I-EH 4)*

> Environmental Hazards Policy 1.2.1 states: *Require appropriate engineering and building practices for all new structures to withstand groundshaking and liquefaction such as stated in the Uniform Building Code (UBC). (I-EH 5)*

Environmental Hazards Program I-EH-1, Studies/Mapping/Master Plans, states, in relevant part:

a. Conduct, prepare and/or update the following as funding permits:

...

- *an assessment of potential damage to essential utility and transportation infrastructure and public service facilities due to geologic/seismic hazards. The findings of the assessment should be utilized in the review of proposed development projects, and used for maintaining and updating emergency preparedness plans;*

Environmental Hazards Program I-EH-3, Alquist-Priolo Earthquake Fault Zone, states:

a. Continue to implement the Alquist-Priolo Earthquake Fault Zone requirements.
b. Implement the fault classification system suggested by Leighton & Associates (April 17, 1986) with regard to faults in the City susceptible to fault rupture, and establish a study requirement based on risk and structure importance.

Environmental Hazards Program I-EH 4, Development Review or Environmental Review Process, states:

During development review (site plan, tract map, etc.) and/or environmental review, require:
d. building structures proposed in liquefaction, unstable soil/slope conditions, flood prone areas, high water tables, peat or other geologic hazards prone areas to determine potential problems and to require mitigation measures;
e. a potential seismic/geologic damage assessment to be conducted for essential public utilities (gas, water, electricity, communications, sewer) and require that appropriate mitigation measures be incorporated;
f. critical or sensitive facilities and uses to be located in areas where utility services and continuous road access can be maintained in the event of an earthquake;
…
i. that proposed critical, essential, and high-occupancy facilities be subject to seismic review, including detailed site investigations for faulting, liquefaction, ground motion characteristics, and slope stability, and application of the most current professional standards for seismic design;

Environmental Hazards Program I-EH-5 – Ordinances:

a. Enforce the most current Uniform Building code adopted by the State of California.
b. *Prepare ordinances prohibiting the location of critical or sensitive facilities or high occupancy facilities within a predetermined distance of an active or potentially active fault.*

The proposed HBEP site and vicinity is subject to several types of relatively severe geologic hazards, including surface fault rupture, ground shaking, liquefaction, and lateral spread. The analysis provided below shows that there is a significant probability that the project would experience one or more of these hazards during its expected operating life. In addition, the expected increase in sea level described above will increase the risk from some of these hazards during the project's operating life. The site's seismic setting and its specific seismic hazards are briefly described below, followed by several recommended conditions to allow the proposed facility to more fully conform to relevant Coastal Act and LCP policies.

Seismic setting

The proposed facility is located within a seismically-active region that includes the underlying Newport-Inglewood Fault Zone (NIFZ), which extends about 50 miles from Newport Beach to Los Angeles. It consists of a series of known faults, and geologists believe there are additional unknown faults in a zone that ranges up to somewhat more than a mile wide. The NIFZ is generally thought to be contiguous with the Rose Canyon Fault Zone which underlies parts of San Diego, trends offshore at La Jolla, and continues north to meet the NIFZ. Just offshore of the facility site is the epicenter of the geologically recent 1933 Long Beach earthquake, which was a magnitude 6.3 event on the NIFZ that resulted in significant loss of life and extensive property damage.

The City's 1996 Environmental Hazards Chapter states that faults within the NIFZ have an expected maximum earthquake of magnitude 7, an expected maximum ground acceleration of up to 1g, and potential surface fault rupture of more than ten feet in earthquakes of between magnitude 6.0 and 7.5. Other more recent reports calculate that the NIRC fault could generate a quake of up to magnitude 7.5[32] or an offshore magnitude 7.4 earthquake.[33] Various entities consider the entire NIRC fault zone as active.[34] Within that NIFZ, the California Geological Survey (CGS) has designated several specific fault segments as being within an Alquist-Priolo Earthquake Fault Zone, including a portion of the NIFZ's North Branch Fault about one-half mile from the HBEP site.[35]

[32] See *City of Huntington Beach Draft Hazard Mitigation Plan*, 2011.

[33] Grant, L., and Shearer, P., *Activity of the Offshore Newport-Inglewood Rose Canyon Fault Zone, Coastal Southern California*, from Relocated Microseismicity, Bulletin of the Seismological Society of America, Vol., 94, No. 2, pp. 747-752, April 2004.

[34] See, for example, Pischke, Gary, *Earthquakes and Folds on the Rose Canyon Fault Zone*, in *The Seismic Risk in the San Diego Region: Special Focus on the Rose Canyon Fault System*, edited by Glenn Roquemore, the Southern California Earthquake Preparedness Project, 1989.

[35] Section 1613A.2 of the California Building Code defines an "active earthquake fault" as "a fault that has been the source of earthquakes or is recognized as a potential source of earthquakes, including those that have exhibited surface displacement within Holocene time (about 11,000 years) as determined by California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act , those included as type A or type B faults for the U.S. Geological Survey (USGS) National Seismic Hazard Maps, and faults considered to have been active in Holocene time by an authoritative source, federal, state or local governmental agency."

The HBEP would be located within a few hundred feet of the NIFZ's South Branch Fault (see **Exhibit 11 – Mapped South Branch Fault Beneath Project Site**). The South Branch Fault is less well understood than some other segments of the NIFZ, due in part to the extensive development and areas of fill existing along the fault route, both of which tend to mask surface expressions of faulting and make investigations at depth more difficult. A 1981 study noted that the NIFZ in the immediate project area had not been designated as active mainly because of the difficulty in identifying evidence for faulting.[36] When investigating the NIFZ for designation within an Alquist-Priolo Earthquake Fault Zone, the CGS found sufficient evidence to designate just the above-referenced segment of the NIFZ's North Branch near the proposed project site. Results of geodetic studies published in 2001 found evidence suggesting that the South Branch may be active.[37] Additionally, a 2007 study of another nearby project's potential pipeline routes described the South Branch Fault as "potentially active."[38]

More recently, the City noted that additional studies of the South Branch and other fault traces could result in Alquist-Priolo Earthquake Fault Zone designations. The City had already classified the South Branch Fault as a "Category C" fault, which requires special studies and subsurface investigation for nearby proposed developments. In 2010, the City's *Beach and Edinger Corridor Specific Plan EIR*, which is a planning document for an area of the City near the HBEP site, discussed the hazards associated with the South Branch Fault and acknowledged the potential for surface fault rupture.[39] The City's 2011 Hazard Mitigation Plan describes the South Branch Fault as "active," and identifies critical infrastructure near that fault that may be subject to damage from seismic activity.

In addition to the NIFZ, the site and facility are subject to potential seismic events and significant hazards from other regional faults, including the Compton-Los Angeles Blind Thrust Fault, the Elysian Park Blind Thrust Fault, and the Palos Verdes, Whittier-Elsinore, Serra Madre-Cucamonga, and San Andreas fault systems and others.[40] For example, the project site has been

[36] See Guptill, Paul, and Edward Heath, *Surface Faulting Along the Newport-Inglewood Zone of Deformation*, California Geology, July 1981, referencing Hart, E. W., *Fault hazard zones in California: California Division of Mines and Geology Special Publication 42 Revised Edition*, 1980.

[37] See Bender, E., et. al, *Surface Motion Detection from a Small Aperture Geodetic Network, Southern Los Angeles Basin*, from 97th Annual Meeting of Pacific Section American Association of Petroleum Geologists, 2001. The report explains that geodetic stations installed across a potential restraining bend along the south branch of the Newport-Inglewood fault zone appeared to be converging at a high rate. Assuming that surface motions accurately depict subsurface conditions, this may indicate that strain is accumulating at depth, which could indicate the South Branch Fault is active.

[38] See ENSR Corporation, *Topic Report 6 – Geological Resources*, for Woodside Natural Gas, Inc., OceanWay Secure Energy, August 2007.

[39] The EIR states, "[t]his does not mean there is no threat of surface rupture along the other fault traces [including the South Branch]: only that the current state of our knowledge about them does not indicate whether a threat is present." It further states that "it is prudent to consider the possibility of surface rupture in the design and construction of development in the Specific Plan Area south of Ellis Avenue," an area that includes the South Branch Fault.

[40] See Magorian, D. Scott, *Preliminary Review of Geotechnical Constraints and Geologic Hazards Poseidon Resources Orange County Desalination Project – North and West Tank Options*, September 7, 2002, and Municipal

identified as subject to "Very Heavy" damage from a magnitude 6.9 earthquake on the Newport-Inglewood Fault, "Moderate to Heavy" damage from a magnitude 6.6 earthquake on the San Joaquin Fault (which is approximately 2.2 miles from the site), and "Moderate" damage from earthquakes on any of several other faults, including a magnitude 6.8 earthquake on the Peralta Hills fault (about 10 miles distant), a magnitude 7.5 earthquake on the Puente Hills fault (19.5 miles distant), and a magnitude 6.8 earthquake on the Whittier fault (20.7 miles distant).[41]

Site Seismic Hazards

The HBEP site is subject to several types of seismic hazards, as described below.

Surface Fault Rupture

The FSA notes that the proposed HBEP site is likely not subject to surface fault rupture. However, AES's July 2012 site assessment identified the above-referenced South Branch Fault trace as being located below the northeast corner of the power plant site, and stated it was proposing to locate its new generating units to provide a 500-foot buffer from the mapped fault and the location of potential surface fault rupture.

As noted in the Land Use and Alternatives discussion above, the Commission recommends that Energy Commission staff evaluate whether that part of the power plant site could be used for construction staging or parking that would reduce the project's effects on offsite coastal resources. That evaluation should include consideration of potential surface fault rupture and geologic stability.

Ground Shaking

The FSA identifies a range of potential ground motions at the site expected from several different seismic events and based on different modeling approaches.[42] They range from 0.598 g up to 2.4 g, which is a relatively severe level of ground movement. Structural measures needed to respond to ground motions at the upper end of this range could require substantial alterations to the facility as it is currently proposed.

Liquefaction and Lateral Spread

Liquefaction occurs in certain soils during seismic events. It results in the soil losing its strength and acting similar to a liquid, often resulting in collapse or damage to overlying structures. Lateral spread occurs when soils that are on flat to gently sloping surfaces above liquefiable soils and adjacent to an unsupported slope move in response to a seismic event – it is essentially a landslide that occurs on nearly flat ground.

Water District of Orange County, *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan, Orange County*, California, February 1, 2012.

[41] See the 2012 *Orange County Regional Water and Wastewater Multi-Hazard Mitigation Plan*.

[42] See FSA's Geology & Paleontology Section, page 5.2-20, Table 3.

The proposed project site is within an area the City has designated as having "Very High" liquefaction potential (see **Exhibit 12 – Map of Liquefaction Potential in Huntington Beach**). The FSA notes that conditions within the power plant site are likely conducive to liquefaction, though less so for lateral spread. As noted above, the power plant site's liquefaction and lateral spread hazards are likely to be exacerbated by the increased surface and groundwater levels associated with predicted sea level rise during the HBEP facility life. The City additionally notes in its Environmental Hazards Chapter that earthquake intensities are likely to be higher in liquefaction-prone areas than in nearby non-liquefaction prone areas. It is not clear whether the range of ground motions noted above incorporate this potential for higher intensities.

Initial geotechnical investigations conducted at the adjoining AES Tank Farm for the proposed Poseidon project showed that site to be underlain by liquefiable soils extending to about 20 feet below the ground surface.[43] Those investigations also concluded that the site had a high potential for lateral spread, due to its soil characteristics, high groundwater levels, and its location along several hundred feet of the sloping sides of the adjacent flood control channel that were not designed to resist lateral spread.[44] Poseidon considered several methods to reduce liquefaction and lateral spread effects, including building the facility on stone columns, constructing below-grade buttress walls, and over-excavating soils subject to liquefaction, and the SEIR for that project required Poseidon to conduct additional geotechnical investigations prior to constructing the facility.

The FSA includes several proposed conditions to address the above-identified risks. Proposed **Condition GEO-1** would require AES to conduct geotechnical engineering analyses and prepare an engineering report that more specifically describes the site's seismicity and anticipated geologic hazards. **Condition GEO-1** also requires that report to include recommended measures to respond to the identified hazards. Proposed **Condition GEN-1** requires AES to design and construct its facility consistent with the requirements of the state's Building Codes, and proposed **Condition GEN-5** requires AES to use licensed engineers, engineering geologists, and other similarly accredited personnel to review the various geotechnical analyses, design the facility plans, and consult as needed during construction. This approach is largely consistent with relevant Coastal Act and LCP policies listed above. However, we are recommending several modifications to these proposed conditions to allow fuller conformity to those policies.

Coastal Commission Recommended Specific Provision

As noted above, it is not yet clear whether the upcoming geotechnical investigations and the resulting proposed mitigation measures will require substantial changes to the facility and cause additional and as-of-yet unknown and unquantified adverse effects on coastal resources. For example, if conditions beneath the HBEP footprint are similar to those beneath the adjacent AES tank farm site, the project could require significant dewatering,

[43] See SEIR, Appendix C – *Updated Preliminary Review of Geological Constraints and Geologic Hazards*, page 13.

[44] See Magorian, D. Scott, *Preliminary Review of Geotechnical Constraints and Geologic Hazards Poseidon Resources Orange County Desalination Project – North and West Tank Options*, September 7, 2002, and Magorien, D. Scott, *Updated Preliminary Review of Geotechnical Constraints and Geologic Hazards, Poseidon Resources Seawater Desalination Project, Huntington Beach, California*, February 2, 2010.

construction of stone columns or buttresses, placement of sheet piles, excavation, as well as other measures, any of which could change the project's anticipated coastal resource effects and its conformity to Coastal Act and LCP policies. Placement of buttress walls, for instance, could alter or reduce groundwater flow beneath the site and affect nearby wetlands, while extensive excavation could require significantly increased truck traffic and adversely affect public access to the shoreline. Additionally, given the site's potential for relatively severe ground motion, results of the upcoming studies could show that the facility will require extraordinary means of construction to ensure its stability. We are therefore recommending the following modifications, as shown in strikethrough/bold underline below:

- In recognition that hazards to the site and proposed facility are not yet fully identified, the Commission expects that some of the current evaluation regarding project effects on coastal resources may be understated and may require additional review to determine the project's conformity to relevant Coastal Act and LCP provisions. We recommend that project changes resulting from the upcoming studies undergo additional public review, if those changes are likely to increase adverse coastal resource effects or reduce the project's conformity to relevant Coastal Act and LCP provisions. We recommend the following modification to the FSA's proposed Condition GEO-1:

  "A Soils Engineering Report as required by Section 1803 of the California Building Code (CBC 2013), shall specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of seismicity; liquefaction; dynamic compaction; compressible soils; corrosive soils; and tsunami. In accordance with CBC 2013, the report should also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present. **If the analyses or recommendations show that the project will cause greater or more significant adverse effects to coastal resources than identified and evaluated in the Presiding Member's Final Decision for this AFC, the project owner shall submit the analyses and recommendations for additional public review to be conducted by the CEC staff.**

  Verification: The project owner shall include in the application for a grading permit a copy of the Soils Engineering Report which addresses the potential for strong seismic shaking; liquefaction; dynamic compaction; settlement due to compressible soils; corrosive soils; and tsunami, and a summary of how the results of the analyses were incorporated into the project foundation and grading plan design for review and comment by the Chief Building Official (CBO). A copy of the Soils Engineering Report, application for grading permit and any comments by the CBO are to be provided to the CPM at least 30 days prior to grading."

Site Seismic Hazards – Coastal and Geologic Hazards and Risks to a Critical Facility

LCP Environmental Hazards Policy 1.1.4 requires evaluating the risk to the proposed project from the above-described hazards. It also requires evaluating the risk of human, property, and social structure damage resulting from these hazards, identifying a level of "acceptable" risk, and comparing the risks to the costs of corrective measures to mitigate or prevent these damages. These analyses are particularly important for this proposed critical facility that, despite its location on a relatively hazardous site, is meant to support regional electrical grid reliability.

The City has not conducted a facility-specific risk assessment for the project; however, it has developed several hazard mitigation plans that address hazards and risks to critical infrastructure in the City. The findings of these hazard mitigation plans can be applied to the proposed project to determine the project's consistency with the hazard planning and risk assessment required pursuant to the above LCP policies.

Pursuant to state and federal requirements, local jurisdictions prepare Hazard Mitigation Plans to identify the suite of natural hazards known or expected to affect a community, identify actions that will reduce losses from those hazards, and establish a coordinated process for implementing the plan and these actions.[45] These requirements also require the Plans be in place for local jurisdictions to be eligible for certain disaster recovery funding. The above-cited FEMA guidance states that these Plans are to describe how a local government will integrate the mitigation elements identified in its Plan into that government's local land use decisions.

The Plans are to include:

- A risk assessment of the type, location, and extent of all natural hazards that can affect the local jurisdiction, along with a description of previous occurrences and the probability of future occurrences.
- A description of the local jurisdiction's vulnerability to these hazards, including the type and number of critical facilities and infrastructure located in hazard areas and an estimate of potential costs should these facilities be lost or damaged due to these hazards.
- Mitigation measures needed to avoid or reduce hazards and potential effects of the loss of critical facilities.
- A description of land uses and development in the local jurisdiction to allow the Plan's mitigation options to be considered as part of land use decisions.

The City has prepared three plans that address these concerns – the aforementioned Flood Management Plan, prepared pursuant to FEMA requirements and meant to help implement the City's Environmental Hazards Element of its LCP, a 2012 Hazard Mitigation Plan, and a Multi-Hazard Mitigation Plan [n.d.] prepared with the neighboring City of Fountain Valley. The Plans identify a number of hazards at the project site, including those described above – flooding, tsunami, seismic events, and others.

[45] See guidance from the California Emergency Management Agency regarding compliance with AB 2140 at http://hazardmitigation.calema.ca.gov/docs/AB2140_Letter_to_Local_Government.pdf , and Federal Emergency Management Agency, pursuant to 44 CFR 201 *et. seq*. regarding Federal Emergency Management Agency requirements.

Additionally, and given the number of site hazards, it is highly probable that the facility will experience one or more of the identified hazards during its operating life. Considering only those hazards with an expected recurrence interval or return period – e.g., a "100-year flood" – the site and facility have the following probabilities of any one of these hazards occurring during the project's expected 30-year operating life:

Hazard:	**Probability:**[46]
100-year flood:	**26%** (approximately 1 in 4 chance).
100-year tsunami:	**26%** (approximately 1 in 4 chance).
500-year tsunami:	**6%** (approximately 1 in 14 chance).
500-year flood:	**6%** (approximately 1 in 14 chance).

However, because the site and the proposed facility are subject to multiple hazards, the probability is much greater that they will experience not just one hazard – i.e., just a 100-year flood – but any one of the several hazards. For example, the probability that the site will experience either a 100-year tsunami or a 100-year flood is about twice as high than if the site was subject to just one or the other of those events. Looking at just the above four events, there is a greater than even chance that the site would experience at least any one of them during its operating life – that is, the probability that the site will experience a 100-year flood or a 500-year flood or a 100-year tsunami or a 500-year tsunami is somewhat greater than 50%.[47] The actual probability is somewhat higher, as the list above does not include all the site hazards for which recurrence intervals can be developed – for example, any damaging seismic events resulting from the above-referenced regional faults for which recurrence intervals have been calculated. Risks from damage to the facility that result from these hazards include short- or long-term disruption of electrical power from the facility, loss of grid support provided by the facility, release of chemicals or structural debris to nearby properties and habitats, and others.

While the FSA's proposed conditions reduce the facility's risk, the site's hazards still make the facility highly vulnerable to damage and result in risks that must be addressed pursuant to Environmental Hazards Policy 1.1.4. Additionally, addressing the risks associated with some of the hazards will require coordination with multiple nearby landowners and local governments – for example, the site's flood protection relies on levees and sheet piles constructed and managed by the Orange County Flood Control District; however, as noted above, those structures are not designed to withstand the area's seismic forces, so the facility's reliability is dependent on ongoing system improvements made by the Flood Control District.

[46] The calculation used is $r = 1-(1- 1/T)^N$, with T = the return period (e.g., a 100-year event), N = the expected operating life of the facility (i.e., 30 years), and r = the probability that the event will occur at least once in N years.

[47] This combined probability is the sum of the individual probabilities minus the probabilities of the site experiencing more than one of the hazards during its operating life. The calculation is ((0.26 + 0.26 + 0.06 + 0.06 - (0.26 * 0.26) – (0.26 – 0.06) – (0.26 * 0.06) - (0.06 * 0.06)) = .5376, or just over 50% probability.

Coastal Commission Recommended Specific Provision

To allow conformity to the LCP's Environmental Hazards Policy 1.1.4, the Commission recommends the following additional condition:

"**Condition GEO-4: Prior to issuance of the project grading permit, the project owner shall provide to the CPM documentation from the City of Huntington Beach showing that the project is consistent with the City's most recent Flood Management Plan, Hazard Mitigation Plan, and Multi-Hazard Mitigation Plan prepared pursuant to California Government Code Sections 8685.9 and 65302.6 and 44 CFR 201.6 et seq.**"

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

G. PUBLIC ACCESS

LCP Policy C 2.5 states:

> *Maintain and enhance, where feasible, existing shoreline and coastal resource access sites.*

Coastal Act Section 30211 states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

The proposed facility is to be built within an industrial site about one-half mile from the shoreline where public access is not available and not warranted. However, the project, as proposed, would cause two main types of adverse effects on public access. First, AES proposes to use over 200 parking spaces near the shoreline that are typically used for public access to the beach. Second, it would increase and interrupt traffic on streets used for public access to the shoreline in this area of Huntington Beach and along about 15 miles of the Pacific Coast Highway between the HBEP site and AES's Alamitos Power Plant site. These two adverse effects and the Commission's proposed mitigation measures are described below.

Beach Access Parking

AES expects a maximum of 331 workers on-site during the peak construction period. AES has proposed using one onsite and four offsite parking areas, and is planning to provide shuttle service to transport workers between the offsite areas and the project site (see **Exhibit 13 – Proposed HBEP Construction Parking**). The proposed parking areas, which are listed below, would provide more than three times the expected parking needed for the project.

Parking Area Location	Parking Area Size	Number of Spaces (approximate)
Onsite at HBEP	1.5 acres	130
Plains All-American Tank Farm, adjacent to HBEP	1.9 acres	170
Graded area west of HBEP on Newland Street	3 acres	300
Graded area at PCH and Beach Street	2.5 acres	215
Huntington Beach City Parking Area at PCH and Beach Street	N/A	225
Total Number of Spaces:		**1040**

The Huntington Beach City Parking Area described in the AES proposal is located about one-half mile from the power plant site and is used extensively by beachgoers. The 225 spaces AES proposes to use at this location would reduce parking that is meant to provide public access to the shoreline along this stretch of the coast.

The FSA's proposed **Condition TRANS-3** would require AES to prepare a Traffic Control Plan to address the project's traffic- and parking-related impacts. The required Plan would include a Parking/Staging Plan that is to ensure all project-related parking during construction and operation be either on-site or in the designated off-site parking areas. However, **Condition TRANS-3** does not yet ensure conformity to the City's LCP to the extent feasible.

Coastal Commission Recommended Specific Provision:
As noted above, LCP Policy C2.5 requires that existing shoreline access sites be maintained and enhanced, where feasible. The Commission therefore recommends that **Condition TRANS-3** be modified to delete the Huntington Beach City Parking Area from the project's parking plans. This feasible modification ensures continued availability of beach parking, allows AES to still have more than three times the expected parking needed, and would allow conformity to LCP Policy C 2.5.[48]

Additionally, and as described above in the Land Use and Alternatives section of this report, the Commission recommends the CEC evaluate whether additional space is available for short- or long-term use at the on-site AES Tank Farm or at the adjacent Plains America Tank Farms. Each of these tank farm areas is larger than the total of all five of AES's currently proposed parking area, and using all or some of the tank farm space could further reduce the project's cumulative and off-site impacts.

[48] Alternatively, Condition TRANS-3 could be modified to require that the Parking/Staging Plan specify that the Huntington Beach City Parking Area be used only if there is insufficient parking space available in the other four proposed parking areas.

Project-Related Traffic

Project-related traffic during approximately eight years of demolition, remediation, and construction activities at the facility site will occur along several thoroughfares, all of which provide access to the shoreline. These include the Pacific Coast Highway (PCH), Newland Avenue, Brookhurst Street, Magnolia Street, and Beach Boulevard. Because AES proposes to stage some of its equipment at its Alamitos Power Plant site, located about 15 miles north of Huntington Beach, the traffic effects would extend along that entire stretch of the PCH. AES also expects to require up to 112 "oversize" trips to transport the largest power plant components from the Port of Long Beach to the project site. AES expects its average daily construction traffic to include about 734 one-way trips, with most (662) due to the workers' commutes and the remainder due to deliveries (48 delivery/haul trucks and 72 cars or trucks that would accompany the deliveries).

The FSA identifies relatively minor reductions of no more than a few seconds delay in the Traffic Levels of Service (LOS) at nearby intersections during peak construction and peak traffic times.[49] However, at least two of the studied intersections are already at LOS E and LOS F, and the City's Circulation Element Policy CE2.1.1 requires a minimum LOS standard at peak hours to be no lower than LOS D. To address this issue, the FSA includes **Condition TRANS-3**, which would require AES to prepare a Traffic Control Plan in consultation with the City and with other agencies, noting that AES would need to monitor the affected intersections and use alternate routes during construction.

Coastal Commission Recommended Specific Provision

To ensure compatibility with LCP Policy C2.5, the Commission recommends that **Condition TRANS-3** be modified to require that project-related traffic needing to use any alternative routes at least maintain existing levels of public access to the shoreline.

We also recommend a modification to the traffic analysis presented in the FSA. The FSA evaluated cumulative traffic impacts expected to result from this project and 26 other projects that are proposed, under review, or approved in the area between the power plant site and the Alamitos Power Plant staging area. However, that analysis does not appear to include two projects – the proposed Poseidon desalination facility and the Ascon Landfill cleanup – that are immediately adjacent to the HBEP site and could involve significant amounts of traffic. The Poseidon project is expected to generate up to about 225 trips per day and would use the same power plant access points and several of the same roads that AES plans to use for its project. The Ascon Landfill cleanup, which the FSA analysis mentions but does not include in its traffic analysis, is expected to involve up to about 200 truck trips per day for about a year starting in 2015.[50] Traffic associated with either of these projects could substantially change the FSA's analysis and further decrease the Levels of Service on nearby roads.

[49] The Level of Service refers to a method used to quantify existing baseline traffic conditions and the level of traffic congestion that may be present at certain times of day or under certain conditions. Levels of Service range from Level A, which allows the free flow of traffic, to Level F, which produces jammed conditions and significant delays.

[50] See DTSC's Ascon Landfill Draft EIR at: http://www.dtsc.ca.gov/SiteCleanup/Projects/Ascon.cfm

To ensure the AES project and these other projects do not create unanticipated cumulative traffic impacts, we also recommend the Traffic Control Plan required pursuant to **Condition TRANS-3** incorporate traffic that may be generated by these two projects, either or both of which could occur concurrently with the AES project.

Conclusion

The Commission finds that the CEC's implementation of the above-recommended Specific Provisions would allow the proposed project to be consistent to the extent feasible with relevant policies of the Coastal Act and LCP.

ATTACHMENT A – SUBSTANTIVE FILE DOCUMENTS

Coastal Commission, *Designation of Coastal Zone Areas Where Construction of an Electric Power Plant Would Prevent Achievement of the Objectives of the California Coastal Act of 1976*, adopted September 1978, revised 1984, re-adopted December 1985, San Francisco, CA

Coastal Commission, staff report for Poseidon Water Huntington Beach Desalination Facility – Appeal #A-5-HNB-10-225 and Application No.: E-06-007, November 2013, available at: http://documents.coastal.ca.gov/reports/2013/11/W19a-s-11-2013.pdf

Energy Commission, *Opportunities to Expand Coastal Power Plants in California*, Staff Report P700-80-001, June 1980, Sacramento, CA.

Energy Commission, Final Staff Assessment and associated docketed documents for 12-AFC-02, Application for Certification for AES Southland, LLC Huntington Beach Energy Project, filed prior to June 2014.