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Project Title:	Puente Power Project
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Document Title:	City of Oxnard's Data Requests, Set 2
Description:	Data Requests, Set 2 (Nos. 47-67) on behalf of the City of Oxnard submitted by the City of Oxnard
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September 8, 2015

John Chillerni, President
NRG Oxnard Energy Center, LLC
100 California Street, Suite 650
San Francisco, California 94111

Re: Puente Power Project (15-AFC-01); Data Requests, Set 2 (Nos. 47-67)

Dear Mr. Chillerni:

Pursuant to Title 20, California Code of Regulations, section 1716(a), the City of Oxnard requests the information specified in the enclosed data requests. The information requested is necessary to: 1) more fully understand the project, 2) assess whether the facility will be constructed and operated in compliance with applicable regulations, 3) assess whether the project will result in significant environmental impacts, 4) assess whether the facilities will be constructed and operated in a safe, efficient and reliable manner, and 5) assess potential mitigation measures.

In this Set 2, Data Requests are being made in the technical area of Environmental Hazards. Written responses to the enclosed data requests are due to the City staff on or before October 8, 2015.

If you are unable to provide the information requested, need additional time, or object to providing the requested information, please send a written notice to the City and me within 20 days of receipt of this notice. The notification must contain the reasons for the inability to provide the information or the grounds for any objections (see Title 20, California Code of Regulations, section 17.16(f)).

If you have any questions regarding the enclosed data requests, please call me at (415) 552-7272.

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP

Ellison Folk

Encl.

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STATE OF CALIFORNIA

Energy Resources
Conservation and Development Commission

In the matter of: Application for Certification of the **PUENTE POWER PROJECT**	DOCKET NO. 15-AFC-01 **CITY OF OXNARD'S DATA REQUESTS, SET 2**

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ENVIRONMENTAL HAZARDS

Background: SEA LEVEL RISE

The AFC evaluated the impact of sea level rise risk on the Project in Appendix N-2. The analysis considers combined effects of sea level rise risk and other sources of flooding that may occur simultaneously, including tidal flooding, wave and storm surge flooding, riverine inundation, dune erosion, and tsunami inundation. The impacts are concluded to not be significant and no mitigation is proposed. In contrast, the Preliminary Geotechnical Evaluation, AFC, Appendix A-9, recommends mitigation. AFC, Appx. A-9, p. 16.

The sea level risk analysis fails to consider the impact of simultaneous tsunami, wave and storm surge flooding, and riverine inundation. Without reporting any cumulative analysis, the AFC concludes: "The combined effects of SLR, potential erosion of the berm, wave events, and storm surge run-up that could occur during the life of the project through planning horizon 2050 are not expected to adversely impact the project." AFC, Appx. N-2, p. 6.

Data Request 47: Please revise the sea level rise analysis in Appendix N-2 to include the cumulative effect of a tsunami, wave and storm surge flooding, dune erosion, and riverine inundation. Your analysis should report the cumulative rise in feet above mean sea level for the combined impact.

Data Request 48: Please provide the NOAA LIDAR data used in the sea level rise Technical Memorandum. Appx. N-2, p. 5.

Data Request 49: The sea level rise analysis failed to consider the impact of flooding from the Edison Canal. Please revise the analysis to consider the cumulative effect of a tsunami, wave and storm surge flooding, riverine inundation, dune erosion, and Edison Canal flooding.

Data Request 50: The sea level rise analysis is difficult to evaluate without a detailed topographic map showing the elevation of the dunes and levees protecting the Project site. Please provide a detailed topographic map and three dimensional diagram showing dune and levee elevation and project site elevations.

Data Request 51: The AFC's analysis of wave and storm surge flooding indicates the worst case run-up elevations would be 20 to 25 feet. Please identify the vertical datum used to calculate this height.

Data Request 52: As the dune elevation ranges from 20 to 30 feet, the AFC's analysis indicates that sea level rise plus wave and storm surge flooding could overtop the dunes along sections that are 20 to 25 feet high. The AFC dismisses this potentially significant impact by arguing the beach is now stable and would not erode as assumed in the worst

case scenario. AFC, Appx. N-2, p. 4. Even assuming this is correct, this is a significant impact that should be mitigated. Please identify the basis upon which you conclude that the beach is stable and not subject to erosion.

Data Request 53: Please provide all documents relied upon to support your answer to Data Request 52.

Data Request 54: Please provide any analysis conducted by NRG or its consultants of erosion of the coastal dunes that abut the Mandalay Bay site.

Data Request 55: Please provide all documents relied upon to support your answer to Data Request 54.

Data Request 56: Please provide any analysis conducted by NRG or its consultants of the effect that the dredging of Ventura Harbor has on the accretion and/or erosion of the beach that abuts the Mandalay Bay Generating Station.

Data Request 57: Please provide all documents relied upon to support your answer to Data Request 56.

Data Request 58: Please identify all measures that NRG considered as possible mitigation for impacts from sea level rise and coastal storms. Please state whether such measures are feasible from a legal, technical, and/or economic perspective and state the basis upon which you make this conclusion.

Background: TSUNAMI INUNDATION

The AFC's analysis for a tsunami is based on the 2009 Oxnard tsunami map, confirmed with LIDAR data. This analysis indicates a water level elevation of 10 to 15 feet. AFC Appx. N-2, p. 5. With 2 feet of sea level rise, this leaves 3 feet of freeboard on the lowest part of the 25 to 30 foot high berms/levees. This is a very small safety margin, given the omissions from the analysis. The AFC's cumulative sea level rise analysis was based on an historic 2009 tsunami map that does not include recently reported information on the Ventura Fault and other Southern California offshore fault systems and worst case sea level rise estimates. Thus, it underestimates potential tsunami impacts. Further, the AFC's tsunami analysis fails to consider cumulative effects from other sources of flooding.

Awareness of the hazards of tsunami inundation has grown since the 2011 Japan earthquake and tsunami. This event led scientists to investigate similar fault systems in Southern California that could unleash tsunamis along the California coast. Recent geological work has indicated that the Ventura fault could cause a major earthquake that could create a tsunami that would begin "in the Santa Barbara Channel area, and would

affect the coastline…down through the Santa Monica area and further south". Other work has reported active fault zones off the Southern California coast.[1] These fault systems were not considered in developing the "Tsunami Inundation Map for Emergency Planning, Oxnard Quadrangle," that the AFC relied on. AFC, Appx. N-2, Attach. 2, Inset Table 1. As a result of these studies, the California Geological Survey is studying whether it needs to revise tsunami hazard maps.[2] The resulting inundation would be "severe right along the coast."[3]

The Preliminary Geotechnical Evaluation (AFC, Appx. A, pdf 259/260) states the project site is adjacent to a mapped tsunami run-up hazard area and notes that while dunes elevated up to about 25 feet above MSL offer some protection, "due to the site location in an area mapped as susceptible to tsunami run-up hazards, the potential for tsunami run-up hazards at the site and possible mitigation techniques should be evaluated during the detailed design phase of the project." The Sea Level Rise Analysis in Appendix N-2, on the other hand, dismisses tsunami inundation as an issue because the elevation of a tsunami with sea level rise is less than the height of the berm. AFC, Appx. N-2, p. 6. This conclusion fails to consider the impact of storm surges, coastal erosion and sea level risk on the structural integrity of the dunes and berms.

Data Request 59: Please prepare a tsunami runup hazard analysis that includes the most recent information on the Ventura Fault and Southern California fault system and propose mitigation for any impacts. Your analysis should include an updated tsunami hazard map that includes all recently discovered faults.

Data Request 60: Please revise the cumulative sea level rise analysis in Appendix N-2 to include recent information on the Ventura Fault and Southern California fault systems.[4]

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[1] Mark R. Legg et al., High-Resolution Mapping of Two Large-Scale Transpressional Fault Zones in the California Continental Borderland: Santa Cruz-Catalina Ridge and Ferrelo Faults, Journal of Geophysical Research: Earth Surface, May 30, 2015; Sci-News.com, Researchers Map Active Fault Zones off Southern California, June 1, 2015, See: http://www.sci-news.com/othersciences/geophysics/science-fault-zones-southern-california-02862.html

[2] Rong-Gong Lin II, Earthquake Fault Heightens California Tsunami Threat, Experts Say, Los Angeles Times, June 6, 2015, See: http://www.latimes.com/local/california/la-me-ventura-fault-20150420-story.html#page=1

[3] Rong-Gong Lin II, Earthquake Fault Heightens California Tsunami Threat, Experts Say, Los Angeles Times, June 6, 2015, See: http://www.latimes.com/local/california/la-me-ventura-fault-20150420-story.html#page=1

[4] J. Hubbard, J.H. Shaw and others, Structure and Seismic Hazard of the Ventura Avenue Anticline and Ventura Fault, California: Prospect for Large, Multisegment Ruptures in

(footnote continued on next page)

Data Request 61: Please resolve the apparent inconsistency between the Sea Level Rise Analysis and the Geotechnical Report with respect to tsunami inundation.

Data Request 62: Please evaluate the ability of the existing berm to contain the force of a tsunami that raises water elevation to the top of the berm along the entire length of the berm.

Data Request 63: The Preliminary Geotechnical Evaluation, AFC, Appendix A-9, concludes: "The existing dunes are up to approximately 25 feet above MSL and should continue to provide protection to the site during the predicted sea level rise of 55 inches by 2100. As sea level rises, however, periodic storm surge and wave activity will impact the dunes. Future maintenance/re-building of the dunes (and berms) that border the site would provide continued protection for the project site, and reduce the impacts of projected sea level rise." AFC, Appx. A-9, p. 16. Please include these measures as mitigation for significant sea level rise impacts in the AFC or provide technical justification for excluding them. How frequent will these measures be required and what form of dedicated funding is in place to maintain these dunes?

Data Request 64: Please provide any photographs or other documentation of any coastal or river flooding or coastal erosion that has occurred at the Mandalay Bay Generating station since 1966.

Data Request 65: Please provide any photographs or other documentation showing the Santa Clara Estuary within 0.5 miles of the Mandalay Bay Generating station since 1966.

Data Request 66: Please provide maintenance records and volume estimates of sand management that has occurred on the Mandalay Bay Generating station since 1966.

(footnote continued from previous page)
the Western Transverse Ranges, Bulletin of the Seismological Society of America, May 2014.

Data Request 67: Please provide plans and locations of any tidegates or water control infrastructure that may affect the hydraulic connectivity between the site, the Pacific Ocean, and the Edison Canal.

DATED: September 8, 2015

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