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June 7, 2010

383194.AP.AM

Ms. Felicia Miller  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

Subject: Almond 2 Power Plant (09-AFC-02)  
Comments on CEC Staff Assessment

Dear Ms. Miller:

Attached please find 5 hard copies and 1 electronic copy on CD-ROM of the Turlock Irrigation District's Comments on the CEC Staff Assessment for the Almond 2 Power Plant (A2PP). Included with the comments are redline/strikeout versions of the Staff Assessment sections, which, except as noted below, represent the District's suggested language changes to the Staff Assessment.

- **Air Quality:** the Applicant's comments include arguments to support the Air District and the Applicant's proposed 10 ppm ammonia slip. The Applicant has not revised the text of the Air Quality section of the Staff Assessment, other than to delete Condition AQSC-9, but is hopeful that the Staff will use the comments to support a 10 ppm slip level in its final analysis.
- **Noise:** the Applicant's comments provide the rationale for the Applicant's proposed operating levels for the A2PP project, as reflected in revised condition Noise-4. In addition to minor conforming changes in the text, the Applicant's proposed revisions to the Staff Assessment include proposed revisions to Noise-4 and the supporting text and materials.
- **Cultural Resources:** the Applicant's comments include, among other comments, the additional geoarcheological studies and information regarding the 1.8 mile natural gas pipeline reinforcement segment on the west side of the San Joaquin River. The redline/strikeout text for the Staff Assessment conforms to these comments and include proposed revisions to the section's Conditions of Certification aimed at clarifying Staff's intent.

<b>DOCKET</b>	
<b>09-AFC-2</b>	
DATE	JUN 07 2010
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Page 2  
June 2, 2010

If you have any questions, comments, or concerns about this matter, please contact me at (916) 286-0249 or contact Susan Strachan at (530) 757-7038.

Sincerely,

CH2M HILL

A handwritten signature in black ink, appearing to read "Sarah Madams". The signature is fluid and cursive, with a long horizontal stroke at the end.

Sarah Madams  
AFC Project Manager

Attachment

cc: S. Strachan, Strachan Consulting  
R. Baysinger, TID

# APPLICATION FOR CERTIFICATION



SUBMITTED TO  
**California  
Energy Commission**

FOR  
**TID Almond 2  
Power Plant**  
(09-AFC-02)

SUBMITTED BY



**Turlock Irrigation District**

TECHNICAL ASSISTANCE BY

**CH2MHILL**

June 2010

**Comments on the CEC Staff Assessment**

# Contents

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## **Comments on the CEC Staff Assessment**

**Attachment A:** Relocated Laydown Area Info

**Attachment B:** Special Status Plant Survey Report

**Attachment C:** Surficial Geology Tech Memo

**Attachment D:** Revised HAZ-1 List

**Attachment E:** School Bus Email

**Attachment F:** PDF of CEC Staff Assessment redline/strikeout sections

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# Almond 2 Power Plant

(09-AFC-2)

## Comments on the CEC Staff Assessment

Submitted to  
**California Energy Commission**

Submitted by  
**Turlock Irrigation District**

With Assistance from

**CH2MHILL**  
2485 Natomas Park Drive  
Suite 600  
Sacramento, CA 95833

June 2010

Listed below, for CEC Staff's consideration, are the Turlock Irrigation District's (TID) comments on the Staff Assessment (SA) for the Almond 2 Power Plant project (A2PP) (09-AFC-2).

### **GENERAL COMMENTS**

In the SA, reference is made to an 11.6-mile long gas line, a 13.4-mile long gas line, and a 13.4-mile natural gas pipeline (11.6 miles of new pipeline and 1.8 miles of pipeline reinforcement). The Applicant recommends that reference to the gas pipeline be consistent; it is an 11.6 mile long new natural gas pipeline and 1.8 mile long pipeline reinforcement.

The Applicant also believes it would be helpful to clearly define what a natural gas "reinforcement" means. The Reinforcement Project leaves the existing natural gas pipeline in the ground untouched, and a new pipeline is placed in a separate trench paralleling the existing pipe. This paralleling of an existing pipe with a new pipe is sometimes also referred to as "looping" the pipeline system. The Reinforcement Project is reinforcing the PG&E system, adding additional capacity; it is not the reinforcement of an existing pipe.

In several areas of the SA, it is stated that the 69-kV line will be reconducted. However, in Data Response Set 1C, #72, The Applicant informed the Staff that the existing line would be re-rated rather than reconducted. Reconducting is subject to a CEQA exemption, and the construction associated with re-rating is less than or comparable to reconducting; all the work will be aboveground within the existing transmission line right-of-way. TID will be simply moving the cross arms on approximately five existing transmission poles. This effort will take a matter of days, whereas reconducting the line would have taken several weeks.

The SA contains a description of the A2PP laydown area on WinCo property located north of the A2PP site. To advance this AFC for the A2PP, TID has been meeting with the neighboring landowner, WinCo Foods, LLC, and potential project construction contractors to develop detailed construction plans.

As a result of these advanced discussions, TID has determined that it would be beneficial to move the construction laydown area to another location on the WinCo property with more available area. This additional area is 6.4 acres and will be adjacent to the western border of the proposed site within the WinCo property, and was historically used for agricultural.

To be clear, while TID and WinCo have been in discussions for weeks on the possible land transaction, an agreement in principle was just recently reached by the negotiating teams and made public for the first time with the TID Board's approval of the Resolution on May 11, 2010.

Moving the laydown area to a new location on the WinCo property does not change any of the analyses in the SA. TID has prepared an environmental analysis for the laydown area.

It is included in Attachment A. Using this 6.4 acre area, TID can forgo the use of the originally proposed 1.85-acre laydown to the north of the A2PP site. While TID continues to believe that there are no stormwater or biological resources associated with the originally proposed laydown area, the use of the 6.4 acres to the west allows TID to avoid the areas identified by Staff as being of some concern to Staff.

The Applicant recommends that all sections of the Staff Assessment describe the laydown area as follows: “The proposed laydown area is located on a 6.4-acre soil borrow pit immediately west of the proposed power plant site that was utilized during construction of the adjacent WinCo distribution center.”

### **EXECUTIVE SUMMARY**

Page 1-2, Project Location and Description, Paragraph 3, First Sentence: Please change the sentence to read as follows: “~~re-rating reconductoring~~ of approximately 2.9 miles of an existing 6.9 miles of an existing 69-kV sub-transmission line to enhance system reliability”.

Page 1-2, Project Location and Description, last paragraph: Identification is made that “...well water for service water and emergency shower/eyewash stations.” is provided. Based on the California requirement for potable water to supply emergency shower/eyewash stations, these components will be provided for the A2PP as self contained units. Service water will not be required for these units.

### **INTRODUCTION**

No comments.

### **PROJECT DESCRIPTION**

Page 3-1, Purpose of Project: In addition to the text set forth, this section should also include a restatement of the Applicant’s Basic Project Objectives. These Basic Project Objectives are found in the AFC in Section 1.1.1, pp. 1-1 to 1-2.

Page 3-2, Power Plant Equipment and Linear Facilities, last paragraph: Identification is made that “...well water for service water and emergency shower/eyewash stations” is provided. Based on the California requirement for potable water to supply emergency shower/eyewash stations, these components will be provided for the A2PP as self contained units. Service water will not be required for these units.

Page 3-2, Power Plant Equipment and Linear Facilities, Fourth Bullet Item: The Applicant requests that the following change be made to the bullet: “~~re-rating reconductoring~~ of approximately 2.9 miles of an existing 6.9 miles of an existing 69-kV sub-transmission line to enhance system reliability”.

Page 3-2, Power Plant Equipment and Linear Facilities, Last Bullet: Please add the following information “and a natural gas pipeline reinforcement approximately 1.8 miles long.”

Page 3-3, Power Plant Equipment and Linear Facilities, Fourth Paragraph, Third Sentence: The Applicant requests the sentence be modified as follows: “In addition, an existing 2.9-

mile long 69 kV sub-transmission line will be re-rated ~~reconducted~~ to prevent possible thermal overloads.”

Page 3-3, Wastewater and Storm Water Discharge: The sentence should be revised to read: “Reverse osmosis reject and wastewater from backwashing the reverse osmosis media ~~also~~ go to the wastewater tank trench.”

Page 3-3, Hazardous Waste, First Paragraph, Third Sentence: This sentence should be revised to read: “Spent lubrication filters will be recycled or disposed of in accordance with regulatory requirements.”

Page 3-3, Transmission System, First Paragraph, last sentence: The 6-9 kV sub-transmission line will be re-rated, not reconducted.

Page 3-5 Project Construction and Operation, Last Paragraph, Last Sentence: The sentence should be revised to reflect the relocated laydown area: “The proposed laydown area is located on a 6.4-acre soil borrow pit immediately west of the proposed power plant site that was utilized during construction of the adjacent WinCo distribution center.”

## **AIR QUALITY**

Page 4.1-11, Existing Emissions, Shared Existing Facilities, third bullet: This bullet identifies “...well water for service water and emergency shower/eyewash stations” is provided. Based on the California requirement for potable water to supply emergency shower/eyewash stations, these components will be provided for the A2PP as self contained units. Service water will not be required for these units.

Page 4.1-12, Proposed Construction Emissions, First Paragraph, Seventh Sentence: Please change “The project would also include a new switchyard, an 11.6 mile long natural gas pipeline and new and reconducted transmission lines” to “The project would also include a new switchyard, an 11.6 mile long natural gas pipeline, a 1.8 mile gas pipeline reinforcement, and new and re-rated ~~reconducted~~ transmission lines”.

Page 4.1-22, Secondary Pollutant Impacts, Third Paragraph, Page 4.1-33, Fourth Bullet, and Staff-recommended Condition of Certification AQ-SC9, pp. 4.1-38 and 39): The Staff proposes a condition that would require TID to replace, repair or otherwise recondition the SCR catalyst within 12 months if ammonia slip limit exceeds 5 ppm, in contrast to the 10 ppm slip limit required by the San Joaquin APCD. The Staff recommends the 5 ppm limit because they believe it is feasible, and because they state that they have a policy of reducing all nonattainment pollutant precursors to the lowest feasible levels. Further, the Staff argues that a lower ammonia slip level is consistent with the decision for the Orange Grove Energy Project, which would use similar CTGs controlled to 5 ppm ammonia slip, and with ARB guidance.

The Staff has not cited any credible basis for arguing that ammonia slip should be limited to 5 ppm, other than that it is possible to achieve such a level. That is not a sufficient basis under CEQA, as mitigation is required only for significant environmental impacts, and the Staff has not demonstrated that ammonia emissions from the project will, in fact, constitute a significant impact. In fact, Staff agrees that



“...particulate formation in the San Joaquin Valley has been found to be limited by the availability of SO<sub>x</sub> and NO<sub>x</sub> in ambient air, rather than the availability of ammonia [citing the SJVAPCD 2008 PM<sub>2.5</sub> Plan]. Offsetting SO<sub>x</sub> and NO<sub>x</sub> emissions would both avoid significant secondary PM<sub>10</sub>/PM<sub>2.5</sub> impacts and reduce secondary pollutant impacts to a less than significant level.” [SA, p. 4.1-22]

Therefore, Staff concedes that with the NO<sub>x</sub> and SO<sub>x</sub> offsets proposed for the project, there would be no significant secondary PM impacts—therefore there is no basis for requiring reductions in ammonia.

In the 2005 Staff Assessment for the Pastoria Energy Facility Expansion (05-AFC-1, November 2005; p. 4.1-40), which is also a simple-cycle turbine project in the San Joaquin Valley, Staff found that

“...the District’s approved PM<sub>10</sub> attainment plan does not currently target ammonia emission reductions (SJVAPCD 2003). The District currently believes that the ammonia rich central valley would not see significant benefits from reducing ammonia emissions, so the District is focusing on emission reductions from primary sources of PM<sub>10</sub> (primarily fugitive dust). Thus, staff agrees with the District’s PDOC permitted ammonia slip level of 10 ppm.”

Staff cites no change in atmospheric chemistry that has occurred in the San Joaquin Valley between the 2005 PEFE recommendation and the 2010 A2PP recommendation that would affect this conclusion.

Further, the ARB “recommendation” regarding ammonia slip was issued in 1999, well before the PEFE was licensed, and was apparently not considered to be relevant or persuasive in the PEFE case. Nevertheless, TID believes that the Staff’s current interpretation of the ARB guidance has been followed in determining the ammonia slip limit of 10 ppm for the project. The ARB guidance states, “Given the *potential for health impacts and increases in PM<sub>10</sub> and PM<sub>2.5</sub>*, districts should ensure that ammonia emissions are minimized from projects using selective catalytic reduction. Staff *recommends that districts consider* establishing ammonia slip levels below 5 ppmvd at 15 percent oxygen in light of the fact that control equipment vendors have openly guaranteed single-digit levels for ammonia slip.”<sup>1</sup> [Emphasis added.] The guidance therefore provides two reasons a district should consider establishing a lower ammonia slip level: health impacts and particulate matter increases. TID’s health risk assessment and the SJVAPCD FDOC evaluated ammonia emissions based on a 10 ppm ammonia slip level and determined that health risks from the proposed project were well below levels of concern.<sup>2,3</sup> Therefore, no potential health impacts have been identified from a 10 ppm slip limit that would require

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<sup>1</sup> CARB’s Guidance for Power Plant Siting and Best Available Control Technology, p. 27, Approved July 22, 1999. Accessed at <http://www.arb.ca.gov/energy/powerpl/guidocfi.pdf> on October 11, 2009. On p. 63, the recommendation is “at or below 5 ppmvd.”

<sup>2</sup> TID Application for Certification, Table 5.1 D-1, May 2009.

<sup>3</sup> SJVAPCD, Final Determination of Compliance, Attachment F (Health Risk Assessment and Ambient Air Quality Analysis), February 2010.

mitigation through a lower ammonia slip limit. Further, the San Joaquin Valley APCD, in which the A2PP is located, has determined that ammonia emissions from power plants in the District do not contribute significantly to particulate formation in the valley.<sup>4</sup> Therefore, no potential increase in PM<sub>10</sub> or PM<sub>2.5</sub> have been identified as a result of the 10 ppm ammonia slip limit that would require mitigation through a lower slip level.

Staff cites the Commission decision in the recent Orange Grove Project (08-AFC-4, April 2009) as additional support for the 5 ppm ammonia slip recommendation. However, Staff fails to note several significant differences between the A2PP project and the Orange Grove project. First, in the Orange Grove case, the applicant proposed the 5 ppm ammonia slip. This limit was not imposed by the air district or by the CEC. In contrast, for A2PP, TID proposed, and the A2PP FDOC includes, a 10 ppm ammonia slip limit. Second, Staff stated in the Orange Grove SA that “[t]he San Diego Air Basin has not undergone the rigorous secondary particulate studies that have been performed in other areas of California, such as the San Joaquin Valley, that have more serious fine particulate pollution problems...”<sup>5</sup> and concludes that it cannot be determined whether the San Diego Air Basin is ammonia-rich or ammonia-poor. In the Orange Grove case, ammonia slip cannot be eliminated as a potential contributor to PM<sub>10</sub> formation in the air basin. However, as discussed above, Staff acknowledges that “...particulate formation in the San Joaquin Valley has been found to be limited by the availability of SO<sub>x</sub> and NO<sub>x</sub> in ambient air, rather than the availability of ammonia.” Therefore, unlike in the Orange Grove case, there is no technical uncertainty regarding the fact that ammonia slip does not contribute significantly to PM formation in the SJVAPCD. Finally, Staff fails to mention that TID has proposed a lower hourly emission limit for directly-emitted PM<sub>10</sub> than the hourly PM limit in the Orange Grove case: PM<sub>10</sub>/PM<sub>2.5</sub> emissions from the A2PP CTGs will be limited to 2.5 lb/hr, while emissions from the Orange Grove CTG may be up to 3.0 lb/hr. Therefore, we do not believe that the Orange Grove decision has any similarity to the A2PP situation or provides any support for a 5 ppm slip level in the A2PP case.

Although Staff states that they have “...reviewed previous cases to determine an NH<sub>3</sub> emission reduction strategy that represents an achievable, feasible, and best available level of ammonia control for the CTGs proposed for A2PP” (SA, p. 4.1-22), Staff does not cite any support for a 5 ppm slip limit other than Orange Grove. However, for the reasons discussed above, the Orange Grove case differs significantly from A2PP. A more comparable case is the NCPA Lodi Energy Center, in which the CEC siting committee reviewed a combined-cycle project in the San Joaquin Valley APCD and determined that a 10 ppm ammonia slip limit was adequate because “[t]he evidence established that ammonia does not form particulate pollution without the introduction of nitrogen or sulfur so that in the absence of nitrogen or sulfur, a small increase in ammonia in an already ammonia rich environment would not add to particulate pollution.”<sup>6</sup> While the Commission stated that the LEC decision was not precedent, the Commission decision

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<sup>4</sup> SJVAPCD 2008 PM<sub>2.5</sub> Plan (see for example Chapter 3, p. 3-8: “Ammonia (NH<sub>3</sub>) is abundant throughout the Valley and does not act as a limiting precursor.”)

<sup>5</sup> Amended Staff Assessment, Orange Grove Project, 08-AFC-4, December 2008; p. 4.1-35.

<sup>6</sup> Commission Final Decision, Lodi Energy Center Project, April 2010, p. 110.

went on to say that Staff would need "...to make a factual showing to support the need for increased mitigation of ammonia slip..." We do not believe Staff can make such a showing for A2PP. Furthermore and to the best of our knowledge, to date no simple-cycle project has been licensed in the SJV with a 5 ppm ammonia slip limit.

Additionally, the project is providing a continuous operating year's worth of offsets for simple-cycle turbines that will likely operate only a fraction of the year. Therefore, the mitigation already being provided by the applicant is expected to be more than adequate to mitigate any project impacts for PM<sub>10</sub>/PM<sub>2.5</sub>.

Finally, the 5 ppm ammonia slip limit proposed by staff would impose significant additional costs on this publicly financed project. TID would need to replace the catalyst material up to twice as often, at a cost of over \$1 million per catalyst changeout.<sup>7</sup> The more frequent catalyst replacement would also generate additional waste catalyst material that must be disposed of in landfills.

In summary, the 10 ppm slip limit for A2PP has been found to be adequately protective of public health and ambient air quality by the San Joaquin Valley APCD, and has not been questioned in this proceeding by either EPA or ARB. Thus, a 5 ppm ammonia slip limit will result in a significant cost increase but will not address any significant environmental impact. Consequently, TID believes that the ammonia slip limit should remain at the 10 ppm level recommended by the APCD. We ask the Staff to delete proposed Condition AQ-SC9.

~~**AQ-SC9** The ammonia (NH<sub>3</sub>) emissions from each combustion turbine (N 3299 4 0, 5 0, 6 0) shall not exceed 10.0 ppmvd @ 15% O<sub>2</sub> averaged over a 24 hour rolling average. In addition, the selective catalytic reduction (SCR) system catalyst shall be replaced, repaired, or otherwise reconditioned within 12 months if the ammonia slip exceeds 5 ppmvd @ 15% O<sub>2</sub> over a 24 hour rolling average. The SCR ammonia injection grid replacement, repair, or reconditioning scheduled event may be cancelled if the owner or operator can demonstrate that, subsequent to the initial exceedance, the ammonia slip consistently remains below 5 ppmvd @ 15% O<sub>2</sub> averaged over 24 hours, and that the initial exceedance does not accurately indicate expected future operating conditions.~~

~~**Verification:** The ammonia injection rate shall be monitored, and ammonia emissions calculated and recorded hourly (AQ-26 and AQ-27). A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).~~

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<sup>7</sup> Replacement cost of Cormatech SCR material was provided by the vendor as \$42,500 per module, with 8 SCR modules per unit. Associated fully burdened labor costs were estimated at \$40,000 per turbine. [(\$42,500/module \* 8 modules/turbine) + \$40,000/turbine] \* 3 turbines = \$1,140,000 per catalyst change.

Page 4.1-34, Condition AQ-SC3, Construction Fugitive Dust Control. While we recognize that the AQ-SC3 conditions are the Staff's standard conditions for dust control during construction activities, we are proposing several changes to better reflect (1) the physical location of the construction site and laydown area relative to public and private roadways; and (2) applicable SJVAPCD rule requirements.

The standard AQ-SC3 conditions generally contemplate that a construction site is located adjacent to a public roadway and that construction vehicles will exit directly from the construction site onto a paved public roadway. However, the A2PP project site is separated from the paved public roadway (Crows Landing Road) by a 2,246 foot long private, paved access road. The changes TID is proposing would make the mitigation conditions more consistent with A2PP's location.

Additionally, we note that in some respects, the requirements of SJVAPCD Regulation 8 (Fugitive PM10 Prohibitions) that will apply to the project during construction are more stringent than the standard AQ-SC3 conditions. We have proposed some changes to AQ-SC3 to make the conditions more consistent with the SJVAPCD rule requirements.

**AQ-SC3 Construction Fugitive Dust Control:** The AQCMM shall submit documentation to the CPM in each monthly compliance report (MCR) that demonstrates compliance with the following mitigation measures for purposes of preventing all fugitive dust plumes from leaving the project site and linear facility routes. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

- a. All unpaved roads and disturbed areas in the project and linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of AQ-SC4. The frequency of watering may be either reduced or eliminated during periods of precipitation.
- b. No vehicle shall exceed 15 miles per hour within the construction site.
- c. The construction site entrance shall be posted with visible speed limit signs.
- d. All construction equipment vehicle tires shall be inspected and washed as necessary to be free of dirt prior to entering paved roadways.
- e. Control devices must be used to prevent trackout from occurring onto paved public roads. One or more of the following techniques must be used:
  1. A grizzly (rails, pipes or grates used to dislodge debris from vehicles before they exit the site) that extends from the intersection with the paved road surface for the full width of the unpaved exit surface for a distance of at least 25 feet;  
OR

2. A layer of washed gravel at least one inch or larger in diameter and three inches deep, extending from the intersection with the paved road surface for the full width of the unpaved exit surface for a distance of at least 50 feet; OR
  3. At least 100 feet of paved surface which extends from the intersection with the paved public road surface for the full width of the unpaved access road to allow mud and dirt to drop off of vehicles before exiting the site; OR
  4. An alternative trackout control device approved by the District and the CPM.
- e. ~~Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.~~
  - f. ~~All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.~~
  - gf. All construction vehicles shall enter the construction site through the treated entrance roadways unless an alternative route has been submitted to and approved by the CPM.
  - hg. Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.
  - ih. All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
  - ji. At least the first 500 feet of any ~~public~~ paved roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs, or on any other day, ~~when~~ if dirt or run-off from the construction site is visible on the ~~public~~ paved roadways.
  - kj. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered or treated with appropriate dust suppressant compounds.
  - lk. All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks to provide at least two feet of freeboard.

- m. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

The project owner shall include in the MCR: (1) a summary of all actions taken to maintain compliance with this condition; (2) copies of any complaints filed with the air district in relation to project construction; and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

Page 4.1-46, Verification for Condition AQ-43: This verification condition appears to be in error and should be replaced with language similar to the verification condition for Condition AQ-45, as follows:

**AQ-43** The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract, or (ii) monitored within 60 days after the end of commissioning period and weekly thereafter. If the sulfur content is less than or equal to 1.0 gr/100 dscf for eight consecutive weeks, then the monitoring frequency shall be every six months. If the result of any six month monitoring demonstrates that the fuel does not meet the fuel sulfur content limit, weekly monitoring shall resume until compliance is demonstrated for eight consecutive weeks. [District Rule 2201 and 40 CFR 60.4360, 60.4365(a) and 60.4370(c)]

**Verification:** ~~The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a preapproved protocol (AQ-39). Testing for steady state emissions shall be conducted upon initial operation and at least once every 12 months. The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (AQ-SC8).~~

Page 4.1-52, Verification for Condition AQ-73: Staff proposes that the Dust Control Plan (DCP) required by the SJVAPCD be "included within the Air Quality Construction Mitigation Plan [AQCMP] and submitted to the District and CPM (AQ-SC2)..." Our concern with this requirement is that the AQCMP must be submitted to the CPM 60 days prior to the start of construction. It has been our experience that some of the information needed for the DCP may not be available 60 days prior to the start of construction, so it may not be possible to submit a complete DCP as part of the AQCMP. We request that this verification condition be amended to read as follows:

**AQ-73** An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]

**Verification:** The final Dust Control Plan shall be included within the Air Quality Construction Mitigation Plan and submitted to the District and CPM not less than 30 days prior to the start of any construction activity (AQ-SC2), and a summary of significant construction activities and monitoring records required shall be included in the construction monthly compliance report (AQ-SC3).

Page 4.1-53, Verification for Condition AQ-82, and page 4.1-55, Verification for Condition AQ-95: Please revise or delete these verification requirements, as TID has already submitted the acid rain application. The timing of the requirements is incompatible with acid rain program requirements in that the acid rain application must be submitted 24 months prior to generation of electricity while the proposed verification conditions would require the application to be submitted after completing commissioning, long after the applicable federal deadline.

**AQ-82** The owners and operators of each affected source and each affected unit at the source shall have an Acid Rain permit and operate in compliance with all permit requirements. [40 CFR 72]

**Verification:** The project owner shall ~~submit to both the District and CPM the Acid Rain Program application after completing commissioning~~ make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-95** The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR 75 Subpart I. [40 CFR 75]

**Verification:** The project owner shall ~~submit to both the District and CPM the Acid Rain Program application after completing commissioning~~ make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

Page 4.1-63: The discussion of SB 1368 under “Operations” and “Compliance with LORS” does not fully describe why SB 1368 does not apply to A2PP. We suggest expanding the discussion to include the following:

“TID does not intend to operate A2PP as a baseload unit. TID’s stated objectives for A2PP support this intent. Some of the basic project objectives are to provide fast-starting, load-following peaking generating units to help maintain TID’s Balancing Authority tie line schedules with neighboring Balancing Authorities; to help provide firming sources for TID’s existing and future intermittent renewable resources in support of TID’s Renewable Portfolio Standard (RPS) and greenhouse gas (GHG) goals; and to allow for better economic dispatch of TID’s existing generation fleet system-wide.

The design of A2PP supports these objectives. The chosen design for the A2PP facility, fast starting, simple-cycle CTGs, allows A2PP to respond to sudden increases in load, or firm the sudden drop off in generation from intermittent renewable resources. In addition, with the construction of A2PP, TID will be able to enhance reliability within its Balancing Authority. A baseload plant would not be able to fulfill these objectives. This is why TID instead seeks to operate A2PP as a peaking facility.”

Page 4.1-68, Replacement of Coal-Fired Generation, Second Paragraph: The discussion of SB 1368 in the second paragraph is inaccurate and should be amended as follows:

coke-fired capacity that may not be able secure long term contracts with California utilities due to the SB 1368 Emission Performance Standard.”

## **BIOLOGICAL RESOURCES**

Page 4.2-1, Summary of Conclusions, Last Paragraph: The applicant has updated this paragraph to reflect that PG&E will construct, own, and operate the gas pipeline and therefore will be submitting the requests for the environmental clearances, based on the Commission’s CEQA-compliant environmental review. The paragraph has also been updated to reflect that there are no wetlands on the A2PP site (based on the wetland delineation) and no special status plants or habitats based on the special status plant survey (attached and discussed below). The revised paragraph is as follows:

The project proponent, in coordinated with PG&E, who will construct, own, and operate the natural gas pipeline, has not received confirmation from the Army Corps of Engineers (ACOE), the regional water quality control board, or the California Department of Fish and Game (CDFG) as to whether waters of the U.S., state waters, or features subject to CDFG jurisdiction are present ~~on the proposed A2PP site or within the disturbance areas of the associated gas pipeline or transmission lines.~~ The project applicant ~~has~~ will also be performing a rare plant survey for the proposed gas pipeline alignment in the spring of 2010. The findings of the rare plant survey and the determination as to whether jurisdictional waters will be impacted by construction of the gas pipeline A2PP or its associated



~~infrastructure~~ will be required and incorporated into the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP).

Page 4.2-4, Project Site And Vicinity Description, First Paragraph, Fourth Sentence: Please change “and reconductoring of 2.9 miles of an existing 69-kV line.” to “and re-rating re-conducted of 2.9 miles of an existing 69-kV line.”

Page 4.2-4, Existing Vegetation, Wildlife and Habitats, Power Plant, First Paragraph, Second Sentence: The description of the site should be replaced with the following: “The project site is composed of three parcels of land: the first parcel, a vacant disturbed parcel of land approximately 3.2 acres previously used by WinCo as a construction borrow pit which is now filled and graded to the current site elevation; the second, a portion of the 1.4 acre existing APP currently in use as a facility proposed to be used as a shared storm water retention pond for the APP and A2PP facility, which will be filled to accommodate portions of the A2PP; and the third, portions of the existing WinCo distribution center site to be used for transmission lines and the proposed A2PP switchyard.

Page 4.2-4, Existing Vegetation, Wildlife and Habitats, Power Plant, First Paragraph: The paragraph should be revised to reflect that the Applicant has relocated the laydown area.

Page 4.2-4, Transmission Lines, Second Paragraph, First Sentence: This sentence should be revised to read: “The existing line that is proposed for re-rating re-conducted is partially located in a previously disturbed right-of-way (ROW)”.

Page 4.2-5, Transmission Lines, First Paragraph Third Sentence: This sentence should be revised to read: “The re-rated re-conducted transmission line has very limited to no potential to support special-status plant or wildlife species.”

Page 4.2-7, Table 2 Invertebrates, Conservancy fairy shrimp:

Common Name (Scientific Name)	Status (State/Federal/CNPS)	Potential for Occurrence
Conservancy fairy shrimp ( <i>Branchinecta coservatio</i> )	_/FE/_	Low; no vernal pools present with the project area. There is one cattle wallow <u>adjacent to within</u> the preferred alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however, this site is highly disturbed from active grazing.</u>
Longhorn fairy shrimp ( <i>B. longiantenna</i> )	_/FE/_	Low; no vernal pools present with the project area. There is one cattle wallow <u>adjacent to within</u> the preferred alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however,</u>

		<u>this site is highly disturbed from active grazing.</u>
Vernal pool fairy shrimp ( <i>B. lynchi</i> )	_/FT/_	Low; no vernal pools present with the project area. There is one cattle wallow <u>adjacent to within</u> the preferred alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however, this site is highly disturbed from active grazing.</u>
Vernal pool tadpole shrimp ( <i>Lepidurus packardi</i> )	_/FE/_	Low; no vernal pools present with the project area. There is one cattle wallow <u>adjacent to within</u> the preferred alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however, this site is highly disturbed from active grazing.</u>

Page 4.2-9, Table 2, Swainson's hawk:

Swainson's hawk ( <i>Buteo swainsonii</i> )	ST/_/_	Present; species was observed nesting within <del>0.5</del> 0.4 mile of the preferred gas pipeline alignment during biological assessments ( <del>TID 2009a</del> CDFG 2010). Areas adjacent to the natural gas pipeline alignment are suitable foraging habitat for this species.
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Page 4.2-9, Table 2, San Joaquin kit fox

San Joaquin kit fox ( <i>Vulpes macrotis mutica</i> )	ST/FE/_	Low; margins of agricultural fields along gas pipeline alignment provide marginal habitat for this species. One burrow, that has since collapsed, was found in 2009 along the pipeline alignment that is potentially large enough for kit fox although the burrow did not have the characteristic shape of a kit fox burrow <u>and more likely was an enlarged California ground squirrel burrow</u> (TID 2009a).
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Page 4.2-11, Special Status Plants (cont'd), Last Sentence: The applicant requests this sentence be revised to read:

“A follow-up spring survey ~~was have been proposed and are expected to be~~ conducted in May 2010 to ensure that special-status plants, including this species, are not present within any designated construction areas or laydown areas.”

The results of the special status plant survey are included in Attachment B.

Page 4.2-11, Merced Monardella, Last Sentence: The last sentence should be revised as follows: “A follow-up survey was conducted in the spring of 2010 which confirmed that this species does not occur on the project site or other areas that will be disturbed during project construction.”

Page 4.2-11, Fairy Shrimp, Fourth Sentence: The applicant requests that this sentence be revised to reflect that the cattle wallow is not located in the pipeline alignment corridor and that this area outside the pipeline corridor is irrigated by the landowner during the irrigation season (approximately March through October), which seasonality may preclude the presence of fairy shrimp. The suggested sentence modifications are below:

“However, the outer edge of the gas pipeline alignment corridor does contain is approximately 25 feet from one disturbed “cattle wallow” that may ponds water during significant rain events for a sufficient time to possibly support a life cycle for fairy shrimp species. The cattle wallow is within an active cow pasture that is irrigated from March through October which seasonality may preclude the presence of fairy shrimp.”

Page 4.2-11, Giant Garter Snake, Last Sentence: The applicant requests this sentence to be revised to read:

“Some of the unlined canals within the gas pipeline alignment were determined to provide low to marginal habitat for this species, though no Giant Garter Snakes were observed during Applicant’s field visits. Canals which do not provide water, vegetation, and refugia were considered unsuitable habitat.”

Page 4.2-14, Swainson’s Hawk, Last Sentence: The applicant suggests that this sentence be revised to indicate that a Swainson’s Hawk nest is located approximately 0.4 miles from the proposed pipeline alignment, based on Google Earth mapping measurements.

Page 4.2-13, Western Burrowing Owl, Second Paragraph, Third Sentence: This sentence should be revised to read: “The proposed re-rating reductored alignment has potential habitat for WBO”.

Page 4.2-14, San Joaquin kit fox, Sixth Sentence: The applicant requests this sentence be revised to read: “They often enlarge ground squirrel burrows for use

as a den and may use vacant badger dens for shelter (USFWS 1998), ~~both of which~~ Ground squirrel burrows occur within the proposed project area.”

Page 4.2-15, San Joaquin kit fox, Second to Last Sentence: The applicant requests this sentence be revised to read: “One ~~potential kit fox~~ small burrow was found during surveys conducted in 2009 (TID 2009a) within 50 feet of the proposed pipeline alignment; however, this burrow was likely an enlarged California ground squirrel burrow.”

Page 4.2-15, Water Resources, Wetlands, Waters of the US, Waters of the State, First Paragraph, First Sentence: The applicant requests that this paragraph be revised to reflect that a wetland delineation was submitted by PG&E in April 2010 and that it was determined that there are no wetlands on the project site or original laydown area. There are also no wetlands in the relocated laydown area. Lastly the proposed changes reflect a recent meeting the applicant had with the USFWS about avoidance measures that would result in no impacts to the cattle wallow. The proposed language revisions are below:

#### **Water Resources, Wetlands, Waters of the US, Waters of the State**

~~The project applicant is submitting~~ PG&E submitted a wetland delineation for the ~~plant site, laydown area and the pipeline alignment in April 2010 to the ACOE and CDFG (tn56391 4/23/10 TID 2009a).~~ The wetland delineation determined that there were no wetlands on the A2PP site nor the original laydown area. There are also no wetlands in the relocated laydown area. The ACOE and CDFG will make a determination regarding the extent of jurisdictional features within the project site. The site contains “puddles” and other seasonally wet areas that could potentially be considered waters of the state. These seasonal features are to be mapped and avoided during project construction with the exception of There is one “cattle wallow” located west of the pipeline construction corridor that may contain suitable habitat for fairy shrimp species. The cattle wallow is within an active cow pasture that is irrigated from March through October which seasonality may preclude the presence of fairy shrimp. The applicant met with the USFWS in June 2010 to discuss avoidance measures that would result in no impacts to the cattle wallow. Any canal crossings for the gas pipeline will be constructed with “bore and jack” or directional drilling techniques (TID 2009a) to avoid directly impacting these areas. Therefore, direct impacts to these features are not expected to occur. However, CDFG has indicated that the project will likely require a streambed alteration agreement for crossings under the Harding Drain and the Prairie Flower Drain which have hydrological connections to the San Joaquin River. It is also assumed that these crossings will be under the jurisdiction of the ACOE due to this hydrologic connection to a navigable water. However, this has not yet been confirmed by the ACOE.

Page 4.2-16, Construction Impacts and Mitigation, First Paragraph, First Sentence: This sentence should be revised to read in part: “re-rating ~~reconducted~~ of an existing 69-kV line”.

Page 4.2-17, Laydown Area: The applicant requests that this paragraph be revised to reflect the relocated laydown area. The proposed language revisions are as follows:

#### Laydown Area

The proposed laydown area is located on a ~~6.4~~ 1.85-acre soil borrow pit immediately ~~west north~~ west of the proposed power plant site that was utilized during construction of the adjacent WinCo distribution center. ~~There is some evidence of wetland vegetation and hydrology within the borrow area due to the topography associated with the borrow pit. The applicant is in the process of preparing and submitting a wetland delineation to ACOE and CDFG to determine if waters of the U.S. or waters of the state are present within the proposed laydown area. Impacts to federal or state jurisdictional wetlands would require appropriate permits and would include mitigation requirements for issuance of a permit. The mitigation requirements of the permits will be included in the conditions of certification for the A2PP and the final BRMIMP.~~ The laydown area does not provide habitat for sensitive plant or wildlife species and will not be permanently impacted. Therefore, no further discussion of the laydown area will be included in this impacts section and no specific mitigation is prescribed for this area. ~~As mentioned previously, if jurisdictional wetlands are present within the laydown area, mitigation would be required for impacts to these features.~~

Page 4.2-17, Transmission Lines, Second Paragraph: Please revise this paragraph to read: “A portion of an existing transmission corridor from the Almond 1 site will be re-rated ~~reconducted~~. The existing transmission corridor is located in disturbed or developed areas. This activity may result in temporary disturbance to wildlife species within the corridor from ~~stringing~~ stringing equipment parked between existing towers. No permanent impacts are associated with re-rating ~~reconducted~~ the existing line.”

Page 4.2-19, Natural Gas Pipeline, First Partial Paragraph, Last Sentence: The applicant requests that this sentence be revised to reflect that the introduction of drilling mud ‘could’ have a significant impact on water quality and subsequently on aquatic species within the San Joaquin River. In addition, the applicant requests that the following sentence be added: “Staff has required the preparation of a frac-out containment plan (BIO-8) to avoid significant water quality impacts that could occur to the San Joaquin River Basin during pipeline construction if a frac-out occurred.”

Page 4.2-19, Construction Impacts to General Vegetation, Second Paragraph, Second Sentence: This sentence should be revised to read: “Temporary impacts to ruderal vegetation may occur during stringing of new wire for the new transmission lines and during re-rating ~~reconducted~~ of the existing line.”

Page 4.2-18, Construction Impacts to Jurisdictional Waters, First Paragraph, Second Sentence: The applicant request this paragraph be revised to reflect that PG&E submitted a wetland delineation to the ACOE and that the requirements of the ACOE 404 permit and CDFG SAA be included in the BRMIMP. The proposed language revisions are as follows:

~~The extent of impacts to jurisdictional waters from project construction is currently unknown. The project applicant is submitting~~ PG&E submitted a wetland delineation to the ACOE and CDFG in April 2010 to determine the extent of jurisdictional features within the project footprint and whether impacts will occur to jurisdictional features. Harding Drain and Prairie Flower Drain are likely to be subject to ACOE and CDFG jurisdiction based on initial consultation with those agencies. If impacts to jurisdictional features cannot be avoided during construction, the appropriate permits and conditions will be required. Staff's proposed condition of certification **BIO- 614 (Compliance with CDFG SAA and ACOE Section 404 Measures)** is designed to require the applicant to prepare a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and include the requirements of a CDFG SAA, and a Regional Water Quality Control Board and a ACOE permits in the BRMIMP. include any necessary measures to avoid or minimize impacts to jurisdictional waters and to fully mitigate impacts to jurisdictional features.

Page 4.2-19, Wildlife, First Paragraph, Last Sentence: The applicant requests that this sentence be revised and an additional sentence be added: "There is one ponded area adjacent to ~~within~~ the preferred gas pipeline alignment that could provides marginal habitat for various fairy shrimp species that are known to occur in the vicinity of the A2PP site. The outer edge of the gas pipeline alignment corridor is approximately 25 feet from one disturbed "cattle wallow" that may pond water during significant rain events for a sufficient time to possibly support a life cycle for fairy shrimp species. The cattle wallow is within an active cow pasture that is irrigated from March through October which seasonality may preclude the presence of fairy shrimp.

Page 4.2-19, Wildlife, Second Paragraph, Second Sentence: The applicant requests that this sentence be revised as follows: "These species often use or enlarge burrows, or dens, created by California ground squirrels, and both could potentially be within or directly adjacent to the pipeline alignment."

Page 4.2-21, Wildlife, First Sentence: "Adjacent to t~~The preferred gas pipeline alignment~~ there is ~~contains~~ one disturbed area that ponds water for a sufficient..."

Page 4.2-21 Last Sentence and 4.2-22 First Paragraph: The applicant requests that the paragraph be revised to reflect that pasture which contains the cattle wallow is

irrigated from March to October which could preclude the presence of fairy shrimp. In addition, the cattle wallow will be avoided so language pertaining to direct impacts due to construction should be deleted. Lastly the applicant suggests new language which reflects its recent meeting with the USFWS regarding avoiding the cattle wallow. The proposed language modifications are as follows:

~~The Adjacent to the preferred gas pipeline alignment contains~~ there is one disturbed “cattle wallow” area that ponds water for a sufficient duration to possibly provide marginal habitat for federally listed fairy shrimp species. However, the area is also irrigated from March through October which could preclude the presence of fairy shrimp. The applicant met with the USFWS in June 2010 to discuss the avoidance measures that would result in no impacts to the cattle wallow. Trenching through this feature during pipeline construction could result in mortality of adults if construction takes place during the rainy season or loss of cysts if construction takes place when the feature is dry. Construction could also result in soil compaction that may result in loss of suitability of the feature to provide suitable habitat for fairy shrimp in subsequent years due to changes in hydrology of the feature. Staff’s proposed Condition of Certification **BIO-15** (Fairy Shrimp Surveys or Avoidance and Compensation Measures) would be expected to reduce project-related impacts to listed fairy shrimp species to less than significant levels.

Page 4.2-22, Construction Noise and Vibration, Item 7: Please add the following language to item 7): “...7) that parts of the surrounding area are already relatively noisy due to the existing Almond 1 Power Plant that currently occupies a portion of the site, ~~and~~ agricultural activities that occur along the gas pipeline alignment, and roadway traffic.”

Page 4.2-22, Reconductoring Impacts, First Paragraph, Please revise this paragraph as follows:

#### **Re-Rating Reconductoring Impacts**

~~Re-rating reconductored~~ would include one segment of existing 69-kilovolt (kV) ~~TID PG&E~~ subtransmission line totaling approximately 2.9 miles. Re-rating would involve lowering the existing underbuilt 12-kV conductors to increase the clearance required for the increased thermal sag at higher ambient temperatures. A new hole will be drilled in the existing pole and the crossarm that supports the 12-kV conductors will be lowered. ~~Reconductoring would include one segment of existing 69-kilovolt (kV) PG&E sub-transmission line totaling approximately 2.9 miles. Reconductoring would involve replacing existing conductors with those of larger ampacity. Pull sites generally include a small staging area for a truck-mounted wire puller and support vehicles. Reconductoring would remove old conductors and install new ones. No other tower work would be involved. Ground-~~

disturbing activities would be limited to parking vehicles along the alignments, and would require minimal vegetation disturbance and ground leveling. Most of the alignment follows existing roads and active agricultural fields, so lowering the cross-arms of the existing poles ~~pull sites~~ would most likely be in previously disturbed areas. The towers and substations along the re-rating ~~reconductoring~~ segment provide potential roosting and nesting opportunities for common and special-status birds. Special-status animals, such as burrowing owls and kit foxes, could potentially use areas near transmission line poles ~~pull sites~~ that contain suitable burrows. These fossorial species could potentially be subject to mortality from construction equipment parking on burrows and crushing or entombing wildlife within their burrows. Staff discusses potential impacts to biological resources associated with the A2PP and makes recommendations for minimizing impacts to biological resources during project construction but does not propose additional specific conditions of certification for re-rating ~~reconductoring~~ because potential impacts to biological resources are similar to those for other proposed infrastructure for the A2PP project. Impact avoidance measures **BIO-5, BIO-7, BIO-9, BIO-10, and BIO-11** would be required prior to initiation of re-rating ~~reconductoring~~ activities.

Page 4.2-25, Avian Electrocution, Second Paragraph, First Sentence: Please revise this sentence to read: “The existing 69-kV TID ~~PG&E~~ transmission lines and the two proposed 115-kV lines and towers”.

Page 4.2-27, Table 3, State LORS, Streambed Alteration Agreement, Status: The status should be revised to read: “PG&E will submit an SAA application to CDFG.”

Page 4.2-27, Table 3, Federal LORS, Section 7 Consultation, Status: The status should be revised to read: “The project applicant in coordination with PG&E as the owner and operator of the natural gas pipeline, has informally consulted with USFWS.

Page 4.2-27, Table 3, Federal LORS, Clean Water Act 404, Status: The status should be revised to read: “PG&E recently submitted a wetland delineation to ACOE.”

Page 4.2-27, Last Paragraph: The paragraph should be revised to reflect that the applicant in coordination with PG&E as the owner and operator of the natural gas pipeline, may need to provide additional permits for impacts to jurisdictional waters. Permits associated with the gas pipeline will be acquired by PG&E.

Page 4.2-28, Take of Listed Species, Second Sentence: The applicant requests that this sentence be revised as follows: “The outer edge of the gas pipeline alignment corridor is approximately 25 feet from one disturbed cattle wallow that may pond



water during significant rain events for a sufficient time to possibly support a life cycle for fairy shrimp species. The cattle wallow is within an active cow pasture that is irrigated from March through October which seasonality may preclude the presence of fairy shrimp.”

In addition, the applicant also proposes that the fourth sentence be revised since there will be no impact to fairy shrimp since the cattle wallow will be avoided. The revised language is as follows: “However, there will be no permanent loss of suitable habitat for these species from construction of the A2PP ~~with the exception of possible fairy shrimp within the gas pipeline alignment.~~”

Page 4.3-28, Special Status Plants: This applicant requests that this paragraph be revised to reflect the results of the special status plant survey conducted in May 2010.

Special Status Plants: Special status plants are not known to occur within the designated impact area for the A2PP. A follow-up survey was conducted in is scheduled for the spring of 2010. If No special status plants were are found during the follow-up survey; therefore no additional mitigation measures are required, would be incorporated to avoid or mitigate for these impacts in the Staff Assessment Addendum. If no special status plant species are found during 2010 surveys then since impacts to special-status plant species are expected to be less than significant.

Page 4.3-28, Impacts to CDFG Jurisdictional State Waters and Waters of the U. S.: The applicant requests that this paragraph be revised to reflect that PG&E submitted the wetland delineation and will be constructing the pipeline: “~~The extent of jurisdictional state waters and waters of the U.S. is currently unknown.~~ It is currently assumed that Harding Drain and Prairie Flower Drain are subject to ACOE and CDFG jurisdiction. If it is determined after review of ~~the applicant’s~~ PG&E’s wetland delineation that jurisdictional features cannot be avoided during project construction, then mitigation contained within the required permit(s) shall be incorporated into the final BRMIMP. If no jurisdictional features are present within the project footprint, then impacts to jurisdictional waters will be less than significant. Any impacts to jurisdictional waters are expected to be temporary and less than significant since ~~the applicant~~ PG&E shall be drilling under any jurisdictional features, thus avoiding direct impacts to these features and features will be restored to pre-project conditions.”

Page 4.2-31, BIO-5: The Applicant requests that the verification language for BIO-5 (Worker Environmental Awareness Program) be revised as specified below.

**Verification:** At least 60 days prior to the start of any site mobilization, the project owner shall provide to the CPM two copies of the proposed WEAP and all supporting written materials and script for electronic media (video or DVD) prepared or reviewed by the Designated

Biologist and a resume of the persons administering the program. The project owner shall provide in the monthly compliance report 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. At least 10 days prior to site mobilization, the project owner shall submit two copies of the CPM-approved training materials and electronic media to the CPM. The signed training acknowledgement forms from construction shall be kept on file by the project owner for a period of at least 6 months after the start of commercial operation. During project operation, signed statements for active project operational personnel shall be kept on file for 6 months following the termination of an individual's employment.

Page 4.2-33, BIO-6: The Applicant proposes that Condition BIO-6 be modified to include provisions of the CDFG Streambed Alteration Agreement, Regional Water Quality Control Board, and US Army Corp of Engineer permits, if any. In addition, the language should be revised to make clear that the CPM has the authority to review and approve submittals and that the California Department of Fish and Game has the authority to review and comment only. The reference to the City of Ceres should also be deleted, as the City of Ceres is preempted by the Commission's siting authority. TID proposes the following language modifications:

**BIO-6** The project owner shall submit two copies of the proposed biological resources mitigation implementation and monitoring plan (BRMIMP) to the CPM for review and approval, and to the USFWS, and CDFG 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, shall include all measures contained in the BRMIMP for the A2PP project, and shall identify:

- all applicant-proposed mitigation, monitoring, and compliance measures included as part of the project description in the AFC, which include all measures required for A2PP construction and operation;
- all biological resource conditions of certification, including any measures or conditions provided in required permits;
- all biological resources mitigation, monitoring, and compliance measures required in other state and federal agency terms and conditions, such as those provided in the Streambed Alteration Agreement Notification, Regional Water Quality Control Board, and U.S. Army Corp of Engineers permits, if any;
- all biological resource mitigation, monitoring, and compliance measures required in terms and conditions of federal agencies permitting the project;
- all mitigation, monitoring, and compliance measures required for protection of fairy shrimp, giant garter snakes, San Joaquin kit foxes,

burrowing owls, Swainson's hawks and other nesting raptors as discussed in conditions of certification below;

- a detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
- all locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
- duration for each type of monitoring and a description of monitoring methodologies and frequency;
- performance standards to be used to help decide if and when proposed mitigation is or is not successful;
- all performance standards and remedial measures to be implemented if performance standards are not met;
- a process for proposing plan modifications to the CPM and appropriate agencies for review and approval;
- a copy of all biological resource-related permits obtained; and
- a description of impact avoidance, minimization, and mitigation measures for noise, fugitive dust, and lighting impacts.

The project owner shall provide the draft BRMIMP at least 60 days prior to start of any site mobilization. The CPM (~~and USFWS, and CDFG if they choose to comment~~), shall determine the BRMIMP acceptability within 45 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM ~~and the City of Ceres~~ within 5 days of their receipt and the BRMIMP shall be revised or supplemented to reflect the permit conditions within 10 days of their receipt by the project owner. Ten days prior to mobilization of the site and related facilities, the revised BRMIMP shall be resubmitted to the CPM.

The project owner shall notify the CPM no less than 5 working days before implementing any modifications to the approved BRMIMP to obtain CPM approval. Any changes to the approved BRMIMP must also be approved by the CPM and submitted to the USFWS and CDFG for review and comment to ensure that no conflicts exist.

Implementation of 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.

Page 4.2-34, BIO-7 Impact Avoidance Mitigation Measures, First Paragraph, Second Bullet Item: Please change: “design, install, and maintain new and reconductored transmission lines” to “design, install, and maintain new and re-rated reconductored transmission lines”.

Page 4.2-34, BIO-8, Verification: The verification language should be revised to reflect that the plan should be submitted no less than 60 days prior to construction of the gas pipeline. It should also reflect that the CPM has review and approval authority and the California Department of Fish and Game has review and comment authority only. Reference to the USFWS should be removed from the Condition since their review of the Frac-out Containment Plan will come under their processes.

**BIO-8** The project owner applicant shall prepare and implement a frac-out containment plan to ensure that drilling mud or other drilling material do not impact biological resources or impair water quality of canals during gas pipeline construction. The plan should include measures to protect water quality of the adjacent canal(s) and any vegetation that provides suitable habitat for special-status wildlife species adjacent to the frac-out. The plan should also include appropriate procedures for cleanup and disposal of drilling materials and contain potential mitigation measures for impacts to sensitive plant and wildlife species or their habitat that may occur as the result of a frac-out.

**Verification:** A draft containment plan must be submitted to the CPM; for review and approval and to the USFWS, and CDFG for review and comment no less than 60 days before the estimated start of construction of the gas pipeline. A final plan must be completed no less than 30 days before the start of the construction of the gas pipeline. The final plan shall be incorporated into the BRMIMP. Notification of any frac-out must be made to the CPM, ~~USFWS, and CDFG~~ within 24 hours of the occurrence. The project owner shall notify the CPM of the circumstances and location of the frac-out and corrective measures that are being taken. Whenever corrective action is taken by the project owner, a determination of success or failure shall be made by the CPM within 5 working days after receipt of notice that corrective action is completed, or the project owner shall be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

Page 4.2-35, BIO-9: The Applicant has modified the condition language to make clearer the project components for which pre-construction surveys must be conducted. The Applicant also suggests that the condition be revised to simply reference compliance with the latest edition of the USFWS *Standard Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* or as an alternative, include the implementing language in

the Verification section of the condition rather than the body of the condition. Proposed language for moving the implementing language to the Verification is included below:

**BIO-9** The project owner shall conduct a pre-construction survey for San Joaquin kit fox for the ~~construction impact area power plant, laydown area, transmission lines, re-rated transmission line, and gas pipeline corridors, or re-conductoring areas and~~ The surveys shall include a 200-foot buffer of ~~for the gas pipeline alignment and the transmission line corridors. If a natal or pupping den is found within a designated construction area or within 200 feet of a designated construction area, USFWS and CDFG shall be contacted regarding the location of the den and whether any impacts are anticipated to the den from construction activities.~~

~~If a take permit was not previously issued for the A2PP project, the project applicant shall coordinate with the CDFG and USFWS to determine if a take permit will be required for project construction. A copy of all conditions of the take permit shall be included in the BRMIMP and a revised BRMIMP shall be prepared for the project as required. After consultation with USFWS and CDFG, potential dens may require a 50-foot exclusion zone and active dens may require a 100-foot exclusion zone. Destruction of any known dens would require a take permit from USFWS and the Energy Commission. Natal dens shall not be collapsed until after the adults and pups have left the den.~~

~~The project owner shall manage the construction site and related linear alignments for the transmission lines and gas pipeline in a manner to avoid or minimize impacts to the San Joaquin kit fox by following the USFWS 1999 guidelines entitled *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 1998). Measures provided by USFWS include but are not limited to the following.~~

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~~During construction, all pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at the construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before using or moving the equipment or materials. If a kit fox is discovered, then the materials or equipment shall not be moved until consultation with the USFWS and CDFG. If necessary, under the direct supervision of the Designated Biologist, the equipment may be moved once to remove it from the path of construction activity until the fox escapes.~~

~~All excavated, steep-walled holes or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals by the Designated Biologist.~~

~~During construction, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in closed containers and removed at least once a week from the construction site.~~

~~During construction, the Designated Biologist shall notify the USFWS and CDFG within 24 hours of receiving a report of incidental take occurring at the project site. The project proponent and the permitting agencies shall meet within two weeks to discuss adaptive management measures that may be undertaken to reduce or eliminate future incidents of incidental take.~~

**Verification:** The pre-construction survey shall be conducted no less than 14 days and no more than 30 days prior to the initiation of construction on the gas pipeline or and transmission corridors. A written report summarizing the results of the pre-construction survey shall be sent to the CPM and USFWS prior to the start of ground disturbance for the gas pipeline and transmission lines.

If a natal or pupping den is found within a designated construction area or within 200 feet of a designated construction area, USFWS and CDFG shall be contacted regarding the location of the den and whether any impacts are anticipated to the den from construction activities.

If a take permit was not previously issued for the A2PP project, the project owner applicant shall coordinate with the CDFG and USFWS to determine if a take permit will be required for project construction. A copy of all conditions of the take permit shall be included in the BRMIMP and a revised BRMIMP shall be prepared for the project as required. After consultation with USFWS and CDFG, potential dens may require a 50-foot exclusion zone and active dens may require a 100-foot exclusion zone. Destruction of any known dens would require a take permit from USFWS and the Energy Commission. Natal dens shall not be collapsed until after the adults and pups have left the den.

The project owner shall manage the construction site and related linear alignments for the transmission lines and gas pipeline in a manner to avoid or minimize impacts to the San Joaquin kit fox by following the USFWS 1999 guidelines entitled *Standardized Recommendations for Protection of*

the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1998). Measures provided by USFWS include but are not limited to the following.

- During construction, all pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at the construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before using or moving the equipment or materials.
- If a kit fox is discovered, then the materials or equipment shall not be moved until consultation with the USFWS and CDFG. If necessary, under the direct supervision of the Designated Biologist, the equipment may be moved once to remove it from the path of construction activity until the fox escapes.
- All excavated, steep-walled holes or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals by the Designated Biologist.
- During construction, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in closed containers and removed at least once a week from the construction site.
- During construction, the Designated Biologist shall notify the USFWS and CDFG within 24 hours of receiving a report of incidental take occurring at the project site. The project proponent and the permitting agencies shall meet within two weeks to discuss adaptive management measures that may be undertaken to reduce or eliminate future incidents of incidental take.

~~The pre construction survey shall be conducted no less than 14 days and no more than 30 days prior to the initiation of construction on the gas pipeline or transmission corridors. A written report summarizing the results of the pre construction survey shall be sent to the CPM and USFWS prior to the start of ground disturbance.~~

All incidental take minimization measures related to San Joaquin kit fox shall be included in the BRMIMP. 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, USFWS, and CDFG, for review

and approval, a written construction termination report identifying how all biological resource-related conservation measures were completed.

Page 4.2-36, BIO-10: The Applicant suggests that the implementing language be moved from the body of the condition to the verification section.

**BIO-10** ~~Where practicable, ground disturbance activities shall be conducted outside the bird nesting season (February 1 through July 31) except within 200 feet of potential giant garter snake habitat as described in **BIO-13**. Pre-construction nest surveys shall be conducted if construction activities would occur between February 1 and July 31. The Designated Biologist or Biological Monitor shall perform the surveys. ~~in accordance with the following guidelines:~~~~

~~Surveys shall be performed within all potential nesting habitat in the project disturbance area (including the gas pipeline and transmission corridors). A survey buffer of 500 feet shall be included in the survey area. Surveys specifically for nesting Swainson's hawks shall be conducted within ½ mile of designated disturbance areas that contain appropriate nesting habitat;~~

~~If active nests are detected during the survey, a no disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) shall be established and a nest monitoring plan shall be developed for all active nests. Active nests shall be monitored on a weekly basis until such time that the Designated Biologist determines the nestlings have fledged and disbursed or the nest is otherwise no longer active. Activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made. Consultation with CDFG shall be required for any construction that occurs within ½ mile of an active Swainson's hawk nest to ensure that no take of Swainson's hawks occurs during project construction.~~

~~Nest locations shall be mapped using a geographic positioning system (GPS) and submitted, along with a summary report describing the survey results, to the CPM. The Designated Biologist shall monitor the nest as prescribed above until he or she determines that nestlings have fledged and dispersed or the nest is otherwise no longer active (abandoned).~~

**Verification:** At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall be conducted within the 14-day period immediately preceding initiation of construction of each project component. The other survey should be



conducted during the start of the Swainson's hawk breeding season (March 20<sup>th</sup> to April 20<sup>th</sup>) prior to construction of each project component to accurately determine the location of Swainson's hawk nests within ½ mile of construction areas. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

At least 10 days prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM and CDFG a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest.

Surveys shall be performed within all potential nesting habitat in the project disturbance area (including the gas pipeline and transmission corridors). A survey buffer of 500 feet shall be included in the survey area. Surveys specifically for nesting Swainson's hawks shall be conducted within ½ mile of designated disturbance areas that contain appropriate nesting habitat;

If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) shall be established and a nest monitoring plan shall be developed for all active nests. Active nests shall be monitored on a weekly basis until such time that the Designated Biologist determines the nestlings have fledged and disbursed or the nest is otherwise no longer active. Activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made. Consultation with CDFG shall be required for any construction that occurs within ½ mile of an active Swainson's hawk nest to ensure that no take of Swainson's hawks occurs during project construction.

Nest locations shall be mapped using a geographic positioning system (GPS) and submitted, along with a summary report describing the survey results, to the CPM. The Designated Biologist shall monitor the nest as prescribed above until he or she determines that nestlings have fledged and dispersed or the nest is otherwise no longer active (abandoned).

Page 4.2-37, BIO-11: The Applicant suggests that the implementing language be moved from the body of the condition to the verification section.

**BIO-11** The project owner shall manage the pipeline alignment and transmission lines in a manner to avoid or minimize impacts to the burrowing owl by consulting the following California Burrowing Owl Consortium Mitigation Guidelines (CBOC 1999).

~~During the non-breeding season (September 1 through January 31), burrowing owls found during pre-construction surveys (**BIO-10**) to be within 50 meters of designated construction areas shall be evicted by passive relocation as described in the California Department of Fish and Game *Staff Report on Burrowing Owls* (CDFG 1995).~~

~~During the breeding season (February 1 through August 31), occupied burrows in designated construction areas or within 75 meters of designated construction areas shall not be disturbed and shall be provided with a 75-meter protective buffer until the Designated Biologist verifies through noninvasive means that either the birds have not begun egg laying or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Once fledglings are capable of independent survival, the owls can be evicted as described in item 1 of this condition and the burrow can be destroyed.~~

**Verification:** The project owner shall submit a report to CDFG and the CPM at least 10 days prior to the start of ground disturbance for the transmission lines and gas pipeline site mobilization that describes survey methods, results, and conservation or mitigation measures implemented in respect to burrowing owls. This report should be submitted in conjunction with **BIO-10**. If owl relocation is necessary, the project owner or the Designated Biologist shall coordinate with CDFG on the number of new burrows required (if any), their locations, and how any created burrows and compensation land shall be protected for the life of the project in a burrowing owl mitigation and monitoring plan. Within 30 days after completion of owl relocation and monitoring and the start of ground disturbance, the project owner shall provide written verification to the CDFG and CPM that burrowing owl mitigation measures have been completed.

The project owner shall manage the pipeline alignment and transmission lines in a manner to avoid or minimize impacts to the burrowing owl following California Burrowing Owl Consortium Mitigation Guidelines (CBOC 1999).

During the non-breeding season (September 1 through January 31), burrowing owls found during pre-construction surveys (**BIO-10**) to be within 50 meters of designated construction areas shall be evicted by

passive relocation as described in the California Department of Fish and Game Staff Report on Burrowing Owls (CDFG 1995).

During the breeding season (February 1 through August 31), occupied burrows in designated construction areas or within 75 meters of designated construction areas shall not be disturbed and shall be provided with a 75-meter protective buffer until the Designated Biologist verifies through noninvasive means that either the birds have not begun egg laying or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Once fledglings are capable of independent survival, the owls can be evicted as described in item 1 of this condition and the burrow can be destroyed.

Page 4.2-38, BIO- 12: The Applicant proposes the following clarifying changes to Condition BIO-12:

**BIO-12** The project owner shall conduct pre-construction surveys for GGS and western pond turtle (WPT) for all gas pipeline construction areas within 200 feet of an area a canal crossing that provides suitable habitat for GGS or WPT as specified in the GGS habitat assessment prepared by the project owner applicant (CH2MHILL 2009k).

**Verification:** The Designated Biologist or a representative approved by USFWS and the CPM must survey the gas pipeline construction area within potential GGS and WPT habitat (including both aquatic habitat and upland habitat within 200 feet of suitable aquatic habitat) no more than 24 hours prior to the initiation of construction. Another pre-construction survey must be conducted if construction activity ceases within potential GGS habitat for a period of more than 2 weeks. The project owner shall submit a report to the CPM, USFWS, and CDFG no more than 10 days after completion of GGS and WPT pre-construction surveys that describes survey methods, results, and conservation or mitigation measures taken. A figure shall be prepared for any sightings of GGS or WPT.

Page 4.2-38, BIO-13: The Applicant suggests that the implementing language be moved from the body of the condition to the verification section.

**BIO-13** Construction within 200 feet of canals with suitable GGS habitat must follow USFWS construction guidelines. ~~The project applicant shall minimize all gas pipeline construction within 200 feet of canals with suitable GGS habitat to the greatest extent possible. All construction that must occur within 200 feet of canals with potential GGS habitat shall occur within the GGS active period (May 1 - October 1). USFWS must approve in writing any construction work within GGS habitat that must be conducted outside of this time window before construction activities commence. All pipeline construction within GGS areas shall incorporate~~

~~measures as described in the USFWS GGS construction guidelines including but not limited to the following;~~

~~Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.~~

~~After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks during construction or drilling operations.~~

~~No fencing or other materials shall be utilized within 200 feet of GGS habitat that could potentially entangle or otherwise harm GGS.~~

**Verification:** The project owner shall submit a report to USFWS and the CPM if any GGS are found within work areas no more than 24 hours after the sighting is made. The report shall include monitoring results; a description of resolution of construction/snake conflict, and any additional monitoring that was required. The monthly monitoring report shall include updates on construction work occurring within GGS habitat.

The project owner applicant shall minimize all gas pipeline construction within 200 feet of canals with suitable GGS habitat to the greatest extent possible. All construction that must occur within 200 feet of canals with potential GGS habitat shall occur within the GGS active period (May 1-October 1). USFWS must approve in writing any construction work within GGS habitat that must be conducted outside of this time window before construction activities commence. All pipeline construction within GGS areas shall incorporate measures as described in the USFWS GGS construction guidelines including but not limited to the following:

- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks during construction or drilling operations.

- No fencing or other materials shall be utilized within 200 feet of GGS habitat that could potentially entangle or otherwise harm GGS.

Page 4.2-39, BIO-14: The Applicant suggests that Condition BIO-14 be deleted and the following bullet be included in Condition BIO-6. The Applicant has already included the bullet in the revised BIO-6 condition above.

- All biological resources mitigation, monitoring, and compliance measures required in other state agency terms and conditions, such as those provided in the Streambed Alteration Agreement Notification, and Regional Water Quality Control Board, and Army Corp of Engineers permits;

~~**Compliance with CDFG streambed alteration agreement (SAA) and ACOE Section 404 Permit measures**~~

~~This condition is subject to change once the applicant determines the extent of federal and state jurisdictional features present within the project footprint and the extent of project-related impacts to these features. Conditions **BIO-12** and **BIO-13** are contingent on the applicant acquiring a Section 404 permit and operating under the ACOE's programmatic permit for GGS with projects requiring a 404 permit.~~

~~**BIO-14** — The applicant is currently preparing a wetland delineation report to be submitted to CDFG and the ACOE to determine if state waters or waters of the U.S. are present within the disturbance areas or within the natural gas pipeline ROW or the transmission line corridors. It is currently assumed that an SAA and Section 404 Nationwide Permit shall be required by the project for Harding Drain and Prairie Flower Drain. The following measures shall be implemented:~~

- ~~1. Acquire appropriate 404 permit through the ACOE.~~
- ~~2. Any conditions of the SAA not currently included in this Condition of Certification **BIO-14** that are required by CDFG shall be included in the final BRMIMP.~~
- ~~3. Right of Access and Review for Compliance Monitoring: The CPM reserves the right to enter the project site or allow CDFG or ACOE to enter the project site at any time to ensure compliance with these conditions. The project owner herein grants to the CPM and to CDFG and/or ACOE employees and/or their representatives the right to enter the project site at any time to ensure compliance with the terms and conditions and/or to determine the impacts of storm events, maintenance activities, or other actions that might affect the jurisdictional waters. The CPM, ACOE, or CDFG may, at their discretion, review relevant documents maintained by the~~

operator, interview the operator's employees and agents, inspect the work site, and take other actions to assess compliance with or effectiveness of mitigation measures.

4. Notification: The project owner shall notify the CPM, ACOE, and CDFG, in writing at least five days prior to initiation of project activities in jurisdictional areas as noted and at least five days prior to completion of construction activities in jurisdictional areas. The project owner shall notify the CPM and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of a proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM, ACOE, and CDFG no later than seven days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project as defined below. A copy of the notifying change of conditions report shall be included in the annual reports.
  - a. Biological Conditions: a change in biological conditions includes, but is not limited to, the following: 1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or 2) the presence of biological resources within or adjacent to the project area whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.
  - b. Physical Conditions: a change in physical conditions includes, but is not limited to, the following: 1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or changes in stream form and configuration caused by storm events; 2) the movement of a river or stream channel to a different location; 3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or 4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.
  - e. Legal Conditions: a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or

threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

5. ~~Code of Regulations:~~ The project owner shall provide a copy of the Streambed Impact Minimization and Compensation Measures from the Energy Commission Decision to all contractors, subcontractors, and the applicant's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel or Energy Commission personnel upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner if the CPM in consultation with CDFG, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:
  - a. The information provided by the applicant regarding streambed alteration is incomplete or inaccurate;
  - b. New information becomes available that was not known to it in preparing the terms and conditions;
  - c. The project or project activities as described in the Staff Assessment Addendum have changed; or
  - d. The conditions affecting biological resources changed or the CPM, in consultation with CDFG and ACOE, determines that project activities will result in a substantial adverse effect on the environment.
6. ~~Best Management Practices:~~ The project owner shall also comply with the following conditions:
  - a. The project owner shall minimize road building, construction activities and vegetation clearing within state waters and waters of the U.S. to the extent feasible.
  - b. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter jurisdictional waters or be placed in locations that may be subjected to high storm flows.
  - c. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the project owner to ensure compliance.

- d. ~~Spoil sites shall not be located within drainages or locations that may be subjected to high storm flows, where spoil shall be washed back into a drainage.~~
- e. ~~Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering jurisdictional waters. These materials, placed within or where they may enter a jurisdictional drainage by project owner or any party working under contract or with the permission of the project owner shall be removed immediately.~~
- f. ~~No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, jurisdictional waters.~~
- g. ~~When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 200 feet of the high water mark of any drainage.~~
- h. ~~No equipment maintenance shall occur within 200 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.~~

**Verification:** ~~The project owner shall obtain all required permits from ACOE and/or the Energy Commission in conjunction with CDFG at least 30 days prior to the start of construction. The project owner shall incorporate all required conditions of the SAA and/or 401/404 permit(s), as applicable, into the final BRMIMP at least 30 days prior to the start of site mobilization. A copy of all issued permits shall be sent to the CPM at least 30 days prior to the start of construction activities.~~

Page 4.2-42, BIO-15: The Applicant is concerned about the potential draft language related to fairy shrimp mitigation and compensation and is currently working with the USFWS on this issue. The Applicant suggests the following revisions to the condition to provide more flexibility.

**BIO-15** ~~The applicant~~ Construction of that portion of the natural gas pipeline near the cattle wallow shall either avoid the cattle wallow located adjacent to the outer edge of the gas pipeline alignment corridor or the project owner shall conduct focused protocol fairy shrimp surveys (1 dry season and 1 wet season survey) within the cattle wallow. ~~or assume presence of fairy shrimp in all suitable habitats within 250 feet, of the edge of impact of~~



~~the preferred pipeline alignment. If the applicant conducts focused surveys which are negative and are accepted by USFWS, then no further mitigation is necessary. If the applicant finds evidence of fairy shrimp within suitable habitat or assumes presence of fairy shrimp and the project cannot avoid occupied habitat by at least 250 feet, then compensatory mitigation shall be required as specified by USFWS in their biological opinion for the project. Compensatory mitigation will include acquisition and protection in perpetuity of occupied fairy shrimp habitat at an acreage specified by USFWS or purchase of vernal pool credits at an appropriate mitigation bank as required by USFWS in the biological opinion. The final requirements for fairy shrimp mitigation as specified in the biological opinion shall be included in the final BRMIMP.~~

**Verification:** If the cattle wallow will be avoided, 30 days prior to construction of the gas pipeline by PG&E, the project owner shall provide the CPM a description of the avoidance measures that will be taken and their acceptability by the USFWS.

~~If the project owner conducts focused surveys for fairy shrimp, the results of focused surveys shall be submitted to the CPM and USFWS no more than 45 days after completion of the surveys. If the focused surveys are negative, then no further analyses or additional mitigation are necessary. If the project owner finds fairy shrimp during the focused surveys or assumes presence, a final mitigation proposal based on the biological opinion for the project shall be sent to the CPM no more than 30 days prior to the implementation of pipeline construction. The final requirements for fairy shrimp mitigation as specified in the biological opinion shall be included in the final BRMIMP.~~

Page 4.2-42, BIO-16: This condition can be deleted. The Applicant recently conducted the special status plant species surveys discussed in BIO-16. No populations of Mercend monardella or other special status plant species were found and none are expected to occur within the study area.

### **Special status Plant Mitigation**

~~The mitigation portion of this condition would only be necessary if special status plant species are found during focused surveys conducted in the spring of 2010 along the preferred gas pipeline alignment.~~

~~**BIO-16** — The applicant shall conduct focused surveys for potentially occurring special status plant species within the preferred gas pipeline ROW in the spring of 2010. If special status plant species are not found during focused surveys, then no further mitigation is required. If special~~

~~status plant species are found within the impact area of the preferred pipeline alignment and cannot be avoided during pipeline construction to the satisfaction of the CPM and CDFG, then the applicant shall prepare a special status plant mitigation plan for approval by the CPM and CDFG. The plan shall include appropriate mitigation measures to fully mitigate all impacts to special status plant species. Mitigation measures may include plant salvage and transplantation, seed collection and replanting, or purchase of appropriate mitigation credits or mitigation land. Appropriate mitigation measures shall depend on the species that is impacted and the degree of impact.~~

**Verification:** ~~— The results of the special status plant survey shall be reported to the CPM and CDFG within 60 days of completion of the survey. If the findings of the survey determine that preparation of a special status plant mitigation plan is necessary, then a draft mitigation plan shall be submitted to the CPM and CDFG no less than 90 days prior to the initiation of pipeline construction. A final mitigation plan shall be prepared no less than 30 days prior to the start of pipeline construction. The conditions of the special status plant mitigation plan shall be included in the final BRMIMP.~~

## **CULTURAL RESOURCES**

*Please note: The page numbers in the electronic version of the Staff Assessment differ from the page numbers in the hard copy provided by the CEC. The page numbers below correspond with the hard copy.*

Page 4.3-3: The summary of Public Resources Code § 5097.98(b) and (e) should be amended to add an important modifier in the statutory requirements: further development activity will be limited in the *immediate vicinity* of the discovery of Native American human remains.

Page 4.3-3: The discussion of California Health and Safety Code § 7050.5 is inaccurate and suggests that a project owner could be held *strictly liable* for the removal or disturbance of human remains. This is incorrect. Rather than strict liability, Health and Safety Cod § 7050.5 makes “knowing” and “willful” removal of human remains a misdemeanor. The Summary of this provision should be amended as follows:

This code makes it a misdemeanor to knowingly mutilate or disinter, wantonly disturb, or willfully disturb or remove human remains found outside a cemetery without authority of law. If human remains are discovered this code also requires a project owner to halt construction excavation or ground disturbance of the site or nearby area reasonably suspected to overlie adjacent remains if human remains are discovered and to contact the county coroner. The law requires the coroner to make a determination that remains are not subject to further investigation within two days of notification from the project owner.

Page 4.3-4, Project, Site, and Vicinity Description, First Paragraph: The description of the existing 69-kV transmission line should be modified to reflect

that the line will be re-rated rather than re-conducted. In addition, TID has relocated the construction laydown area. It will now be 6.4 acres, not 1.85 acres.

Page 4.3-4, Project, Site, and Vicinity Description, Last Paragraph: The discussion of the natural gas pipeline should be amended to reflect PG&E's ownership of the pipeline and that the pipeline is being constructed to upgrade PG&E's gas system in addition to serving TID's natural gas needs. Specifically, Staff should include the following language:

The proposed 11.6 mile natural gas pipeline and 1.8 mile reinforcement is the preferred route. PG&E will own and operate the natural gas pipeline. The pipeline will be constructed to reinforce the existing PG&E natural gas system, serving the greater Modesto area and the A2PP project. At the time the AFC was submitted, PG&E had not identified the preferred alignment for the proposed natural gas line, and the AFC initially included two possible routes.

Page 4.3-5, First Paragraph, Third Sentence: This sentence should be revised to read:

“Construction of the proposed pipeline would be open trench, and would use a trenchless construction method to cross under some of the TID laterals...”

Page 4.3-5, Third Paragraph, First Sentence: The sentence should be revised to read: “The existing 69-kV transmission line, running north of the proposed site, would be re-rated ~~reconducted~~ to prevent thermal overloads.”

Page 4.3-18, Results of Geoarchaeological Investigations: Included in Attachment C is a Technical Memorandum prepared by Geof Spaulding providing a review of the existing surficial geological mapping of the pipeline right-of-way on the east and west sides of the San Joaquin River, to determine the extent of these two substantially different (from the point of view of cultural resources sensitivity) sedimentary units. The Applicant proposes that Staff revise the subsection, “Results of Geoarchaeological Investigations” to address the information provided by the Applicant. The Applicant has also proposed new conditions of certification (CUL-1, CUL-2, and CUL-3) below, which correspond to the information in the Technical Memorandum.

Page 4.3-27, Third Full Paragraph: It should be noted that the gas pipeline will be designed, constructed, owned, and operated by PG&E. TID is not responsible for PG&E actions during operation of the gas pipeline.

Page 4.3-31, CUL-1: The Applicant has revised Condition CUL-1 in the Staff Assessment based on the information provided by the Applicant in Attachment B regarding project components located within the Modesto Formation (A2PP site, laydown area, transmission lines, 11.6 mile gas pipeline on the east side of the San Joaquin River) versus the project component that is not (1.8 mile gas pipeline reinforcement located on the west side of the San Joaquin River). The proposed language modification to CUL-1 is listed below. In addition, for clarity, the

Applicant has divided the Staff's Condition CUL-1 into three conditions, CUL-1, CUL-2, and CUL-3.

**Project Geoarchaeologist**

**CUL-1** Prior to the start of ground disturbance for the natural gas pipeline segment on the west side of the San Joaquin River (the Reinforcement Segment), the project owner shall obtain the services of a Project Geoarchaeologist (PG).

**Verification:**

At least 120 days prior to the start of ground disturbance for the Reinforcement Segment, the project owner shall submit the PG's resume to the CPM for review and approval. The resume shall include information demonstrating to the satisfaction of the CPM that the PG's training and background conform to the U.S. Secretary of Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and showing the completion of graduate-level coursework in geoarchaeology or Quaternary science.

The resume of the PG shall include the names and telephone numbers of contacts familiar with the work of the PG, as a professional geoarchaeologist, on referenced projects and demonstrate to the satisfaction of the CPM that the PG has the appropriate training and experience to undertake the required geoarchaeological study.

**Initial Geoarchaeological Context Report**

**CUL-2** The PG will conduct pre-excavation geoarchaeological research on the Reinforcement Segment construction right-of-way (ROW) and its immediate setting using available technical literature, remote imagery, site records, and observations from a field reconnaissance of the area.

**Verification:**

At least 90 days prior to the start of ground disturbance, results of the pre-excavation geoarchaeological research shall be presented in a general description, and portrayed on a large scale ( $\geq 1:12,000$ ) map. Identified landforms with the potential to lie within the construction right-of-way of the Reinforcement Segment, the geomorphic history of the study area, and the hypothesized distribution of potentially sensitive subsurface conditions will be addressed. The age of the landforms on which the Reinforcement Segment would be located will be identified to the extent feasible. The postulated distribution of Modesto Formation (Pleistocene and possible early Holocene) landforms versus post-Modesto Formation (postglacial or Holocene) landforms will be addressed. Review of the cultural resources data compiled during the AFC review process will precede the field reconnaissance. The report of this work will conclude with recommendations for the location of geoarchaeological pre-construction

excavations of a portion of the Reinforcement Segment pipeline trench as part of CUL-3.

### **Geoarchaeological Preconstruction Excavations**

**CUL-3** Geoarchaeological preconstruction excavations along the Reinforcement Segment ROW will occur under the direction of the PG. The Project Owner shall pre-excavate selected portions of the Reinforcement Segment ROW identified in the CUL-2 study.

#### **Verification:**

At least 60 days prior to the start of ground disturbance, geoarchaeological preconstruction excavations will occur along the pipeline centerline to avoid additional impacts to buried cultural resources beyond that which would occur during construction along the Reinforcement Segment ROW. Unless otherwise specified in the approved CUL-2 report, the excavations shall consist of backhoe trenches.

1. The total depth of excavations shall be to the water table, or to the anticipated depth of the proposed pipeline installation, whichever is encountered first. The number of backhoe trenches appropriate to this study shall be based on the work called for by CUL-2, above, but will in no case exceed 4 trenches. Excavation methods shall include:
  - a) The recordation of one measured profile from each backhoe trench to include descriptions of each lithostratigraphic and pedostratigraphic unit, a drawing, and profile photographs with a metric scale,
  - b) Screening through ¼-inch hardware cloth 3, 5-gallon buckets of sediment from major lithostratigraphic units in each profile, and
  - c) Radiocarbon or TL (thermoluminescence) samples may be collected to date and/or correlate stratigraphic units and time horizons at the discretion of the PG and in consultation with the CPM.
  - d) Implementation of a protocol to immediately inform the project owner of any buried prehistoric archaeological deposits encountered and to facilitate informing the CPM,
  - e) Recording any archaeological deposits encountered on Department of Parks and Recreation (DPR) 523 “Primary Record” and “Archeological Site Record” forms (Forms 523A and C), additionally completing other DPR 523 series forms, as appropriate;

2. At the conclusion of field work and initial data review (no later than 3 weeks after the geoarchaeological preconstruction excavations conclude), a meeting with the CPM, the PG, and the Project Owner will be held to review the results of pre-excavations. Decisions on whether or not to radiocarbon date some or all of the samples will be made at this meeting.
3. No later than four weeks after this meeting, a report will be provided to the CPM that describes the results of the geoarchaeological preconstruction excavation and the subsurface geomorphology along the Reinforcement Segment ROW. This report shall include:
  - a) Summary stratigraphic column(s) and a written description describing the stratigraphy of the subject portion of the Reinforcement Segment ROW;
  - b) Placing the results of this study in the context of what is known of the area's Quaternary geomorphology and environmental history;
  - c) Descriptions of any encountered archaeological deposits, and the character of the sedimentary matrix for each deposit, and the approximate age of each archaeological deposit;
  - d) Recommends, based on the above, where and to what depth archaeological monitoring should be done during construction;
  - e) Assesses the potential necessity and the approximate cost of mitigating project impacts to any CRHR-eligible buried archaeological deposits found during the preconstruction excavations, should such deposits be encountered during the above-described investigation; and
  - f) Includes in appendices to the report completed DPR 523 forms for any archaeological deposits encountered and recorded.

No other ground disturbing activities shall occur within the Reinforcement Segment ROW prior to CPM receipt of this final report.

Page 4.3-34, CEC Staff Assessment Condition CUL-2 (renumbered as CUL-4 by the applicant), First Paragraph, Last Sentence: The following sentence should be moved to the verification requirements for CUL-2: "No ground disturbance shall occur prior to Compliance Project Manager (CPM) approval of the CRS and alternates, unless such activities are specifically approved by the CPM."

Page 4.3-36: CEC Staff Assessment CUL-2 (renumbered as CUL-4 by the applicant), Verification 2: should be adjusted to provide consistency with the timeframe for finding a new CRS in the event that the current CRS resigns. Specifically, construction should be allowed to continue for ten days without a CRS present. In addition, if cultural resources are discovered, ground disturbance should only be required to stop in the *immediate vicinity* of the discovery. Halting construction in the *immediate vicinity* of the discovery is the same language used in the applicable LORS for discovery of Native American remains (Public Resources Code 5097.98(b) and (e)).

Page 4.3-37, CEC Staff Assessment CUL-4 (renumbered as CUL-6 by the applicant), First Paragraph, Second to last sentence: A copy of the CRMMP should reside with the Applicant's Environmental Compliance Manager. The on-site construction manager will receive the WEAP training and be aware of the procedures to be followed in the event of a discovery. However, the Environmental Compliance Manager will represent the Project Owner in working with the CRS, on-site construction manager, Project Owner, and CPM in the event of a discovery. In addition, the CEC compliance submittals will be located within document control and accessible to construction staff, if needed.

Page 4.3-40, CEC Staff Assessment CUL-6 (renumbered as CUL-8 by the applicant), Verification (1): The Applicant requests that the timing for submitting the required WEAP materials be changed so it is consistent with the Biology conditions. The recommended modification is listed below:

“At least 60 30 days prior to the beginning of ground-disturbance site mobilization...”

Page 4.3-41, CEC Staff Assessment CUL-7 (renumbered as CUL-9 by the applicant): The Applicant requests that this condition be amended to be consistent with the surficial geology information provided in Attachment C. Please note: Conditions CUL-2 and CUL-3 referenced in the condition are those proposed by the Applicant. In addition, the Applicant proposes additional modifications to the condition. The Condition as written in the Staff Assessment, requires that the CRS or alternate CRS report daily to the CPM, as long as no cultural resources are found, that “no cultural resources over 50 years of age were discovered.” This requirement is unnecessary and burdensome. The CPM already approves the project's assigned CRS and CRM's (CUL-1). In addition, Condition CUL-8 requires that the CRS notify the CPM within 24 hours of a discovery. To also require that daily notification be provided to the CPM stating that nothing was found is unreasonable.

**CUL-79** The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor ~~full-time all~~ ground disturbance along the ~~linear facilities routes~~ Reinforcement Segment ROW, according to the recommendations of the geoaerchaeological ~~field study research and~~ preconstruction excavations required in ~~CUL-1~~ CUL-2 and CUL-3.

~~and as approved by the CPM, to ensure that known resources are not impacted in an unanticipated manner.~~

~~Full-time Archaeological monitoring for this project shall be the archaeological monitoring of the earth-removing activities in the areas specified in the previous paragraph as a result of geoarchaeological research and preconstruction excavation required in CUL-2 and CUL-3 for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no further than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.~~ Full-time archaeological monitoring shall require at least one monitor per excavation area where machines are actively disturbing native soils. If an excavation area is too large for one monitor to effectively observe the native-soil disturbance, one or more additional monitors shall be retained to observe the area.

The project owner shall obtain a Native American monitor to monitor ground disturbance in any areas where Native American artifacts are discovered in native soils. A Native American monitor shall be obtained to monitor ground disturbance associated with the installation of the new natural gas pipeline and associated with the reinforcement of the existing natural gas pipeline in the geoarchaeological study area, if the geoarchaeological field study report recommends archaeological monitoring in that area. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the Conditions and/or applicable LORS. Copies



of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

~~The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.~~

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

### **Verification**

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.
2. Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.
3. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

4. ~~Daily, as long as no cultural resources are found, the CRS shall provide a statement that “no cultural resources over 50 years of age were discovered” to the CPM as an email or in some other form of communication acceptable to the CPM.~~
5. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS’s justification for reducing or ending daily reporting.

Page 4.3-43, CEC Staff Assessment CUL-8 (renumbered CUL-10 by the applicant): This condition requires the project owner to grant authority to halt ground disturbance to the CRS. If cultural resources are discovered, the authority to halt ground disturbance should only extend to the *immediate vicinity* of the discovery. Halting construction in the *immediate vicinity* of the discovery is the same language used in the applicable LORS for discovery of Native American remains (Public Resources Code 5097.98(b) and (e)). The phrase “immediate vicinity” should be inserted in the first paragraph of CUL-8 and in Verification 1. Language should also be added which specifies that the “immediate vicinity” is to be determined by the CRS in consultation with the CPM. Lastly, the word “daily” should be deleted to make the condition consistent with the Applicant proposed modifications to Condition CUL-7.

The proposed language revisions are listed below:

**CUL-8~~10~~** The project owner shall grant authority to halt ground disturbance in the immediate vicinity of a discovery to the CRS, alternate CRS, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and ~~daily~~ reporting as provided in these conditions shall continue during the project’s ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner and the CPM within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery

(or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 “Primary” form. Unless the find can be treated prescriptively, as specified in the CRMMP, the “Description” entry of the DPR 523 “Primary” form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.
4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS’s proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

**Verification:**

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the immediate vicinity of a cultural resources discovery, as determined by the CRS in consultation with the CPM, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.
2. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than ~~24 hours~~ 3 days following the notification of the CPM, or ~~48 hours~~ 5 days following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

## **HAZARDOUS MATERIALS**

Page 4.4-21, HAZ-3, Verification: The Verification should be modified to read:

“At least 30 days prior to the start of construction ~~commissioning~~ of the A2PP...”

Page 4.4-21, HAZ-5, Last Sentence: At the Data Response Workshop held on September 22, 2009, the applicant provided draft language pertaining to the coordination of anhydrous ammonia transport and school bus travel times. The language modification below reflects the language agreed upon at that workshop.

“The project owner shall also consult with officials of the Ceres Unified School District regarding school bus schedules and shall prohibit vendors through contractual language from transporting anhydrous ammonia to the site at times that would coincide with regular school bus traffic along Crows Landing Road.”

Page 4.4-21, HAZ-5, Verification 2: The word “aqueous” should be replaced with “anhydrous.”

Page 4.4-36, Appendix B: The applicant has revised the Appendix B Hazardous Materials list. The revised list is included in Attachment D.

## **LAND USE**

Page 4.5-5, Introduction, Second Paragraph, First and Second Sentences: These sentences need to be revised to reflect the 6.4 acre relocated laydown area.

Page 4.5-5, Last Paragraph, Second Sentence: The sentence should be revised to read: “The re-rating ~~reconductoring~~ 69-kV sub-transmission line route is on land...”

Page 4.5-7, Power Plant and Construction Laydown Area, First Paragraph, Last Sentence: The sentence should be revised to reflect the relocated laydown area. “The construction laydown area would be on 6.4 ~~4.85~~ acres of WinCo property to the west ~~north~~.”

Page 4.5-8, Linear Facilities, Second Paragraph, First Sentence: The sentence should be revised to read: “The re-rating ~~reconductor~~ of an existing 69-kV sub-transmission line would involve lowering the crossarms on the existing transmission poles along the route ~~hanging travelers on on the insulators of the existing line and using the existing conductor as a pull line for the new conductor~~.”

Page 4.5-13, Second Paragraph, First Sentence: This sentence should be clarified to reflect that the turbine stacks are 80 feet tall, not the turbines themselves.

Page 4.5-14, Third Paragraph, First Sentence: The sentence should be revised to read: “No general plan or zoning inconsistencies would occur relating to re-rating ~~reconductoring~~ of the existing 69-kV sub-transmission line.”

Page 4.5-19, Condition Land-1: Please delete the last sentence of the condition which begins with “All documentation and submittals shall be completed to the

satisfaction of...” The condition verification requires that “written documentation submitted to the CPM shall include copies of all approved and recorded documents relating to the lot line adjustment and record of survey.” That sentence ensures that the CPM will receive the information required to demonstrate compliance with the condition. Including specific approval in the condition is not necessary or appropriate.

Page 4.5-19, Condition Land-2: The condition needs to reflect that with the exception of planting trees, grape vines, or installing deep wells or other structures on the gas pipeline right-of way, the agreement between PG&E and the landowner will specify how his/her property will be restored. Therefore, the Applicant requests that the second sentence of the condition be revised as follows:

“Any lands that are identified by the Farmland Mapping and Monitoring Program as Important Farmland or located within agricultural preserves shall be restored to pre-project conditions consistent with the agreement between PG&E and the landowner.”

**NOISE AND VIBRATION**

Page 4.6-10, Noise Table 7, the table should be revised to reflect the operational noise levels provided by the Applicant in the AFC.

**Noise Table 7**  
**Predicted Operational Noise Levels and Noise LORS**

Receptor	Project Alone Operational Noise Level $L_{eq}$ (dBA) <sup>1</sup>	Stanislaus County General Plan, $L_{eq}$ (dBA) <sup>2</sup>
M1	<del>46</del> <u>47</u>	55 day/ 53 night
M2	<del>44</del> <u>45</u>	55 day/ 46 night
M3	49	60 day/ 55 night
M4	<del>44</del> <u>49</u>	59 day/ 56 night
M5	47	63 day/ 60 night

Sources: <sup>1</sup>TID2009a, AFC § 5.7.3.3.3; staff calculations

<sup>2</sup>Noise Table 3 and Noise Table 4, above

Page 4.6-10, Last Paragraph: The text in the paragraph should be revised as follows since it appears that the incorrect receptor was listed:

As seen in **Noise Table 7**, the project’s operational noise level at the nearest receptors would be no more than 49 dBA  $L_{eq}$ . This is 11 decibels below the 60 dBA  $L_{eq}$  daytime noise limit and ~~2~~6 decibels below the ~~46~~55 dBA  $L_{eq}$  nighttime limit at location ~~M23~~, which is the most noise impacted sensitive receptor. Therefore, the project’s operational noise impacts at the nearest

sensitive receptors (M1 through M5) would comply with both the City of Ceres and Stanislaus County noise LORS.

Page 4.6-12, Noise, Linear Facilities, First Sentence: This sentence reads: “All gas piping would lie underground and would be silent during operation.” This is not fully accurate. Specifically, the PG&E gas piping will be above ground within the plant boundary to enter the gas compressors. The paragraph should be revised to add an introductory phrase as follows: With the exception of the above ground gas pipeline within the plant boundary, all gas pipeline would lie underground and would be silent during operation.”

Page 4.6-14, NOISE-1, First Sentence: This condition requires that prior to ground disturbance, notification be provided to all residents within two miles of the site and one mile of the linear facilities. Notifying residents two miles from the project site is excessive. The Applicant requests that this condition be modified to be consistent with Condition General Compliance-4, which requires notification within one mile. It should also be recognized that construction of the plant and linears may not commence at the same time. The Applicant has proposed language to address that. The revised language is below:

**NOISE-1:** “Prior to ground disturbance of each project component, the project owner shall notify all residents within one ~~two~~ mile of the that project component site and one mile of the linear facilities by mail or other effective means, of the commencement of ~~project~~ construction.”

Page 4.6-14, NOISE -2: The Applicant requests that the second bullet be revised to read: “Attempt to contact the person(s) making the noise complaint within 24 hours or 72 hours if the complaint is made over the weekend.”

Page 4.6-15, NOISE-4: TID proposes modifications to Condition NOISE-4 to reflect that the project is not intended to operate as a base load facility and will therefore, not operate continuously during the nighttime hours.

Below is information that better explains how TID intends to operate the A2PP, followed by proposed changes to the language for Condition NOISE-4.

**A2PP Operations:** Several of the project objectives in the AFC demonstrate how TID intends to operate the A2PP. These objectives include:

- Safely construct and operate a 174-MW, natural gas fired, simple-cycle, peaking generating facility within the TID service territory.
- Provide operating reserves and thus reliability for TID’s Balancing Authority requirements.
- Allow for better economic dispatch of TID’s existing generation fleet system-wide.
- Provide fast-starting, load-following peaking generation units to help maintain TID’s Balancing Authority tie line (interconnection) schedules

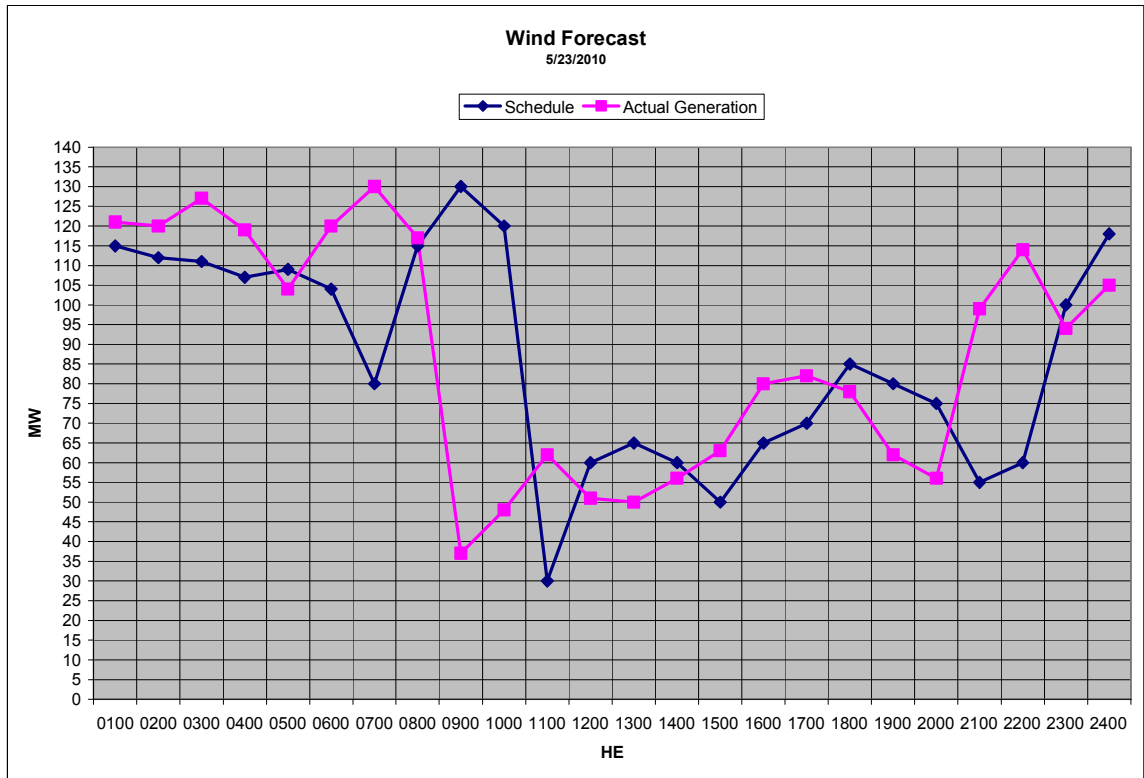
with neighboring Balancing Authorities (the California Independent System Operator [CAISO] and Sacramento Municipal Utility District [SMUD])

- Help provide firming sources for TID’s existing and future intermittent renewable resources in support of TID Renewable Portfolio Standard (RPS) and greenhouse gas (GHG) goals.

From the outset of project development, TID has planned for the A2PP project to fill several specific needs within its resource mix. These are described below:

**Renewable Integration**

TID recently completed development of a Tuolumne Wind Project (TWP), a 138 MW renewable wind/energy project, which currently satisfies the District’s State mandated renewable energy requirements. The A2PP project will provide “firming” generation for the District’s renewable energy sources including the TWP. As is typical of most wind/energy projects, the wind variability is greatest at sunrise and sunset. This is shown in the figure below. These are the periods that are most likely to require the support of A2PP to offset off schedule generation of wind/energy.

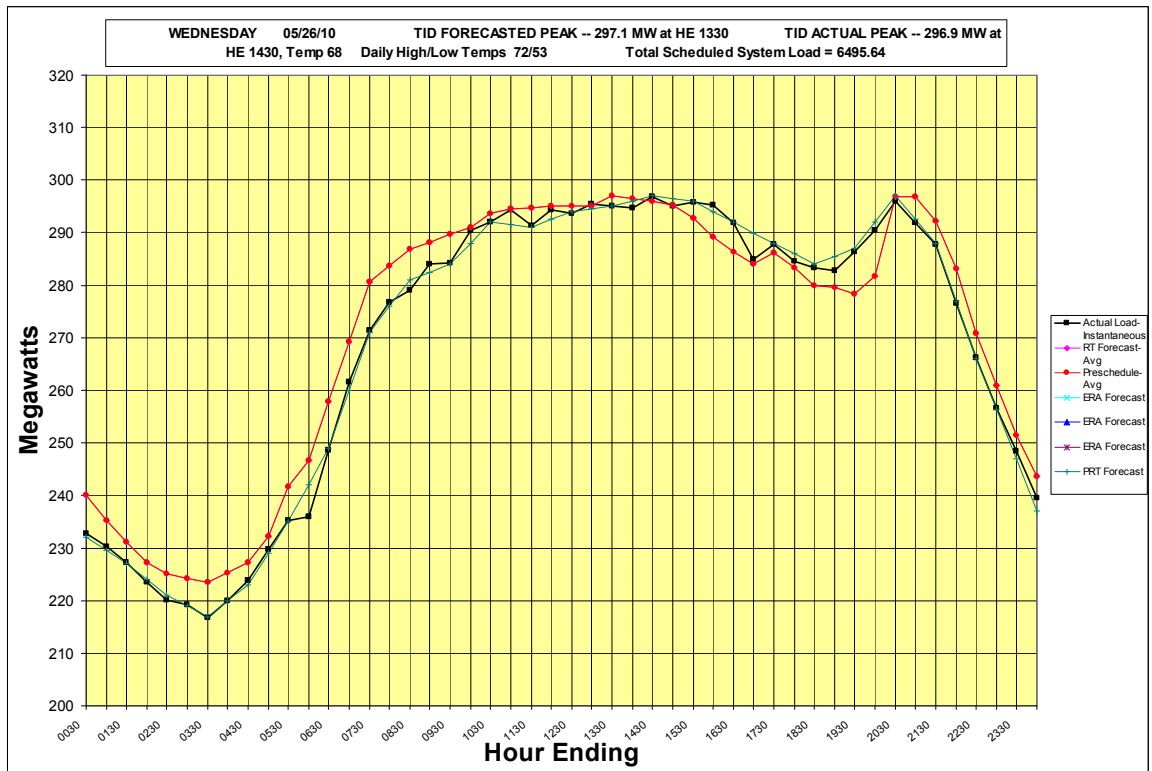


**Emergency Dispatch**

With its fast start / fast loading capability, the A2PP project will be called on to pick up lost generation during transmission system upsets and/or during the loss of other District generation resources such as the Walnut Energy Center. The need for this replacement power is significant during the District’s peak load periods.

### Peaking Resource

The A2PP project will also act as a much needed emergency standby peaking generation resource. In this role, the A2PP generators would be called on to start during peak demand times. TID load historically peaks between the hours of 11:00 am and 9:00 pm, as shown in the graph below. The A2PP generator may be called on to start during these hours to support District peak load energy demands. Without the generation of A2PP within the District’s boundaries, the District would import needed power, thereby adding additional stress to already heavy loaded regional transmission lines.



### System Optimization

With its competitive heat rate and generous operating range, the A2PP project will also be able to perform load following duties, which will allow TID to operate the Walnut Energy Center (WEC) at base load. TID would prefer to operate the WEC at base load where it is most efficient and where the “emissions to kwh” production are most favorable. In this scenario the A2PP generators would follow the District’s changing load while the WEC units remained at base load.



All of the above scenarios indicate that the operation of A2PP is “most likely” to occur between the hours of 9:00 am through 11:00 pm to support the District’s needs. These hours also coincide with higher background ambient noise levels as indicated by the project’s noise surveys. The A2PP project is much less likely to operate between the hours of midnight and sunrise. Given this, TID proposes the revision to NOISE-4 below. In addition, the implementing language in the condition has been moved to the verification section.

**NOISE-4** The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the noise levels attributable due to operation of the project alone will not exceed: an hourly average of 47 dBA at M1, 45 dBA at M2, 49 dBA at M3 and M4, and 47 dBA at M5. 44 dBA, measured at or near monitoring locations M2 (approximately 3,375 feet northeast of the project site boundary), M3 (approximately 1,875 feet northeast of the project site boundary), and M4 (approximately 3,375 feet southeast of the project site boundary); an hourly average of 46 dBA, measured at or near monitoring location M1 (approximately 2,700 feet northwest of the project site boundary); and an hourly average of 47 dBA, measured at or near monitoring location M5 (approximately 2,275 feet west of the project site boundary).

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

~~A. When the project first achieves a sustained output of 85% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location M3, or at a closer location acceptable to the CPM. This survey during the power plant’s full load operation shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.~~

~~During the period of this survey, the project owner shall conduct a survey of noise at monitoring locations M1, M2, M4 and M5, or at closer locations acceptable to the CPM. The short term noise measurements at these locations shall be conducted during the nighttime hours of 10:00 p.m. to 7:00 a.m.~~

~~The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations~~

~~to determine the presence of pure tones or other dominant sources of plant noise.~~

~~B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.~~

~~C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.~~

**Verification:** The project owner shall conduct a 25-hour noise survey at monitoring location M3, or at a closer location acceptable to the CPM ~~shall take place~~ within 30 days of the project first achieving a sustained output of 85% or greater of rated capacity. During the period of this survey, the project owner shall also conduct short-term noise measurements between the nighttime hours of 10:00 p.m. to 7:00 a.m. at monitoring locations M1, M2, M4, and M5 or at closer locations acceptable to the CPM. All surveys shall measure one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project. During the 25-hour survey, full load operation shall be maintained between midnight and 3 a.m. Outside of these hours, output shall be maintained at a level of 50% or greater. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limit, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

A. As indicated above, the measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence.

B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

## **PUBLIC HEALTH**

No comments.

## **SOCIOECONOMICS**

Page 4.8-2, Section Below-Poverty-Level Populations, last sentence: The below-poverty-level population within a six-mile radius of the A2PP consists of approximately 20% ~~22%~~ of the total population in that area or approximately 35,061 ~~31,078~~ people.

Page 4.8-6, Displace Existing Housing and Substantial Numbers of People, First Paragraph, Second Sentence : The sentence describing the laydown area should be revised as follows: “An approximately 6.4-acre unpaved area of WinCo’s property west of the project site would be used as a project construction laydown area.”

Page 4.8-11, Table 6: This Table shows the estimated indirect construction income as \$556,020; however this information in the table does not clearly state that this estimate is based on the assumption that local expenditures are \$1 million instead of \$2 million. A footnote should be added to the table that states that the numbers shown for construction income (both indirect and induced) are based on local expenditures of \$1 million.

## **SOIL AND WATER RESOURCES**

*Please note: the page numbers in the Soil and Water section are incorrect. The sections begin with page 4.12-1. However, it should be 4.9-1.*

Page 4.12-1: The third bullet on waste discharge requirements for the City of Ceres wastewater treatment plant that may be revised by the Central Valley Regional Water Quality Control Board during the life of the project is a statement of speculation and should be deleted from the document.

Page 4.12-5, Project Site and Vicinity Description: The text states that the A2PP would be operated in tandem with the existing APP. This is incorrect and should be deleted. In addition, the text should be revised to reflect the relocated laydown area and that the 69-kV transmission line will be re-rated, not reconducted.

Page 4.12-7, First Full Paragraph, First Sentence: This sentence should be revised to read: “The Ceres WWTP is located about one-half mile ~~feet~~ from APP/A2PP.”

Page 4.12-8, Soil Resources Fourth Paragraph: The text should be revised to reflect the relocated laydown area. In addition, the 11.6 mile gas pipeline route described in this paragraph is not entirely correct. The correct route as specified in Data Response Set 1D, page 2-1 is as follows:

From the meter set, the gas pipeline would exit the existing Almond Power Plant boundary and turn east for approximately 0.6 mile paralleling Turlock Irrigation District (TID) Lateral #2. At the intersection of TID Lateral #2 and Morgan Road, the gas

pipeline would turn south and continue along Morgan Road for approximately 3 miles. The gas pipeline would then turn west on East Zeering Road for approximately 0.5 mile, and then turn south on Bystrum Road and on unpaved farm access roads for approximately 4.5 miles, before turning west on W. Harding Road (paralleling Harding Drain) for approximately 1.5 miles. Next, the gas pipeline would turn south on an unnamed farm road for 0.3 mile, west through a farm field for 0.5 mile, and finally south on an unnamed farm road for approximately 0.7 mile, before joining with PG&E's Line #215 at W. Bradbury Road. PG&E will also construct a 1.8 mile gas pipeline reinforcement located on the west side of the San Joaquin River.

Page 4.12-12, Laydown Area, First Paragraph, First Sentence: This sentence needs to be revised to reflect the relocated laydown area.

Page 4.12-13, Wastewater and Sanitary Waste: The Staff assessment states that the Staff recommended that TID handle wastewater from hydrostatic testing similar to the handling of equipment washwater. This statement should be deleted. Hydrotest water will be handled in a manner allowed by the Central Valley Regional Water Quality Control Board and may or may not include collecting and disposing of it offsite.

Page 4-12-19, Noteworthy Public Benefits: The Staff assessment states that neither the Staff nor Applicant has identified any noteworthy benefits to soil and water resources that would be provided by the project. This is incorrect. In fact, referring back to pages 4.12-14 to 4.12-15, the Staff has identified significant benefits associated with the project. Specifically, in referring to the water supply agreement between Turlock Irrigation District and the City of Ceres, the Staff assessment says, "The agreement is based upon mutual benefits provided to TID and the City of Ceres. TID is offered an economic source of reclaimed water for use in power plant processes and the pumping increases the percolation rate of the WWTP T-E basins. The added demand for A2PP water helps draw down the local groundwater table in the vicinity of the Ceres WWTP to drive down mounding that inhibits percolation capacity." These benefits should be recognized in the section under Noteworthy Public Benefits.

Page 4.12-19, Conclusions: The third bullet again refers to possible future changes to the waste discharge requirements of the City of Ceres and speculates that those may occur in the future. This should be deleted from the conclusions, as it is simply speculation.

Page 4.12-20, SOIL & Water-1, Verification: The condition require that the SWPPP and DESCOP be sent to the Stanislaus County Stormwater Management Engineer for review. The County would not typically review a SWPPP or DESCOP since they are not documents required by a local jurisdiction. Given this, the conditions should be modified to delete the requirement that the SWPPP and DESCOP be sent to the County for review. In addition, the Verification language

has been clarified to require that the Notice of Termination must be submitted once construction is complete.

Page 4.12-21, SOIL & WATER-2, Verification: Given that the County would not typically review a DESCP, reference to submitting it to Stanislaus County for review should be deleted. In addition, given the similarities between the SWPPP and the DESCP, the Applicant requests that the following sentence be added to the verification: “The information required in the DESCP may be included as part of the SWPPP.”

Page 4.12-22, SOIL & WATER-4: Most of the language in Soil and Water 4 is implementing language that should be moved to the Verification, beginning with the second paragraph of the proposed condition.

Page 4.12-23, SOIL & WATER-5: The condition language seeking “all information and documentation related to the A2PP water supply or wastewater discharge to the City of Ceres’ wastewater treatment plant WWTP” should be deleted. Instead, the condition should rely on the last sentence of the verification which requires the project owner to provide notice to the CPM of all correspondence between Ceres and the Applicant related to suspensions, nullifications or amendments to water services agreements.

### **TRAFFIC AND TRANSPORTATION**

Page 4.10-8, School Bus Service: The school bus service information should be revised to reflect new information the Applicant received from the Ceres Unified School District regarding the school bus travel times on Crows Landing Road between Service Road and Grayson Road and the number of stops. This information is included in Attachment E.

Page 4.10-10, Construction Impacts and Mitigation, Second Paragraph, Third Sentence: This sentence should be revised to read: “A 6.4-acre parcel adjacent to the western border of the existing Almond Power Plant and the project site within the WinCo property will be used for parking as well as laydown of construction materials.

Page 4.10-14, Linear Facilities, Fourth Paragraph: The following sentence should be added at the end of the paragraph: “A 1.8 mile gas pipeline reinforcement will also be constructed on the west side of the San Joaquin River.”

Page 4.10-14, Linear Facilities, Sixth Paragraph: The first sentence should be revised to read: “In addition, two 115-kV transmission line corridors and the re-rating of a 69-kV subtransmission line will be constructed.”

Page 4.10-19, TRANS-1: The Applicant requests that the Ceres Unified School District be included in the verification for review and comment of the traffic control plan, rather than the City of Ceres and the San Joaquin County Public Works Division. Also, the Applicant suggests that the school bus information be a component of the Traffic Control and Implementation Plan rather than being a separate plan.

Page 4.10-19, TRANS-2: The traffic control and implementation plan does not need to be reviewed by Lodi and the San Joaquin County Public Works Department. In addition, the California Highway Patrol should be included in the condition to be consistent with the Verification and Stanislaus County should replace San Joaquin County in the Verification. The Applicant also suggests that the implementing condition language be moved to the Verification and the ninth bullet be deleted since it is redundant.

Page 4.10-20, TRANS-3: SR-99 and SR-132 should not be included on the list of roads subject to post-construction repairs. While it is important to identify pavement damage associated with the proposed Project, it is impossible to determine impacts on these high volume roads, because the percentage of Project trucks is so small.

For example, ADTs on SR-99 are 118,000 vehicles/day, with approximately 12% trucks, or a total of 14,160 trucks per day. The Project contribution of at most **84** trucks per day on SR-99 represents only 0.6% of the total truck traffic. Any pavement damage during the construction period will most likely attributable to the 99.4% of the other truck traffic. Similarly, SR-132 has approximately 10% trucks, with an ADT of 26,600 vehicles/hour, so the Project contribution is only 3.2% of the trucks. Most roadway damage will be caused by the 96.8% of the other trucks.

In summary, the requirement in TRANS-3 to videotape SR-99 and SR-132 is unnecessary, because the videotape cannot be used to identify pavement damage specific to the Project.

Page 4.10-20, Condition TRANS-3, Verification: The verification section of the condition assumes that roads have been damaged due to the project. The first sentence of the second paragraph of the Verification should be revised to read: “If a roadway(s) has been damaged as a result of project construction, ~~W~~within 90 days following the completion of construction...” In addition, Stanislaus County should replace San Joaquin County and road information should be provided to the Ceres Public Works Department, not the Planning Department.

Figure 2: This Figure lists Lower Lateral 2 as a “Class I Bikeway.” This is not a bikeway, this is TID canal right-of-way. It should not be listed as a recognized bikeway.

### **TRANSMISSION LINE SAFETY AND NUISANCE**

No comments.

### **VISUAL RESOURCES**

Page 4.12-3, Method and Threshold for Determining Significance, bottom of page: KOP1 does not represent a “Communication Lines Corridor”. The lines shown are electrical distribution and transmission lines, not communication lines.

Page 4.12-5, C. Visual Character or Quality, Construction Impacts: Numbered items 2 through 5 each specifically identify a quantity of “One” in the prepared text. However, there is one of each of these items for each combustion gas turbine assembly. The value should read “Three” in each of the locations.

Page 4.12-5, Project Site, 2<sup>nd</sup> Paragraph: The Applicant requests that this paragraph be rewritten as follows: “The project site is composed of three parcels of land: the first parcel, a vacant disturbed parcel of land approximately 3.2 acres previously used by WinCo as a construction borrow pit which is now filled and graded to the current site elevation; the second, a portion of the 1.4 acre existing APP currently in use as a facility proposed to be used as a shared storm water retention pond for the APP and A2PP facility, which will be filled to accommodate portions of the A2PP; and the third, portions of the existing WinCo distribution center site to be used for transmission lines and the proposed A2PP switchyard.”

Page 4.12-6, Construction Laydown and Parking Area, First Sentence: This sentence should be revised to read: “The construction laydown and parking area – located on approximately 6.4 acres of adjacent WinCo property – would be situated directly west of the existing APP and the proposed A2PP facility.

Page 4.12-6, Linears, 2<sup>nd</sup> Paragraph: The description of the natural gas pipeline should be revised as follows: “The natural gas pipeline, approximately 11.6 miles long ~~and consisting of six segments~~ would begin at PG&E Line 215 located in Bradbury Road and end at a new PG&E metering set for the A2PP located along the south fence line of the existing Almond Power Plant and end on the northwest side of the A2PP. ~~In all alignments, the gas line would go from the meter set to the gas compressors at~~ See **Visual Resources Figure 1.**”

Page 4.12-6, KOP 1 – Communications Line Corridor, Looking South from Crows Landing Road: As stated above, Crows Landing Road is not a “communications line corridor”.

Page 4.12-7, Visual Sensitivity, Second Paragraph: There are several inaccuracies in this paragraph: First, there are no telephone poles in KOP 1. The existing poles are 12-kV electrical distribution line poles. Second, Crows Landing Road is not a highway. In addition, there are no transmission poles associated with the existing Almond Power Plant on Crows Landing Road.

Page 4.12-8, Visual Change, First, Second, and Third Paragraphs: There are no 230-kV transmission lines associated with the A2PP. References to 230-kV lines should be changed to 115-kV.

Page 4.12-9, Linears, Second Paragraph: The two 115-kV transmission lines will be carried by tubular steel angle structures and ~~or~~ wood or steel tangent structures. In addition, the steel structures will be brown when they are installed.

Page 4.12-9, Linears, Third Paragraph, Last Sentence: This sentence should be modified as follows: "...south fence line of the existing Almond Power Plant ~~and be installed on the northwest side of the A2PP.~~"

Page 4.12-10, D. Light or Glare, Last Paragraph: This paragraph should mention that Staff met with the Applicant on March 24 where the proposed paint color for the A2PP was discussed. The Applicant proposes to paint the A2PP a grey color (PSX 700 Pearl Grey). Staff concurred with the color selection. Although the Applicant understands that it is moving forward at risk since the project has not yet been approved by the Committee and the full Commission, the selected paint color should be recognized in the Visual analysis.

Page 4.12-13, VIS-1, B: The Applicant requests that the following language be added to the first sentence of item B:

B. All fixed position lighting shall be shielded/hooded, to the extent feasible given safety and security concerns..."

This language is consistent with prior Commission practice.

Page 4.12-13, VIS-1: The Applicant requests that the following provision be deleted from the condition:

C. Low pressure sodium vapor lighting or overhead high pressure sodium vapor lighting with shields or cutoff luminaries shall be utilized.

This requirement is unreasonable for a construction site which is not visible to any sensitive receptors.

In addition, item E should be deleted from the condition. It is included in the Verification.

Page 4.12-13, VIS-2 Subsection a: The Applicant requests that item (a) in the condition be modified by removing the requirement that reflectors not be visible from beyond the project site. The project site is in an industrial area, not visible by any sensitive receptors. Requiring that reflectors not be visible from beyond the project site is unreasonable. It would require that additional lights be installed, resulting in inefficiencies, additional costs, and an unnecessary use of electricity.

Page 4.12-14, VIS-2: The County of Stanislaus should be removed from the Condition and the Verification since the plant site is not within the County's jurisdiction. In addition for the City of Ceres, the Development Services Department should be listed.

Page 4.12-14, VIS-2 Subsection d: The Applicant requests that this requirement be removed. Low pressure fixtures cannot meet the lighting requirements to support the power plant site.



Page 4.12-14, VIS-3: The County of Stanislaus should be removed from the Condition and the Verification since the plant site is not within the County's jurisdiction. For the City of Ceres, the Development Services Department should be listed.

Page 4.12-15, VIS-3: Currently, additional information/requirement follows subsection f with the recommendation for change as noted below. The requirement is unduly restrictive and fails to recognize that the Staff met with the Applicant in March 2010 and agreed on a paint color for the A2PP. The paragraph should be revised to read:

~~The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives comment from the city of Ceres Planning Department and notification of approval of the treatment plan by the CPM.~~ Subsequent modifications to the treatment plan are prohibited without CPM approval.

### **WASTE MANAGEMENT**

Page 4.13-7, Existing Site Conditions, Second Paragraph, Last Sentence: The Applicant requests that the sentence be revised as follows: "...and to the south by TID's existing ~~Almond 1 evaporation ponds~~ Lateral Line #2."

Page 4.13-8, Existing Site Conditions, First Complete Paragraph, Second Sentence: There is a typographical error. The Applicant provided Staff with a modified Phase I ESA for the natural gas pipeline route, not a Phase II.

### **WORKER SAFETY/FIRE PROTECTION**

No comments.

### **FACILITY DESIGN**

Page 5.1-6, GEN-1, Verification, Second Paragraph: This paragraph requires that once the project is operating, the project owner notify the CPM 30 days in advance of certain power plant activities that require CBO approval. TID requests that the words "repair or maintenance" be deleted. Since design and construction of the power plant will undergo CBO review, repair and maintenance activities will be on those components that have already been reviewed and approved by the CBO. Further review should not be necessary for the repair and maintenance of those components. It is burdensome and unrealistic to expect the applicant to contact the CBO whenever it seeks to perform repairs and maintenance on the plant.

Facility Design Condition: The Facility Design conditions (with the exception of GEN-1 and 2) require the project owner to provide the CPM documents submitted to or from the CBO. The CBO is a delegate of the CEC and keeps the CPM informed on project CBO activities through a project specific website funded by

the project owner. The CBO is also required to submit to the CPM copies of all transmittal letters to the CBO. In addition, the CBO is required to notify the CPM when documents are posted to the website. Given the CBO's notification obligations and that the CBO is the delegate of the CEC, it seems redundant, costly, and unnecessary to also require the project owner to submit CBO related documents to the CPM. TID requests that the Facility Design conditions be modified to remove this duplicative and burdensome requirement.

### **GEOLOGY, MINERAL RESOURCES AND PALEONTOLOGY**

Page 5.2-3, Setting: This paragraph should be revised to reflect that the Grayson Substation is not existing. It should be listed as the "proposed Grayson Substation." It is being built as part of a separate TID project.

Page 5.2-14, PAL-1: The Applicant proposes the following changes to the Condition and Verification below:

**PAL-1** The project owner shall provide the Compliance Project Manager (CPM) with the resume and qualifications of its Paleontological Resource Specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified Paleontological Resource Monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. institutional affiliations, appropriate credentials, and college degree;
2. ability to recognize and collect fossils in the field;
3. local geological and biostratigraphic expertise;
4. proficiency in identifying vertebrate and invertebrate fossils; and
5. at least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary

on the project. Paleontological Resource Monitors (PRMs) shall have the equivalent of the following qualifications:

BS or BA degree in geology or paleontology and one year of experience monitoring in California; or

AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or

enrollment in upper division classes pursuing a degree in the fields of geology or paleontology ~~and two years of monitoring experience in California.~~

**Verification:** (1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

(2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project, stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. ~~The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.~~

(3) Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

Page 5.2-15, PAL-2: The Applicant proposes the following changes to the Condition and Verification below:

**PAL-2** The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction laydown areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS ~~and CPM~~. The site grading plan and plan and profile drawings for the utility lines are appropriate for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS ~~and CPM~~.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and

CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

**Verification:** (1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

(2) If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

(3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of implementing ~~identifying~~ the changes.

Page 5.2-17, PAL-4, Verification, Item 1: For consistency with the Biology and Cultural WEAP requirements, the Applicant requests that this item be revised as follows: “At least ~~30~~ 60 days prior to ground disturbance...”

Page 5.2-11, PAL-4, Verification, Item 2: Item 2 requires that the video script and final video be provided to the CPM for review and approval 30 days prior to ground disturbance, if the project owner is planning to use a video for interim training. The Applicant intends to use a video for the WEAP training. The video will be made after the script has been reviewed. It does not make sense and would be too costly to submit the script at the same time as the video, in case changes to the video are requested. The Applicant requests that Item 2 be revised as follows:

“(2) At least ~~30~~ 60 days prior to ground disturbance, the project owner shall submit the script ~~and final video~~ to the CPM for approval if the project owner is planning to use a video for ~~interim~~ training.

### **POWER PLANT EFFICIENCY**

Page 5.3-1, Setting, second paragraph: The paragraph as currently written is inconsistent with the project description and the other sections of the Staff Assessment. The paragraph should be revised to read:

“...5,000 engine hours per year per turbine generator (~~total for all three combustion turbine generators~~), or an average of approximately 57~~49~~% of the year per combustion turbine generator...”

Page 5.3-3, Project Configuration, Third Paragraph: The paragraph as currently written is inconsistent with the project description and the other sections of the Staff Assessment. The paragraph should be revised to read:

“The applicant intends for this facility to operate in peaking duty up to a total of approximately 5000 engine hours per ~~for the three~~ combustion turbine generators ~~(an average of approximately 1,670 hours per turbine operating at full load)~~. This is equivalent to each of the three turbines operating approximately 5719% of the year...”

### **POWER PLANT RELIABILITY**

Page 5.4-3, Equipment Redundancy, First Paragraph: The paragraph as currently written is inconsistent with the project description and the other sections of the Staff Assessment. The paragraph should be revised to read:

“...the applicant expects to operate Almond 2 approximately 5,000 machine-hours per year, or 5719% of the year per machine...”

### **TRANSMISSION SYSTEM ENGINEERING**

Page 5.5-3, Project Description and Interconnection Facilities, Second Paragraph, Second sentence: The sentence needs to be revised as follows to reflect the correct design rating for the generator step-up transformer: “The CTG would connect through a 4,000 Amps generator circuit breaker and 15 kV underground cable to the low side of its dedicated ~~50/67/83~~ 60/80/100 MVA generator step-up (13.8/~~445~~ 120) transformer.”

Page 5.5-3, Project Description and Interconnection Facilities, Second Paragraph Last Sentence: Reference is made to “...a 1200 Amps disconnect switch...”. This should be revised to read “...a 2000 Amps disconnect switch...”.

Page 5.5-3, Switchyards and Interconnection Facilities, First Sentence: Reference is made to “...consists of five 1,200 A circuit breakers and ten 1,200 A disconnect switches...”. This should be revised to read “...consists of five 2,000 A circuit breakers and twelve 2,000 A disconnect switches...”.

Page 5.5-5, Power Flow Study Results and Mitigation Measures, First Paragraph, Third bullet Item: Please change “102.68%” to “102.98%”.

Page 5.5-6, Flow Study Results and Mitigation Measures, First Paragraph (after bullet items), First Sentence: Please change “when the McClure generation unit was modeled off.” to “when MID’s McClure generation units were was modeled off.”

Page 5.5-6, Flow Study Results and Mitigation Measures, First Paragraph (after bullet items), Second Sentence: Please change “However, the McClure generation unit is normally on during summer peak.” to “However, the McClure generation units are normally on during summer peak.”

Page 5.5-6, Flow Study Results and Mitigation Measures, First Paragraph (after bullet items), Third Sentence: Please change “Once the McClure generation unit is on, no pre-project or post-project overloads occurred as shown in Table V-5.” to “Once the McClure generation units are is on, no pre-project or post-project overloads occurred as shown in Table V-5.”

Page 5.5-8, TSE-2: The requirement for a mechanical engineer for the transmission line design and construction should be deleted. In addition, the Applicant has modified the condition to reflect the removal of the mechanical engineer and made other changes to the language intended to clarify.

Page 5.5-12, TSE-5, Verification, Item 4: The Applicant requests that the sentence be revised to read: “Any ~~Letters~~ received from PG&E, MID, and WAPA...” The modification reflects the fact that many times PG&E, MID, and WAPA do not send letters regarding their review of short circuit studies. The Applicant should not be obligated to provide a letter if one of those entities chooses not to send one.

Conditions TSE-2, 3, and 4: Similar to the Facility Design conditions, these TSE conditions require the project owner to provide the CPM documents submitted to or from the CBO. The CBO is a delegate of the CEC and keeps the CPM informed on project CBO activities through a project specific website funded by the project owner. The CBO is also required to submit to the CPM copies of all transmittal letters to the CBO. In addition, the CBO is required to notify the CPM when documents are posted to the website. Given the CBO’s notification obligations and that the CBO is the delegate of the CEC, it seems redundant, costly, and unnecessary to also require the project owner to submit CBO related documents to the CPM. TID requests that TSE 2, 3, and 4 be modified to remove this requirement.

## **GENERAL CONDITIONS**

No comments

# **ATTACHMENT A**

# Relocated Laydown Area

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## 1.0 Introduction

To advance the Application for Certification (AFC) for the Almond 2 Power Plant (A2PP), the Turlock Irrigation District (TID) has been meeting with the neighboring landowner, WinCo Foods, LLC, and potential project construction contractors to develop detailed construction plans. While these detailed design discussions would typically occur later in the process (closer to certification by the California Energy Commission), TID has advanced these discussions because TID's elected Board has made a determination that the A2PP project is the keystone in an integrated resource plan that will allow TID to achieve a 28 percent Renewable Portfolio Standard.

As a result of these advanced discussions, TID has determined that it would be beneficial to increase the size of the laydown area to approximately 6.4 acres for temporary, construction-related activities. This additional area will be adjacent to the western border of the proposed A2PP site within the WinCo property, on land that was historically used for agriculture (see Figure 1.1-3R).

While TID and WinCo have been in discussions for weeks on the possible land transaction, an agreement in principle was just recently reached by the negotiating teams and made public for the first time with the TID Board's approval of the resolution on May 11, 2010.

TID has prepared this detailed environmental analysis of the proposed additional laydown area. Using this 6.4 acre area, TID can forgo the use of the originally proposed 1.85-acre laydown to the north of the A2PP site. While TID continues to believe that there are no stormwater or biological resources associated with the originally proposed laydown area, the use of the additional laydown area to the west allows TID to avoid the areas identified by Staff as being of concern.

## 2.0 Location for the Relocated Laydown Area

Figures 1.1-3R and 2 show the location of the 6.4-acre laydown area, which will serve as a staging area during construction of the A2PP. (All figures are provided at the end of this report.) The laydown area will be adjacent to the western border of the proposed A2PP site within the WinCo, on land that was historically used for agriculture. Recently, the area has been used by WinCo as a laydown area, borrow pit, and stormwater pond for the WinCo distribution center to the west of the A2PP. A stormwater pipe in the northwest corner of the laydown area will be relocated to drain directly into the WinCo stormwater pond. The additional laydown area contains sufficient room to allow TID can forgo the use of the originally proposed 1.85-acre laydown to the north of the A2PP site. Figure 1.1.-3R has been updated to reflect the additional laydown area.



### 3.0 Environmental Analysis of the Additional Laydown Area

The location of the additional laydown area provides the A2PP project with a staging area during project construction.

The majority of the subject matters considered have no potential to be affected by the additional laydown area. These unaffected subjects include: Geologic Resources and Hazards; Hazardous Materials Management; Land Use; Noise and Vibration; Paleontology; Socioeconomics; Traffic and Transportation; Visual Resources; Waste Management; Worker Safety and Fire Protection. An analysis of the remaining environmental areas included in the AFC is presented below. Additionally, the applicable laws, ordinances, regulations, and standards (LORS) contained in the AFC have been reviewed to confirm consistency.

#### 3.1 Air Quality

The additional laydown area would not have any significant impacts on air quality. The proposed change in the size and location of the laydown area would not extend the construction period, change the construction equipment loading, or change the construction equipment activity assumptions upon which the most recent construction air quality impact analysis was based. Furthermore, the proposed change would not increase the number of workers or the number of deliveries required on a daily basis. The minor grading and site preparation activities required prior to using the proposed laydown area are not expected to be any more extensive than the activities anticipated for the original laydown area that were analyzed in the AFC. High-traffic areas will be graveled and water or other dust suppressants will be used on the remainder of the laydown area to limit fugitive dust. Therefore, because there would be no increase in short-term or long-term construction emissions, no significant air quality impacts are expected to result from the proposed change in the size and location of the laydown area.

#### 3.2 Biological Resources

The additional laydown area will have no effect on the biological resources analysis provided in the AFC. The additional laydown area will temporarily affect approximately 6.4 acres of disturbed land adjacent to the western boundary of the A2PP, within an area previously used by the WinCo facility. A survey of the additional laydown area was conducted on March 2, 2010, by CH2M HILL scientists Steve Long and Michael Clary. Vegetation is a mixture of non-native, weedy grasses and forbs including foxtail barely (*Hordeum jubatum*), wild oats (*Avena fatua*), wild radish (*Raphanus raphanistrum*), and little mallow (*Malva parviflora*). Habitat quality is generally low and most likely attracts common, edge-adapted species such as deer mouse (*Peromyscus maniculatus*), American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), and Brewer's blackbird (*Euphagus cyanocephalus*). The additional laydown area is not habitat for any listed species. No LORS will change as a result of the modification to the laydown area. No additional information beyond that described previously in the AFC is warranted. Therefore, any potential biological resources impacts associated with the proposed change in the size and location of the laydown area will be less than significant.

### 3.3 Cultural Resources

The additional laydown area is located adjacent to the proposed A2PP, bordering the western boundary and consists of disturbed land within a topographic depression previously used as a borrow pit for the WinCo facility to the west. Additionally, new fill has been deposited and the area has been re-graded and leveled at the location of the relocated laydown area.

A literature search of the area was conducted during preparation of the AFC and a subsequent search of the A2PP and a half-mile buffer from the project site was completed in fall 2009. The half-mile buffer included an intensive pedestrian field survey of the laydown area identified in the AFC, project site, and relocated laydown area. No cultural resources were observed during the pedestrian field survey. No known cultural resources are located within the relocated laydown area that are eligible for listing in the National Register of Historic Places or the California Register of Historic Resources.

The relocated laydown area will not result in potential impacts greater than those analyzed in the AFC, and no LORS will change as a result of the relocated laydown area. Therefore, any potential cultural resources impacts associated with the proposed change in the size and location of the laydown area will be less than significant.

### 3.4 Public Health

The temporary construction-related impacts associated with the proposed change to the laydown area would not result in any significant increase in air pollutant emissions. Therefore, the proposed change would not result in potential public health impacts greater than those analyzed in the AFC and would comply with applicable LORS. As discussed in Section 3.2 (Air Quality), there would be no increases in maximum daily emissions or in total construction project emissions as a result of the proposed change to the additional laydown area, so there would be no changes in acute, chronic or cancer health impacts. Therefore, any potential public health impacts would be less than significant.

### 3.5 Soils

All soil units in the additional laydown area and project area were provided in the AFC. Soil loss by water erosion during construction was estimated for the additional laydown area, using the Revised Universal Soil Loss Equation (RUSLE2). Results and detailed calculations for soil loss estimates are provided in an appendix to this report

With the implementation of appropriate best management practices (BMPs) that will be required under the National Pollutant Discharge Elimination System permit, the total project soil loss of 0.97 ton is considered to be a minimal amount and would not constitute a significant impact. It should also be recognized that the estimate of accelerated soil loss by water is very conservative (overestimate of soil loss) because it assumes only a single BMP (i.e., silt fencing), whereas a Stormwater Pollution Prevention Plan will require multiple soil erosion control measures.

Potential fugitive dust resulting from the wind erosion of exposed soil was calculated for the additional laydown area using the emission factor in AP-42 (U.S. Environmental

Protection Agency, 1995; also in Table 11.9-4 of Bay Area Air Quality Management District, 2005).

A summary of the mitigated total suspended particulates (TSP) predicted to be emitted from the site from grading and the wind erosion of exposed soil is provided in the appendix to this report. Without mitigation, the maximum predicted erosion of material from the site is estimated at 6.67 tons over the course of the project construction cycle. This estimate would be reduced to approximately 2.33 tons by implementing basic mitigation measures, such as water application. These estimates are conservative because they make use of emission rates for a generalized soil rather than for site-specific soil properties.

With implementation of the appropriate BMPs that will be required for the project, the additional potential soil impacts are less than significant. Revision of the laydown area will be consistent with applicable LORS. As a result, any potential soil impacts will be less than significant.

### **3.6 Water Resources**

Use of the additional laydown area will require additional water for dust suppression on the additional laydown area. However, water for dust suppression for the laydown area will be minimal and is not anticipated to create impacts on either groundwater or stormwater. TID would use water from the TID irrigation canal system for dust-suppression activities during laydown area use. All of these uses are temporary and construction-related. Use of the additional laydown area will not result in potential impacts greater than those analyzed in the AFC and will comply with applicable LORS. As a result, any potential water resource impacts will be less than significant.

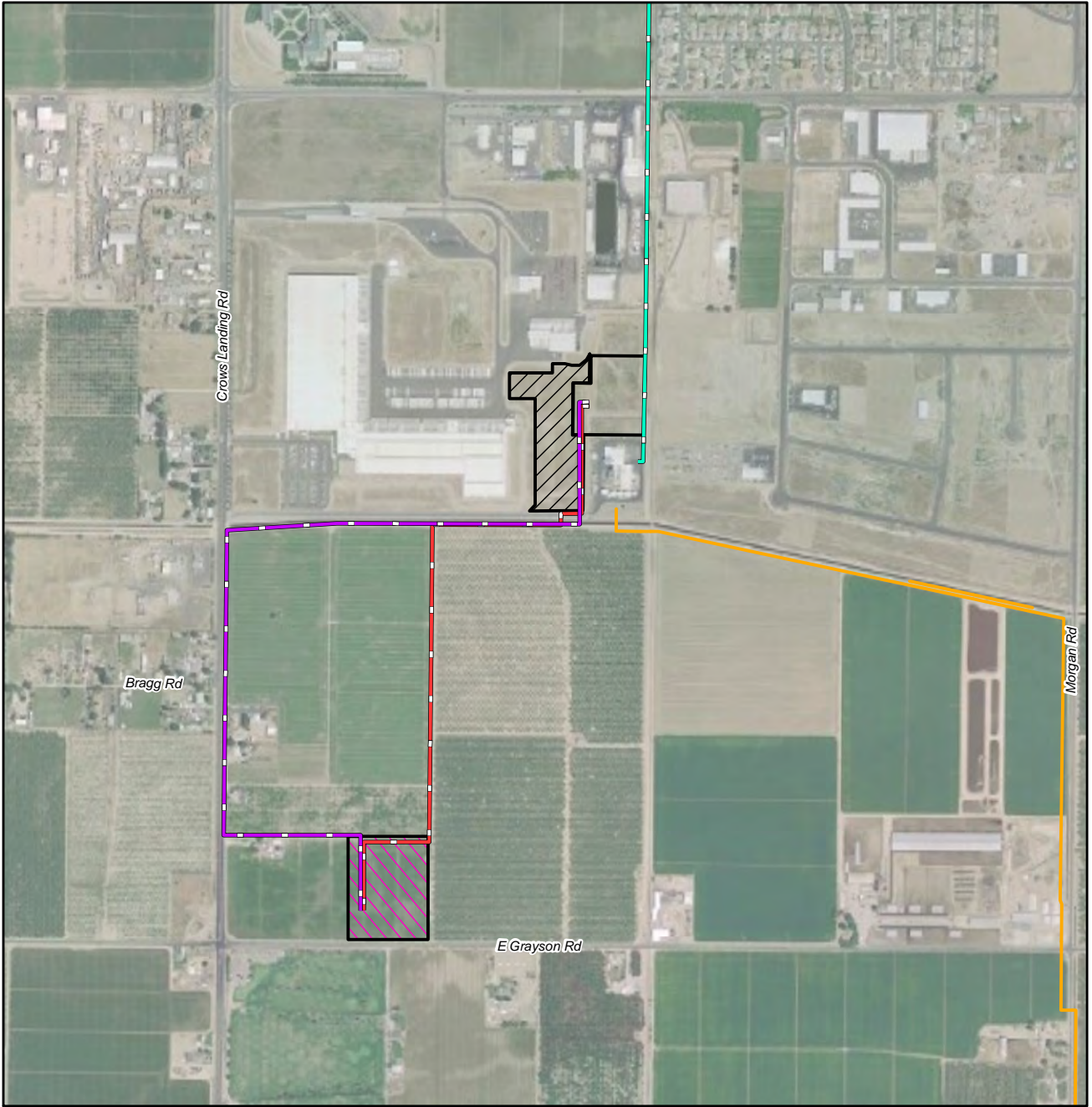
## **4.0 References**

Bay Area Air Quality Management District. 2005. Available at [http://www.baaqmd.gov/pmt/handbook/rev02/permit\\_handbook.htm](http://www.baaqmd.gov/pmt/handbook/rev02/permit_handbook.htm).








U.S. Environmental Protection Agency. 1995. Compilation of Air Pollutant Emission Factors AP 42. Volume I: Stationary Point and Area Sources, 5th edition (Online). Available at <http://www.epa.gov/ttn/chief/ap42/index.html>.

## Figures

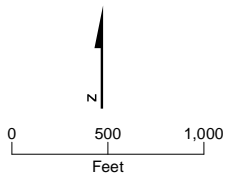
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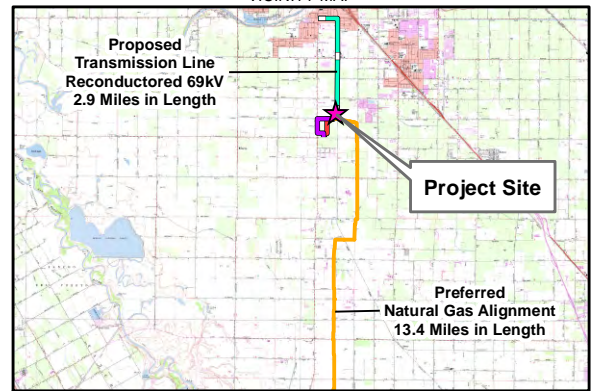
**LEGEND**

-  Preferred Natural Gas Alignment
-  115-kV Circuit 1 Line (Corridor 1)
-  115-kV Circuit 2 Line (Corridor 2)
-  Reconstructed 69kV Sub-Transmission Line
-  Proposed Grayson Substation
-  Laydown Area
-  Project Site

Note:  
The Grayson Substation is being developed as a separate Project

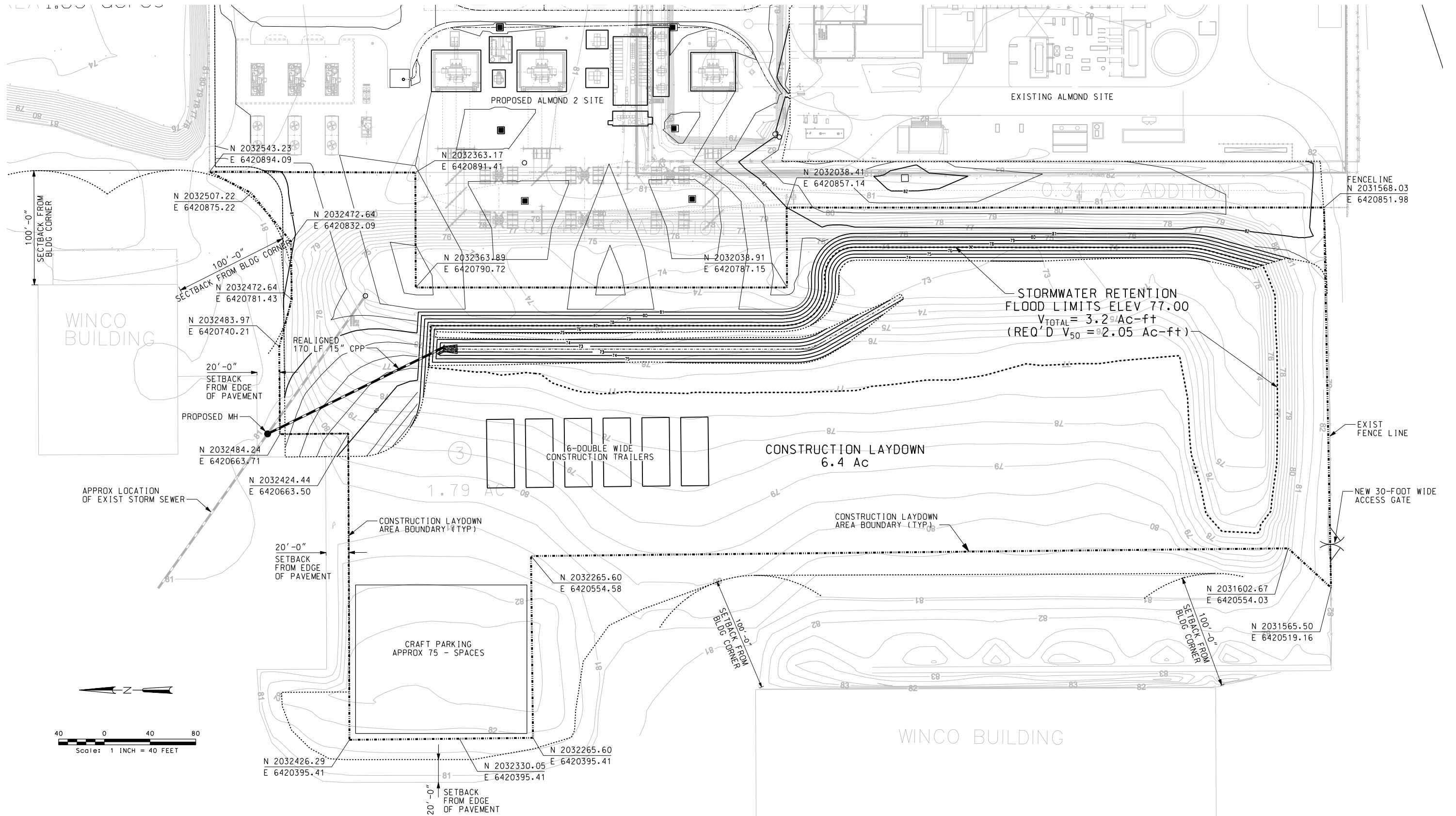


VICINITY MAP



**FIGURE 1.1-3R**  
**SITE LOCATION**  
ALMOND 2 POWER PLANT  
CERES, CALIFORNIA

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



**FIGURE 2**  
**SITE LAYDOWN ARRANGEMENT**  
 ALMOND 2 POWER PLANT  
 CERES, CALIFORNIA

# **ATTACHMENT B**

**Revised and Final Results of a Special-Status  
Plant Survey Conducted for Turlock Irrigation  
District's Proposed Almond 2 Power Plant in  
Stanislaus County, California**

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May 2010



## **Methods**

Background information on special status plants with the potential to occur in the Vicinity of the Almond 2 Power Plant was compiled from the California Native Plant Society Inventory search of a nine quadrangle area surrounding the Ceres and Crow's Landing USGS 7 ½ minute quadrangles and California Department of Fish and Game's Natural Diversity Data Base occurrence records (CNDDDB September 2009).

Field surveys within the facility footprint, preferred gas line alignment ("preferred alignment"<sup>1</sup>) and transmission lines were conducted during October 12 and 17, 2009. Spring surveys were conducted within the preferred alignment on May 6, 2010.

Most of the preferred alignment and transmission lines consist of agricultural land that has little natural habitat value. These areas were driven or walked through; special attention was given areas where any potential habitat was present such as fallow fields, or natural or manmade wetlands, including larger vegetated irrigation and drainage ditches. During the field surveys, habitat was assessed for the potential to support rare plant species that were not identifiable during the fall botanical survey. Surveys in the late spring of 2010 generally assessed habitats and species present within the preferred alignment, but were primarily focused on those limited habitats with potential to support species not identifiable during the previous fall 2009 survey. A true color aerial photograph of the preferred alignment was used for navigation and to assess habitats within 1-mile of the project. Additional information about native soils and historic land use patterns was gained from the USDA Stanislaus Soil Survey (1964). A list of plant species observed during the field surveys was compiled (Attachment 1). No herbarium collections were made.

## **Findings**

No special status plant species were observed within the Almond 2 project area during fall 2009 or spring 2010 field surveys.

The study area (project site, preferred alignment, and transmission corridors) is found at the distal end of the Stanislaus River fan and within the historic floodplain of the San Joaquin River. The project area is underlain with recently to moderately developed sandy soils formed at the basin rim. Some of these alkaline and saline affected soils would have supported alkaline scrub vegetation of iodine bush and saltbush with hummocky topography and depressions formed above cemented lime-silica or claypan horizons.

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<sup>1</sup> The preferred alignment is approximately 11.6 miles long, and consists of six segments A through F. In addition, 1.8 miles of PG&E's pipeline will be reinforced for the Almond 2 Power Plant Project and is referred to as Segment 1. For purposes of this analysis, the preferred alignment includes Segments A through F and Segment 1.

These historic wetlands provided habitat for many of the San Joaquin valley plant species that are now considered rare.

All of the areas in the preferred alignment and transmission corridors have been altered to some degree by agricultural or urban uses. Natural habitats with potential to support rare species are not present. Ruderal or marginal habitats with potential to support special status plants are few. Some rare species may colonize roadside drainages, grazed pastures, fallow fields, and road cut-banks, but these habitats have low suitability and likely serve only as a limited refuge to a local or previously established population.

Those special status plant species considered as occurring in the vicinity of the project, preferred alignment, and transmission corridors are provided in Table 1. Species such as Colusa grass, Hoover's spurge, succulent owl's clover, and the orcutt grass are known only from specific vernal pool habitats that are no longer present in the vicinity of the project, preferred alignment, and transmission corridors. Other species noted on the list, such as Hartweg's golden sunburst, and beaked clarkia are found in grassland habitats restricted to higher and older alluvial terraces. Other species such as Lemmon's jewelflower, diamond-petaled poppy, and roundleaf filaree are found in the Coast Range foothills. Neither of these habitats are representative of the sandy alkaline habitats that are present in the study area (project site, preferred alignment, and transmission corridors).

Marginal saline/alkaline wetland habitat is present for the following saltscare species: *Atriplex cordulata*, *Atriplex persistens*, *Atriplex depressa*, and *Atriplex joaquiniana*. Small patches of salt grass within the preferred alignment and transmission corridors were surveyed for these species and for hispid bird's beak (*Cordylanthus mollis* ssp. *hispidus*) during October and May. No populations of these plants were found in the study area.

Sanford's arrowhead (*Sagittaria sanfordii*) is another Great Valley species known to be found in the manmade habitats like roadside or agricultural drainage ditches. This species was sought in larger vegetated drains supporting cattail, water primrose, and other emergent aquatics. Sanford's arrowhead plants are distinctive enough by leaf shape, rooting habitat, and fruit to be discernable in the fall, but additional surveys during the plant's May flowering period confirmed its absence from the study area.

Merced monardella (*Mondardella leucocephala*) is a summer flowering annual that was historically known from sandy alkaline ground adjacent to the Merced River near Delhi in Merced County and Tuolumne River in Southern Stanislaus County (Stebbins 1993). It has not been relocated in the wild since the 1940's and is considered extinct. So little ecological information is known about this annual species that it was sought in all open sandy habitats along the preferred gas line alignment that comes within a mile of the San Joaquin River during October 2009 and May 2010. No members of the genus *Monardella* were encountered within the corridor during these surveys. Naked buckwheat

(*Eriogonum nudum*), a common species known to be found with Merced monardella was also absent. While Merced monardella is an annual plant that could be diminutive in bad years, the precipitation in the Turlock area for the 2009-2010 rainfall year has been 13 to 30 percent above average. No populations of Merced monardella were found and none are expected to occur within the study area.

### **Summary**

The study area (project site, preferred alignment, and transmission corridors) contains very limited potential for the occurrence of rare plant species. No special status plants were identified in the study area during the October 2009 or May 2010 field surveys.

### **References**

Stebbins, J.C. 1993. Status survey of *Monardella leucocephala* (Lamiaceae) in the San Joaquin Valley, California. U.S. Fish and Wildlife Service, Sacramento, CA. 16 pp. + appendices

TABLE 1

Special-Status Species with the Potential to Occur in the Vicinity of the Almond 2 Power Plant

Common Name	Scientific Name	Status	Habitat	Season	Potential to Occur
<b>Plants</b>					
Lesser saltscale	<i>Atriplex minuscula</i>	--/--/CNPS 1B.1	Sandy soils in alkaline areas at elevations of less than 100 m, often in association with slough systems and river floodplains. However, it is found only in microhabitats that are not inundated year-round. CNDDDB record from roadside drainage, annual grassland, alkaline grasslands/flats	May - October	None –No suitable habitat in the study area. Not observed during October or May field surveys. Nearest suitable habitat (and CNDDDB record of occurrence) is located adjacent to the San Joaquin River and approximately 1.5 miles west of the natural gas pipeline segment A and appears to overlap natural gas pipeline segment B. However, the accuracy of this occurrence is 1 mile and the record dates from 1965, therefore, it's unlikely this species is present within the project impact area.
Heartscale	<i>Atriplex cordulata</i>	--/--/CNPS1B.2	Sandy, saline or alkaline flats or scalds, in chenopod scrub, meadows, and valley and foothill grassland. CNDDDB occurrence in unplowed, grazed pasture. Often associated with <i>Distichlis</i> .	April - October	None – Not observed during October or May field surveys. No suitable habitat. Believed extirpated from Stanislaus County. Nearest suitable habitat (and CNDDDB record of occurrence) is located adjacent to the San Joaquin River and approximately 1.5 miles west of the natural gas pipeline segment A and appears to overlap natural gas pipeline segment B. However, the accuracy of this occurrence is 1 mile and the record dates from 1965, therefore, it's unlikely this species is present within the project impact area.
Brittle scale	<i>Atriplex depressa</i>	-/-/CNPS1B.2	Chenopod scrub, meadows and seeps, Playas, valley and foothill grassland, vernal pools/alkaline, clay	April –October	Low- Not observed during October or May field surveys. No local or historic populations, Marginal habitat limited, no vernal pools.
San Joaquin spearscale	<i>Atriplex joaquiniana</i>	-/-/CNPS 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland/alkaline	April - October	None –Not observed during October or May field surveys. Marginal habitat limited. No local or currently know populations within 1-mile of the project area.
Vernal pool smallscale	<i>Atriplex persistens</i>	--/--/CNPS1B.2	Vernal pools.	June - October	None – Not observed during October or may field surveys. No vernal pool habitat in the study area.

TABLE 1

Special-Status Species with the Potential to Occur in the Vicinity of the Almond 2 Power Plant

Common Name	Scientific Name	Status	Habitat	Season	Potential to Occur
Alkali milk-vetch	<i>Astragalus tener</i> var. <i>tener</i>	--/--/CNPS 1B.2	Vernal pools and playas, edges of salt marshes, alkali meadows, and moist grassy flats.	March - June	None – Not observed during October or May field surveys. No seasonally wet grassland habitat in the study area. Nearest suitable habitat (and CNDDDB record of occurrence) is located adjacent to the San Joaquin River and approximately 1.5 miles west of the natural gas pipeline segment A and appears to overlap natural gas pipeline segment B. However, the accuracy of this occurrence is within 1 mile and the record dates from 1940; according to the CNDDDB the occurrence is assumed to be extirpated from the area.
Big tarplant	<i>Blepharizonia plumosa</i>	--/--/CNPS 1B.1	Valley and foothill grasslands. .	July – October	None – Not observed during October or May field surveys. No native habitat observed in the study area.
Santa Cruz Mountains pussypaws	<i>Calyptidium parryi</i> var. <i>hesseae</i>	--/--/CNPS 1B.1	Chaparral, Cismontane woodland; sandy or gravelly openings	May-Aug	None – Not observed during October or May field surveys. No suitable habitat.
Succulent (fleshy) owl's clover	<i>Castilleja campestris</i> ssp. <i>succulenta</i>	FT/CE/ CNPS 1B.2	Vernal pools.	April - May	None – Not observed during October or May field surveys. No vernal pool habitat in the study area.
Lemmon's jewelflower	<i>Caulanthus coulteri</i> var. <i>lemmonii</i>	-/--/CNPS 1B.2	Pinon and juniper woodland, Valley and foothill grassland	March –May	None – Not observed during October or May field surveys. No potential or historic habitat in the study area.
Hoover's spurge	<i>Chamaesyce hooveri</i>	FT/--/CNPS 1B.2	Vernal pools.	July - September	None – Not observed during October survey. No vernal pool habitat in the study area. Nearest critical habitat 18 miles east of the project.
Beaked clarkia	<i>Clarkia rostrata</i>	--/--/CNPS 1B.3	Cismontane woodlands; Valley and foothill grasslands at higher elevations.	April – May	None – Not observed during October or May field surveys. No high terrace grassland habitat in the study area.
Hispid bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>hispidus</i>	--/--/ CNPS 1B.1	Meadows and seep, Playas, Valley and foothill grassland/alkaline parasitic on salt grass	June - September	Low – Not observed during October or May field surveys. Marginal habitat limited and disturbed. No known or historic populations in the project vicinity.
Roundleaf filaree	<i>Erodium macrophyllum</i>	--/--/CNPS 1B.1	Cismontane woodland, valley and foothill grassland/clay	March-May	None – Not observed during October or May field surveys. No clayey soils or natural grassland habitats in the study area.

TABLE 1

Special-Status Species with the Potential to Occur in the Vicinity of the Almond 2 Power Plant

Common Name	Scientific Name	Status	Habitat	Season	Potential to Occur
Diamond-petaled California poppy	<i>Eschscholzia rhombipetala</i>	--/--/CNPS1B.1	Valley and foothill grassland alkaline/clay	March –April	None— Not observed during October or May field surveys. No alkaline clay soils in the project area. Plants are known from the central coast foothills outside of the project area.
Delta button celery	<i>Eryngium racemosum</i>	--/CT/CNPS 1B.1	Riparian scrub; 3 - 30 meters elevation.	June - September	None – Not observed during October or May field surveys. No riparian scrub habitat in the study area.
Merced monardella	<i>Monardella leucocephala</i>	--/--/CNPS 1A	Extremely sandy, subalkaline soils in low-lying areas bordering rivers.	May – August	Low – Not observed during October or May field surveys. Limited, marginal habitat.
Prostrate vernal pool navarretia	<i>Navarretia prostrata</i>	--/--/CNPS1B.1	Valley and foothill grassland, Vernal pools (alkaline)	March-June	None – Not observed during October or May field surveys. No vernal pool habitat in the study area.
Colusa grass	<i>Neostapfia colusana</i>	FT/CE/ CNPS 1B.1	Vernal pools.	May - August	None – Not observed during October or May field surveys. No vernal pool habitat in the study area. Nearest critical habitat is 14 miles northeast of the project.
San Joaquin Valley orcutt grass	<i>Orcuttia inaequalis</i>	FT/CE/CNPS 1B.1	Vernal pools	April – September	None – Not observed during October or May field surveys. No vernal pool habitat in the study area. Nearest critical habitat is 24 miles southeast of project.
Hairy orcutt grass	<i>Orcuttia pilosa</i>	FE/CE/ CNPS 1B.1	Vernal pools.	May - September	None – Not observed during October or May field surveys. No vernal pool habitat in the study area. Nearest critical habitat is 21 miles east of the project.
Hartweg's golden sunburst	<i>Pseudobahia bahaifolia</i>	FE/CE/CNPS 1B	Open grasslands and grasslands at the margins of blue oak woodland, primarily on shallow, well-drained, fine-textured soils, nearly always on the north or northeast facing of Mima mounds or cut banks. Often in grazed areas.	March - April	None – Not observed during October or May field surveys. No high terrace grassland habitat in the study area.
Sanford's arrowhead	<i>Sagittaria sanfordii</i>	-/-/ CNPS1B.2	Marshes and swamps (assorted shallow freshwater)	May-October	Low – Not observed during October or May field surveys. Limited potentially suitable habitat found in larger vegetated agricultural drainage ditches.

TABLE 1

Special-Status Species with the Potential to Occur in the Vicinity of the Almond 2 Power Plant

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Habitat</b>	<b>Season</b>	<b>Potential to Occur</b>
Greene's tuctoria	<i>Tuctoria greenei</i>	FE/ CNPS 1B.1	Vernal pools.	May - July	None – Not observed during October or May field surveys. No (vernal pool) habitat in the survey area. The species has been extirpated from Fresno, Madera, San Joaquin, Stanislaus and Tulare Counties. Nearest critical habitat is 15 miles northeast of the project.

## Attachment 1

Plants observed during within the Almond 2 power plant facilities area and transmission and pipeline corridors October 2009 and May 2010

Family	Scientific Name	Common Name
<b><i>Alismataceae</i></b>		
	<i>Sagittaria latifolia</i>	broad-leaf arrowhead
<b><i>Amaranthaceae</i></b>		
	<i>Amaranthus albus</i>	tumbleweed
	<i>Amaranthus palmeri</i>	Palmer's amaranth
<b><i>Apiaceae</i></b>		
	<i>Foeniculum vulgare</i>	fennel
<b><i>Asteraceae</i></b>		
	<i>Centaurea maculosa</i>	spotted knapweed
	<i>Centaurea solstitialis</i>	yellow star-thistle
	<i>Chamomilla suaveolens</i>	pineapple weed
	<i>Cirsium vulgare</i>	bull thistle
	<i>Conyza bonariensis</i>	South American horseweed
	<i>Conyza canadensis</i>	Canada horseweed
	<i>Eclipta prostrata</i>	false daisy
	<i>Grindelia camporum</i>	Great Valley gumweed
	<i>Helianthus annuus</i>	common sunflower
	<i>Hemizonia pungens</i> ssp. <i>pungens</i>	common tarweed
	<i>Heterotheca grandiflora</i>	telegraph weed
	<i>Lactuca serriola</i>	prickly lettuce
	<i>Picris echioides</i>	bristly ox-tongue
	<i>Senecio vulgaris</i>	common groundsel
	<i>Silybum marianum</i>	milk thistle
	<i>Sonchus asper</i> ssp. <i>asper</i>	prickly sow thistle
	<i>Xanthium spinosum</i>	spiny cocklebur
	<i>Xanthium strumarium</i>	cocklebur
<b><i>Azollaceae</i></b>		
	<i>Azolla filiculoides</i>	mosquito fern
<b><i>Boraginaceae</i></b>		
	<i>Amsinckia menziesii</i> var. <i>intermedia</i>	orange-flowered Menzies' fiddleneck
	<i>Heliotropium curassavicum</i>	seaside heliotrope
<b><i>Brassicaceae</i></b>		
	<i>Barbarea orthoceras</i>	American rocket
	<i>Brassica nigra</i>	black mustard
	<i>Cardamine oligosperma</i>	Idaho bittercress
	<i>Lepidium latifolium</i>	broad-leaved pepper-grass
	<i>Lepidium nitidum</i>	shining pepper-grass



Family	Scientific Name	Common Name
	Raphanus sativus	wild radish
<b>Caryophyllaceae</b>		
	Cerastium glomeratum	mouse-ear chickweed
<b>Chenopodiaceae</b>		
	Allenrolfea occidentalis	iodine-bush
	Atriplex fruticulosa	ball saltbush
	Atriplex heterosperma	two-scale saltbush
	Atriplex lentiformis	big saltbush
	Atriplex triangularis	spearscale
	Bassia hyssopifolia	five-horn bassia
	Chenopodium album	white goosefoot
	Chenopodium ambrosioides	Mexican tea
	Salsola tragus	tumbleweed
	Suaeda moquinii	bush seepweed
<b>Convolvulaceae</b>		
	Convolvulus arvensis	field bindweed
<b>Cucurbitaceae</b>		
	Cucurbita foetidissima	calabazilla
<b>Cuscutaceae</b>		
	Cuscuta californica var. californica	California dodder
<b>Cyperaceae</b>		
	Cyperus eragrostis	tall flatsedge
	Cyperus strigosus	false nutsedge
	Eleocharis macrostachya	common spikerush
<b>Euphorbiaceae</b>		
	Chamaesyce maculata	spotted spurge
	Eremocarpus setigerus	turkey mullein
<b>Fabaceae</b>		
	Lotus wrangelianus	Chilean lotus
	Medicago polymorpha	California burclover
	Medicago sativa	alfalfa
	Melilotus alba	white sweetclover
	Melilotus officinalis	yellow sweetclover
	Trifolium dubium	shamrock
	Trifolium hirtum	rose clover
	Trifolium incarnatum	crimson clover
	Trifolium repens	white clover
	Vicia villosa	hairy vetch
<b>Fagaceae</b>		
	Quercus lobata	Valley oak
<b>Frankeniaceae</b>		
	Frankenia salina	alkali heath
<b>Geraniaceae</b>		

Family	Scientific Name	Common Name
<b>Juncaceae</b>	Erodium cicutarium	red-stemmed filaree
	Geranium dissectum	cut-leaved geranium
<b>Lamiaceae</b>	Juncus bufonius	toad rush
	Juncus mexicanus	Mexican rush
<b>Liliaceae</b>	Marrubium vulgare	horehound
	Asparagus officinalis ssp. officinalis	asparagus
<b>Lythraceae</b>	Lythrum hyssopifolia	
	Abutilon theophrasti	velvet-leaf
<b>Malvaceae</b>	Malva parviflora	cheeseweed
	Malvella leprosa	alkali mallow
	Mollugo verticillata	green carpetweed
<b>Molluginaceae</b>	Morus alba	mulberry
	Epilobium brachycarpum	autumn willowweed
<b>Onagraceae</b>	Epilobium ciliatum	willowherb
	Ludwigia peploides	floating water-primrose
	Plantago lanceolata	English plantain
<b>Plantaginaceae</b>	Plantago major	common plantain
	Agrostis avenacea	pacific bentgrass
<b>Poaceae</b>	Aira caryophylla	silver hairgrass
	Avena barbata	slender wild oats
	Avena sativa	common oats
	Bromus diandrus	ripgut brome
	Bromus hordeaceus	soft chess
	Bromus rubens	
	Cynodon dactylon	bermuda grass
	Digitaria sanguinalis	crabgrass
	Echinochloa crus-galli	barnyard grass
	Hordeum depressum	low barley
	Hordeum marinum ssp. gussoneanum	Mediterranean barley
	Hordeum murinum ssp. leporinum	foxtail barley
	Leptochloa fascicularis	sprangletop

Family	Scientific Name	Common Name
	Lolium perenne	English rye-grass
	Panicum capillare	witchgrass
	Paspalum dilatatum	dallis grass
	Paspalum distichum	knot grass
	Poa annua	annual blue grass
	Polypogon monspeliensis	annual beard grass
	Sorghum halepense	johnsongrass
	Vulpia bromoides	brome fescue
	Vulpia myuros	rattail fescue
<b><i>Polygonaceae</i></b>		
	Polygonum arenastrum	common knotweed
	Polygonum aviculare	
	Polygonum hydropiper	marsh pepper
	Polygonum persicaria	lady's thumb
	Rumex acetosella	common sheep sorrel
	Rumex crispus	curly dock
	Rumex pulcher	fiddle dock
<b><i>Pontederiaceae</i></b>		
	Eichhornia crassipes	water hyacinth
<b><i>Portulacaceae</i></b>		
	Calandrinia ciliata	red maids
	Portulaca oleracea	common purslane
<b><i>Primulaceae</i></b>		
	Anagallis arvensis	scarlet pimpernel
<b><i>Rubiaceae</i></b>		
	Galium aparine	common bedstraw
<b><i>Salicaceae</i></b>		
	Populus fremontii ssp. fremontii	Fremont cottonwood
	Salix babylonica	weeping willow
	Salix exigua	sandbar willow
	Salix gooddingii	Goodding's black willow
	Salix lasiolepis	arroyo willow
	Salix lucida ssp. lasiandra	shining willow
<b><i>Scrophulariaceae</i></b>		
	Triphysaria eriantha	butter 'n' eggs
	Verbascum thapsus	common mullein
<b><i>Simaroubaceae</i></b>		
	Ailanthus altissima	tree-of-heaven
<b><i>Solanaceae</i></b>		
	Datura wrightii	toluaca
	Nicotiana glauca	tree tobacco
	Solanum americanum	common nightshade
<b><i>Typhaceae</i></b>		
	Typha latifolia	broadleaf cattail

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>
<b><i>Urticaceae</i></b>	<i>Urtica dioica</i> ssp. <i>holosericea</i>	hoary nettle
<b><i>Verbenaceae</i></b>	<i>Phyla nodiflora</i>	common lippia
	<i>Verbena bonariensis</i>	purple-top vervain
<b><i>Vitaceae</i></b>	<i>Vitis vinifera</i>	cultivated grape
<b><i>Zannichelliaceae</i></b>	<i>Zannichellia palustris</i>	horned pondweed
<b><i>Zygophyllaceae</i></b>	<i>Tribulus terrestris</i>	puncture-vine

# **ATTACHMENT C**

# Surficial Geology of the PG&E Gas Pipeline In the Vicinity of The San Joaquin River

PREPARED FOR: Sarah Madams/SAC  
Susan Strachan

PREPARED BY: W. Geoffrey Spaulding, Ph.D./LAS

COPIES: Clint Helton/SCO

DATE: May 10, 2010

## Introduction

The southern-most extremity of work to provide for natural gas service to TID's Almond 2 Power Plant (A2PP) involves reinforcement<sup>1</sup> of the existing PG&E natural gas system in the vicinity of the San Joaquin River approximately 2.3 miles to the north of the Crows Landing Road Bridge. The reinforcement work on the west side of the San Joaquin River will involve approximately 1.8 miles of new natural gas pipe to be installed using trenching at a shallow depth of 4 to 8 feet deep, terminating approximately 2,270 feet to the west of the river (the termination point is closer to the unnamed tributary which runs parallel to the river). On the east side of the San Joaquin River, however, no work is planned within approximately 1,500 feet of the river.

As part of its proposed Conditions of Certification for the A2PP, CEC cultural resources staff recommends a detailed study of the geomorphology in the vicinity of the San Joaquin River to better inform on the geoarchaeology of the project right of way (ROW) near the river. As a first step, the relative extent of the Pleistocene age Modesto Formation, versus younger Holocene-age sediments, can be employed to delimit broad patterns of subsurface archaeological sensitivity. Cultural materials have not been reliably recorded from the Modesto Formation, while important archaeological records have come from younger, Holocene geomorphic features bounding the San Joaquin River. This technical memorandum provides a review of the existing surficial geological mapping of the pipeline ROW in the vicinity of San Joaquin River to determine the extent of these two substantially different (from the point of view of cultural resources sensitivity) sedimentary units.

## East Side of the San Joaquin River

On the east side of the San Joaquin River the surficial geology is dominated by the vast outwash fans that originate in the Sierra Nevada, lying more than 30 miles to east. The rate of accumulation of the alluvial fans of the Sierra Nevada has been much slower than that of the fans issuing from the Coast Range to the west of the river. The last two outwash

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<sup>1</sup> For the TID A2PP, reinforcement is defined as "reinforcing the PG&E system", and does not mean reinforcing the actual pipeline. The reinforcement will leave the existing pipeline on the west side of the San Joaquin River untouched, and instead, a new pipeline will be installed paralleling the existing pipeline currently in place. The paralleling of this existing pipeline can also be referred to as "looping" the pipeline system.

episodes, thought to have been due to Sierra Nevada glaciations, left deposits that are widespread throughout the Great Valley. The youngest is named the Modesto Formation, and is dated to the Wisconsin (or Wisconsinan) glaciation<sup>2</sup>, which ended between 14,000 and 10,000 years ago.

The work of Atwater et al. (1986) and Marchand and Alwardt (1981) provide surficial geological mapping of the east side of the San Joaquin River in this area. Their coverage extends to within 0.9 mile of the southern extent of the pipeline route on the east side of the San Joaquin River, and is extrapolated to the pipeline ROW here. On the east side of the river Holocene sediment is restricted to the extent of the current floodplain and the lowest terraces of the San Joaquin River. These are mapped as the Upper Member (M1b) and Lower Member (M2b) of the Modesto Formation. Both these units are fine-grained stratified alluvium typical of the fan toes of the Sierra, and the flood basins of the San Joaquin River (Marchand and Alwardt, 1981). These usually possess alkaline soils and distinct argillic horizons (Atwater et al., 1986) which during field reconnaissance was seen to contain abundant calcium carbonate root molds. The entire pipeline ROW on the east side of the San Joaquin River appears to lie within the Modesto Formation.

### **West Side of the San Joaquin River**

Surficial geological mapping on the west side of the San Joaquin River is provided by Sowers et al. (1993). Examining the pipeline ROW from west to east on the west side of the river, for most of that distance it primarily crosses fan and terrace deposits of Little Salado Creek (Qhfl). This Holocene alluvium consists of unconsolidated silts, clays, sands and gravels from the poorly lithified, easily eroded sediments of the Coast Range. The easternmost approximate quarter mile of the pipeline ROW crosses Holocene basin rim and distal fan deposits (Qhr) of the San Joaquin River (Sowers et al., 1993). To the extent that they overlie the distal fan of Little Salado Creek (ibid.), these fluvial deposits postdate the alluvial units issuing from the Coast Range. Nevertheless, both of these units (Qhfl and Qhr) are post-glacial in age, and likely dated to the middle and/or late Holocene (the last 7,000 years).

### **Conclusions**

The proposed pipeline excavations (estimated to be between 4 to 8 feet in depth) on the east side of the San Joaquin River terminate well before reaching the current floodplain, and in what has been determined to be Modesto Formation sediments. This determination was reached during both this review as well as during the previous paleontological resources assessment for A2PP (Section 5.8 of the AFC). In contrast, the entire length of the pipeline ROW on the west side of the river is in Holocene-age sediment. These results suggest that no other considerations are required regarding subsurface cultural resources sensitivity on the east side of the San Joaquin River. The surficial geology there is exclusively the Modesto Formation. However, on the west side of the river additional considerations are warranted to the extent that the subsurface geology is dominated by Holocene-age sediment which may contain cultural materials.

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<sup>2</sup> Although the Pleistocene is commonly referred to as "the Ice Age" there were at least seven glacial-interglacial cycles during the last 700,000 years of the Pleistocene.

## References

- Atwater, B. F., D. P. Adam, J. P. Bradbury, R. M. Forester, R. K. Mark, et al. (1986). A fan dam for Tulare Lake, California, and implications for the Wisconsin glacial history of the Sierra Nevada. *Geological Society of America Bulletin* 97: 97-109.
- Marchand, D. E., and A. Allwardt. 1981. *Late Cenozoic Stratigraphic Units, Northeastern San Joaquin Valley, California*. U.S. Geological Survey Bulletin 1470. 70 pp.
- Sowers, J. M., J. S. Noller, and W. R. Lettis. 1993. Preliminary maps showing Quaternary geology of the Patterson and Crows Landing 7.5-minute Quadrangles, California. U.S. Geological Survey Open-file report 93-223. Menlo Park, CA.



# **ATTACHMENT D**

**HAZARDOUS MATERIALS**  
**Appendix B**

**Hazardous Materials Proposed for Use at the A2PP**

## HAZARDOUS MATERIALS

### Appendix B

#### Hazardous Materials Proposed for Use and Storage On Site at the A2PP

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Acetylene	47-86-2	Welding gas	Health: asphyxiant gas Physical: flammable	435 cubic feet
Anhydrous Ammonia (100 percent NH <sub>3</sub> by weight)	7664-41-7	Control NOx emissions through selective catalytic reduction	Health: Corrosive, irritation to permanent damage from inhalation, ingestion and skin contact Physical: Combustible, but difficult to burn	10,200 gallons
Anti-scalant	Various	Prevent scale in reverse osmosis membranes	Health: may cause slight irritation to the skin and moderate irritation to the eyes Physical: non flammable	250 gallons
<u>Argon</u>	<u>7440-37-1</u>	<u>Welding Gas</u>	<u>Health: Asphyxiant gas</u> <u>Physical: Non-flammable</u>	<u>450 cubic feet</u>
<u>Argon / Carbon Dioxide</u>	<u>7440-37-1 / 124-38-9</u>	<u>Welding Gas</u>	<u>Health: Asphyxiant gas, Exposure can cause nausea and respiratory problems; oxygen levels below 19.5% may cause asphyxia; high concentrations may cause vasodilation leading to circulatory collapse</u> <u>Physical: Non-flammable</u>	<u>342 cubic feet</u>
<u>Aviation Engine Oil</u>	<u>None</u>	<u>Lubricate rotation equipment (e.g., gas turbine bearings)</u>	<u>Health: hazardous if ingested</u> <u>Physical: can be combustible depending on manufacturer</u>	<u>250 gallons</u> <u>1,000 gallons (250 x4 Gas Turbines)</u>
<u>Bleach (Sodium Hypochlorite)</u>	<u>7681-52-9</u>	<u>Biological Control</u>	<u>Health: Corrosive, irritation to permanent damage from inhalation, ingestion and skin contact</u> <u>Physical: Nonflammable</u>	<u>800 gallons</u>
<u>Carbon Dioxide</u>	<u>124-38-9</u>	<u>Fire Protection for GT Packages</u>	<u>Health: Exposure can cause nausea and respiratory problems; oxygen levels below 19.5% may cause asphyxia; high concentrations may cause vasodilation leading to circulatory collapse</u> <u>Physical: Non-flammable</u>	<u>250 gallons</u> <u>Almond 1: 600 pounds</u> <u>A2PP: 7,200</u> <u>Total = 7,800 pounds</u>

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Citric Acid	77-92-9	Reverse osmosis membrane cleaning	Health: causes irritation to the skin, gastrointestinal tract, and respiratory tract Physical: slightly flammable	350 pounds
Cleaning Chemicals	Various	Cleaning	Health: refer to individual chemical labels Physical: refer to individual chemical labels	Varies (less than 25 gallons liquids or 100 pounds solids for each chemical)
Cleaning Chemicals/ Detergents	None	Periodic cleaning of combustion turbine	Health: refer to individual chemical labels Physical: refer to individual chemical labels	<del>55 gallons</del> <u>110 gallons</u>
<u>Corrosion Inhibitor (365 Amine)</u>	<u>2008-39-1 (Amine Solution)</u>	<u>Corrosion inhibitor</u>	Health: Harmful if swallowed; causes irreversible eye damage Physical: Non-flammable	<u>75 gallons</u>
<u>Diesel No. 2</u>	<u>68476-34-6</u>	<u>Small equipment refueling</u>	Health: May be carcinogenic Physical: Flammable	<u>250 gallons</u>
EPA Protocol Gases	Various	Calibration gases	Health: refer to individual chemical labels Physical: refer to individual chemical labels	<del>1,400 cubic feet</del> <u>4,060 cubic feet</u>
Hydraulic Oil	None	High-pressure combustion turbine starting system, turbine control valve actuators	Health: hazardous if ingested Physical: combustible	<del>600 gallons</del> <u>215 gallons</u>
Laboratory Reagents	Various	Water/wastewater laboratory analysis	Health: refer to individual chemical labels Physical: refer to individual chemical labels	130 pounds
<u>Lead Acid Batteries (10-45% Sulfuric Acid and 45-60% Lead)</u>	<u>7664-93-9</u> <u>7439-92-1</u>	<u>UPS Electrical power</u>	Health: Causes severe eye and skin burns; causes burns of the mouth, throat, and stomach; acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping which may lead rapidly to systemic toxicity and must be treated by a physician Physical: Non-flammable	<del>25,650 pounds (in batteries)</del>  Almond 1: <u>25,650 pounds</u>  A2PP: <u>40,000 pounds (est)</u>  Total: <u>65,650 pounds</u>

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Lubrication Oil	None	Lubricate rotation equipment (e.g., generator bearings, gas compressors, pumps)	Health: hazardous if ingested Physical: flammable	<del>775 gallon</del> 12,775 gallons
Mineral Insulating Oil	8012-95-1	Transformers/switch yard	Health: minor health hazard Physical: can be combustible depending on manufacturer	<del>75,000</del> 150,000 gallons (in numerous transformers)
<u>Nalco 3DT-183 Cooling Treatment (30-60% Phosphoric Acid)</u>	<u>7664-38-2</u>	<u>Corrosion control</u>	<u>Health: Corrosive, may cause tissue damage</u> <u>Physical: Non-flammable</u>	400 gallons
Oxygen	7782-44-7	Welding gas	Health: therapeutic overdoses can cause convulsions Physical: oxidizing agent; actively supports combustion	562 cubic feet
<u>Oxygen Scavenger</u>	<u>None</u>	<u>Oxygen scavenger for water conditioning</u>	<u>Health: Mild Irritation</u> <u>Physical: Non-flammable</u>	<u>75 gallons</u>
Paint	Various	Touchup of painted surfaces	Health: Refer to individual container labels Physical: Refer to individual container labels	Varies (less than 25 gallons liquids or 100 pounds solids for each type)
Propane	74-98-6	Torch gas	Health: Asphyxiant gas, causes frostbite to area of contact Physical: Flammable	None
Propylene Glycol	57-55-6	Anti-icing system	Health: Hazardous if ingested Physical: Combustible	2,000 gallons (contained within equipment)
Sodium Bisulfite (NaHSO <sub>3</sub> )	7631-90-5	Reduce oxidizers in reverse osmosis feed to protect the RO membranes	Health: Corrosive, irritation to eyes, skin, and lungs; may be harmful if digested Physical: Non-flammable	<del>25 pounds</del> 200 pounds
Sodium Carbonate (Na <sub>2</sub> CO <sub>3</sub> )	497-19-8	Reverse osmosis membrane cleaning	Health: May cause irritation or burns to eyes, skin, and lungs; may be harmful if digested Physical: Non-flammable	200 pounds

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Sodium Hydroxide (NaOH)	1310-73-2	Convert CO <sub>2</sub> to alkalinity for removal by reverse osmosis	Health: Causes eye and skin burns, hygroscopic, may cause severe respiratory tract irritation with possible burns may cause severe digestive tract irritation with possible burns Physical: Non-flammable	400 gallons
Sodium Nitrite (NaNO <sub>2</sub> )	7632-00-0	Closed & chilled water loop corrosion inhibitor	Health: Very hazardous in case of eye contact (irritant), of ingestion, of inhalation, hazardous in case of skin contact (irritant), slightly hazardous in case of skin contact, prolonged exposure may result in skin burns and ulcerations, over-exposure by inhalation may cause respiratory irritation, severe over-exposure can result in death, inflammation of the eye is characterized by redness, watering, and itching Physical: Non-flammable	On site only periodically and during initial start-up
<u>Stabrex ST70 (9% Sodium Bromide and 6% Sodium Hypochlorite)</u>	<u>7647-15-6</u> <u>7681-52-9</u>	<u>Biological control</u>	<u>Health: Harmful by ingestion, inhalation and through skin contact</u> <u>Physical: Non-flammable</u>	<u>100 gallons</u>
<u>Sulfuric Acid</u>	<u>7664-93-9</u>	<u>pH control</u>	<u>Health: Causes severe burns</u> <u>Physical: Non-flammable</u>	<u>1,950 gallons</u>

Source: TID2009a, Tables 5.5-1 through 5.5-3.

a. Reportable quantities for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act.

# **ATTACHMENT E**

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**From:** George Davies [mailto:GAD@tid.org]  
**Sent:** Wednesday, May 05, 2010 1:40 PM  
**To:** Susan Strachan  
**Subject:** Fwd: Crowslanding / Service

Susan,  
Regarding the Transportation Section of the Staff Assessment, I solicited and received the following Bus schedule from the Ceres School District.

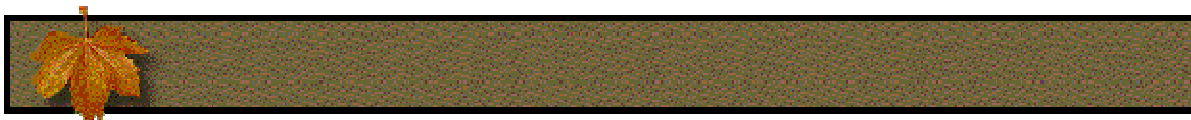
-George

>>> Tracy Marshall <[tmarshall@ceres.k12.ca.us](mailto:tmarshall@ceres.k12.ca.us)> 5/5/2010 8:26 AM >>>

**Here is the information that you requested.**

**We have buses that travel South on Crows Landing between Service and Grayson at approximately 6:30 to 8:30 Am and then 2:30 to 4:00 in the PM. I hope this will help. There are only 3 stops for the bus between Service and Grayson.**

**Thanks,  
Tracy Marshall  
Dispatcher, Transportation Dept.  
556-1595 ext 1486**





No virus found in this incoming message.

Checked by AVG - [www.avg.com](http://www.avg.com)

Version: 9.0.819 / Virus Database: 271.1.1/2855 - Release Date: 05/04/10 23:26:00

# **ATTACHMENT F**

# **EXECUTIVE SUMMARY**

Testimony of Felicia Miller

## **INTRODUCTION**

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The Staff Assessment (SA) contains the California Energy Commission staff's independent analysis and final recommendations on the Almond 2 Power Plant Project (A2PP). The proposed project is under the Energy Commission's jurisdiction and cannot be constructed or operated without the Energy Commission's certification. This SA examines engineering, environmental, public health and safety aspects of the proposed project. The SA analysis is based on the information provided by the Applicant and other sources available at the time the analysis was prepared and contains analyses similar to those normally contained in an Environmental Impact Report required by the California Environmental Quality Act. When issuing a certificate, the Energy Commission is the lead state agency under the California Environmental Quality Act and its process is functionally equivalent to the preparation of an Environmental Impact Report.

The Energy Commission staff has the responsibility to complete an independent assessment of the project's potential effects on the environment, the public's health and safety, and whether the project conforms to all applicable laws, ordinances, regulations and standards. The staff also recommends conditions of certification to mitigate potentially significant adverse environmental effects and conditions for construction, operation and eventual closure of the project if approved by the Energy Commission. This SA is not a decision document for these proceedings, nor does it contain findings by the Energy Commission; it is a staff recommendation related to environmental and public health and safety impacts and the project's compliance with local, state and federal laws, ordinances, regulations and standards.

The SA will serve as staff's testimony in evidentiary hearings to be held by a Committee of two Commissioners who are hearing this case. The Committee will hold evidentiary hearings and will consider the recommendations presented by staff, the Applicant, government agencies, all parties and the public prior to proposing its decision. The Energy Commission will make findings and provide a final decision after the Committee's publication and consideration of comments on its Presiding Member's Proposed Decision.

The analyses contained in this SA are based upon information from: 1) the Application for Certification; 2) subsequent supplements; 3) workshops and site visits; 4) responses to data requests, additional information from federal, state and local agencies; 5) existing documents and publications; 6) independent research; and 7) public comments.

## **PROJECT LOCATION AND DESCRIPTION**

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The project is located at 4500 Crows Landing Road, Modesto, California in the county of Stanislaus approximately 2 miles from the Ceres city center and 5 miles south of Modesto, in Stanislaus County. Although the site address identifies the project in Modesto, the project site is located within the city limits of Ceres.

The project will occupy a 4.6-acre site, adjacent to the existing 48-MW TID Almond Power Plant (A1PP). The project site is bordered by the A1PP to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and various industrial facilities to the east. The site is zoned for industrial use and is approximately 0.3 miles south of the nearest residential uses with several industrial buildings located nearby. The project site was previously used as a borrow pit and was filled and graded in 2008.

The following are the major components of the power plant: three GE Energy LM6000 PG combustion turbine generators (CTGs) equipped with evaporative cooling and GE's SPRay-INTERcooled (SPRINT) power augmentation; 115-kilovolt (kV) switchyard; two 115-kV transmission line corridors; corridor 1 is approximately 0.9 miles long, and corridor 2 is approximately 1.2 miles long; ~~reconductoring~~ re-rating of approximately 2.9 miles of an existing 6.9 miles of an existing 69-kV sub-transmission line to enhance system reliability; natural gas pipeline approximately 11.6 miles long.

TID would be a common owner and operator of the existing A1PP and the proposed A2PP, therefore some existing facilities would be shared between the two plants, as follows: anhydrous ammonia system, including the 12,000 gallon storage and unloading facilities; fire protection system, including fire water storage tank and diesel-fired emergency fire pump; well water for service water ~~and emergency shower/eyewash stations~~; water treatment system; recycled water supply and wastewater discharge system; instrument and service air systems; oil/water separator; demineralized and reverse osmosis water storage tanks; administration building, including the control room and office space. A more complete description of the project that includes site layout and regional maps is contained in the **PROJECT DESCRIPTION** section of this Staff Assessment.

## **PUBLIC AND AGENCY COORDINATION**

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Prior to the publication of the SA, the Energy Commission conducted a publicly noticed business meeting at which it accepted the A2PP Application for Certification as complete and allowed comments on the proposed project. Staff sent notices informing property owners, libraries and agencies of the proposed project and sent copies of the Application for Certification to libraries, agencies and organizations. The Committee of two Commissioners assigned to oversee the A2PP proceeding conducted an Informational Hearing, Issues Identification and Scheduling Conference on July 30, 2009 in Ceres, CA.

Staff conducted a publicly noticed Data Response and Issue Resolution Workshop in Sacramento on September 22, 2009. The workshop allowed staff and the Applicant to discuss data requests, data responses, and resolve issues. Additionally, the workshop provided opportunities to hear opinions on the project and the proceeding from interested agencies, and members of the public. Staff also has coordinated directly with relevant local, state and federal agencies including the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, State Water Resources Control Board/Regional Water Quality Control Board, California Department

of Fish and Game, and California Air Resources Board. Additionally, the Energy Commission works closely with local air and water districts and building and planning departments to include local government officials.

## ENVIRONMENTAL JUSTICE

The steps recommended by the U.S. EPA's guidance documents to assure compliance with the Executive Order 12898 regarding environmental justice are: (1) outreach and involvement; (2) a screening-level analysis to determine the existence of a minority or low-income population; and (3) if warranted, a detailed examination of the distribution of impacts on segments of the population. Though the Federal Executive Order and guidance are not binding on the Energy Commission, staff finds these recommendations helpful for implementing its environmental justice analysis. Staff has followed each of the above steps for the following 11 sections in the SA: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management.

The purpose of staff's environmental justice screening analysis is to determine whether a low-income and/or minority population exists within the potentially affected area of the proposed site. Staff conducted the screening analysis in accordance with the "Final Guidance for Incorporating Environmental Justice Concerns in USEPA's National Environmental Protection Act Compliance Analysis" (Guidance Document) dated April 1998. People of color populations, as defined by this Guidance Document, are identified where either:

- the minority population of the affected area is greater than 50% of the affected area's general population; or
- the minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Staff has reviewed Year 2000 U.S. Census block data for the proposed project site which indicates 22% low-income, which does not exceed staff's screening threshold of greater than 50% within a six-mile radius of the proposed project site and a minority population of 55%, which does exceed staff's screening threshold of greater than 50% within a six-mile radius of the proposed project site. Over the course of the analysis for each of the 11 areas identified above, staff considered potential impacts and mitigation measures, significance, and determined that there would be no disproportionate impact on an environmental justice population. (**See Socioeconomics Figure 1**).

## STAFF'S ASSESSMENT

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Each technical area section of the Staff Assessment contains a discussion of impacts, and where appropriate, mitigation measures and conditions of certification. The Staff Assessment includes staff's assessments of: the environmental setting of the proposal; impacts on public health and safety, and measures proposed to mitigate these impacts; environmental impacts, and measures proposed to mitigate these impacts; the engineering design of the proposed facility, and engineering measures proposed to ensure the project can be constructed and operated safely and reliably; project

alternatives; compliance of the project with applicable laws, ordinances, regulations and standards during construction and operation; proposed conditions of certification; and project closure.

## OVERVIEW OF STAFF'S CONCLUSIONS

Staff's analysis indicates that the project's impacts in all areas would be mitigated to levels that are less than significant. Staff believes that as currently proposed, including the Applicant's and the staff's proposed mitigation measures and the staff's proposed conditions of certification, the Almond 2 Power Project does comply with all applicable laws, ordinances, regulations, and standards (LORS).

**Technical Sections Status Table**

<b>Technical Discipline</b>	<b>Impacts Mitigated</b>	<b>Complies with LORS</b>
Air Quality	x	x
Alternatives	x	x
Biological Resources	x	x
Cultural Resources	x	x
Efficiency	x	x
Facility Design	x	x
Geology, and Paleontological Resources	x	x
Hazardous Materials	x	x
Land Use	x	x
Noise and Vibration	x	x
Public Health	x	x
Reliability	x	x
Socioeconomics	x	x
Soil and Water Resources	x	x
Traffic and Transportation	x	x
Transmission Line Safety/Nuisance	x	x
Transmission System Engineering	x	x
Visual Resources	x	x
Waste Management	x	x
Worker Safety/Fire Protection	x	x

## **CONCLUSIONS**

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The SA is staff's testimony for the A2PP, and as such, is part of the overall project discovery process and suggests resolution of issues identified in this document. Each technical area assessment in the SA includes a discussion of the project and the existing environmental setting; the project's conformance with laws, ordinances, regulations and standards (LORS); whether the facility can be constructed and operated safely and reliably; project specific direct and cumulative impacts; the environmental consequences of the project using the proposed mitigation measures; conclusions and recommendations; and any proposed conditions of certification under which the project should be constructed and operated, should it be approved.

The suggested resolution of the issues discussed in this document are a result of workshops, agreements between the Applicant and appropriate agencies, comments received by involved parties and staff's professional opinions.

Staff's analysis indicates that A2PP can be built with no significant unmitigated impacts, and would be in conformance with all laws, ordinances, regulations and standards.

# PROJECT DESCRIPTION

Felicia Miller

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## INTRODUCTION

On May 11, 2009, Turlock Irrigation District (TID or Applicant), filed an Application for Certification (AFC) seeking approval from the California Energy Commission (Energy Commission) to develop the Almond 2 Power Plant (A2PP). On July 1, 2009, the Energy Commission accepted the AFC as complete, thus starting the Energy Commission's formal review of the proposed project.

## PURPOSE OF PROJECT

The A2PP would provide electric generation capacity with increased efficiency and operational flexibility. The three new generation units would assist TID in meeting its balancing authority obligations by providing operating reserves to increase system-wide reliability and address TID's growing load by meeting the demands within TID's service territory.

Some of TID's basic objectives for the A2PP include the following:

- Safely construct and operate a 174-MW, natural gas-fired, simple-cycle, peaking generating facility within the TID service territory.
- Provide operating reserves and thus reliability for TID's Balancing Authority requirements.
- Allow for better economic dispatch of TID's existing generation fleet system-wide.
- Provide fast-starting, load-following peaking generating units to help maintain TID's Balancing Authority tie line (interconnection) schedules with neighboring Balancing Authorities (the California Independent System Operator [CAISO] and Sacramento Municipal Utility District [SMUD])
- Help provide firming sources for TID's existing and future intermittent renewable resources in support of TID Renewable Portfolio Standard (RPS) and greenhouse gas (GHG) goals.<sup>1</sup>
- Provide additional generation to meet TID's growing load and meet the demands of customers within TID's service territory.
- Achieve economies of scale and maximize the use of TID assets by locating the project on an industrial site, with the ability to use existing TID assets and power plant infrastructure.
- Minimize environmental and air quality impacts.

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<sup>1</sup> TID's Board has adopted a RPS goal of by 20% by 2017. TID will exceed this goal by the summer of 2009 with 28% of its resources being renewable resources.



- Assist the State of California in developing increased local generation projects, thus reducing dependence on imported power.
- 

- Contribute to the diversification of the City of Ceres and Stanislaus County's economic base by providing increased employment opportunities and a reliable power supply.

- **PROJECT LOCATION**

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- The project is located at 4500 Crows Landing Road, Modesto, California in the county of Stanislaus approximately 2 miles from the Ceres city center and 5 miles south of Modesto. Although the site address identifies the project in Modesto, the project site is located within the city limits of Ceres.
- The project will occupy a 4.6-acre site, adjacent to the existing 48-MW TID Almond Power Plant (A1PP). The project site is bordered by the A1PP to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and various industrial facilities to the east. The site is zoned for industrial use approximately 0.3 miles south of the nearest residential uses, with several industrial buildings located nearby. The project site was previously used as a borrow pit and was filled and graded in 2008. (**PROJECT DESCRIPTION Figure 1**).

## **POWER PLANT EQUIPMENT AND LINEAR FACILITIES**

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The proposed A2PP will be a natural-gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts (MW) and designed to provide TID with operating reserves. Primary equipment for the generating facility would include three 58-MW General Electric LM6000PG turbines equipped with a water injection system to the turbine in order to reduce nitrogen oxide (NOx) formation, and a selective catalytic reduction system (SCR) to further control NOx emissions. Power will be transmitted to the grid at 115 kilovolts (kV) through two proposed new transmission lines which will connect to the proposed TID Grayson Substation, to be located approximately 3,300 feet from A2PP. The substation is expected to be complete before the A2PP project is operational and is not part of the A2PP project. Existing facilities at the adjacent A1PP will be shared with the A2PP facility without modification. A2PP will receive process water from the Ceres Wastewater Treatment Plant (CWTP) through an existing pipeline at A1PP, as well as service water for domestic use provided by an existing onsite water well. Expansion of the existing natural gas service would be required for the proposed project. PG&E will construct an approximately 11.6-mile long natural gas pipeline to their supply line from the A2PP site.

The following are the major components of the power plant:

- three GE EnergyLM6000 PG combustion turbine generators (CTGs) equipped with evaporative cooling and GE's SPRay-INTercooled (SPRINT) power augmentation,
- 115-kilovolt (kV) switchyard,
- two 115-kV transmission line corridors; corridor 1 is approximately 0.9 miles long, and corridor 2 is approximately 1.2 miles long,

- ~~reconducting~~ re-rating of approximately 2.9 miles of an existing 6.9 miles of an existing 69- kV sub-transmission line to enhance system reliability,
- natural gas pipeline approximately 11.6 miles long,
- and a natural gas pipeline reinforcement approximately 1.8 miles long.

TID would be a common owner and operator of the existing A1PP and the proposed A2PP, therefore some existing facilities would be shared between the two plants, as follows:

- anhydrous ammonia system, including the 12,000 gallon storage and unloading facilities,
- fire protection system, including fire water storage tank and diesel-fired emergency fire pump,
- well water for service water ~~and emergency shower/eyewash stations,~~
- water treatment system,
- recycled water supply and wastewater discharge system,
- instrument and service air systems,
- oil/water separator,
- demineralized and reverse osmosis water storage tanks,
- administration building, including the control room and office space.

## **NATURAL GAS SUPPLY**

Natural gas would be supplied to the A2PP from existing and new pipelines constructed and owned by PG&E. The new Preferred Alignment is approximately 11.6-miles long and will run alongside paved roads, farm roads, and through agricultural fields. In addition, PG&E will reinforce a 1.8-mile long existing pipeline segment along the western side of the San Joaquin River. All pipelines will be installed underground, with trenchless construction under several water crossings. (**PROJECT DESCRIPTION Figure 2**).

## **WATER SUPPLY**

The A2PP will use approximately 293 acre-feet of process water per year, assuming typical expected operation of 5,000 hours per year (about 57% capacity factor). A2PP will share service water by tying into existing onsite water well located in the southeast corner of the existing A1PP site. Drinking water will be provided by an outside drinking water delivery service. Fire water will tie into the existing A1PP fire system. The A2PP project receives process water that is currently delivered to the site by an existing 6-inch diameter pipeline between the A1PP and the CWTP for water.

## **WASTEWATER AND STORM WATER DISCHARGE**

The process wastewater collection system will collect process wastewater in a sump and pump it to the existing wastewater tank. Reverse osmosis reject and wastewater from backwashing the reverse osmosis media also go to the wastewater ~~trench~~ tank. From there it is returned to the wastewater treatment plant through an existing pipeline. Stormwater runoff will be routed to a new onsite retention pond located on the north side of the project site.

## **HAZARDOUS WASTE**

Hazardous wastes generated by A2PP would be managed and disposed using several methods. Waste lubricating oil will be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters will be recycled or disposed of in a Class 4 landfill. Accordance with regulatory requirements. Spent SCR and oxidation catalysts will be recycled by the supplier or disposed of in accordance with regulatory requirements.

## **TRANSMISSION SYSTEM**

Power will be transmitted to the grid at 115 kilovolts (kV) through two new proposed transmission lines which will connect to the proposed TID Grayson Substation, which will be located approximately 3,300 feet from A2PP. Corridor 1 is 0.9 miles long; Corridor 2, 1.2 miles long. In addition, an existing 2.9-mile long 69 kV sub-transmission line will be ~~reconducted~~ re-rated to prevent possible thermal overloads.

The proposed Grayson substation consists of an approximately 10-mile long 115 kV transmission line, a 0.5-mile long 69 kV transmission line from the existing TID A1PP and a second 69 kV double-circuit transmission line that extends 0.8 mile east from the proposed substation. The Grayson substation and linears are part of the Hughson-Grayson 115-kV Transmission Line and Substation Project and are not part of the A2PP project. The substation and linears are expected to be complete before the A2PP project is operational.

## **PROJECT CONSTRUCTION AND OPERATION**

If approved by the Energy Commission, TID proposes to initiate construction of the A2PP in the fourth quarter of 2010, provided there are no delays. The construction period is expected to last approximately 12 months, with scheduled commercial operations beginning in the fourth quarter of 2011. The on-site construction workforce would peak at approximately 149 workers, and average 96 workers over the construction period. Construction hours will typically occur between 7 a.m. and 3:30 p.m. on weekdays,

however additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. Operation and maintenance of the A2PP will require 16 full-time permanent staff. Construction costs are estimated to be approximately \$175 million.

Primary construction access would be from SR 99 to Crows Landing Road. The project site is approximately 4.6 acres, with a 6.4 ~~4.85~~-acre construction laydown and parking area adjacent to the western ~~northern~~ border of the construction site located on the WinCo property.

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## REFERENCES

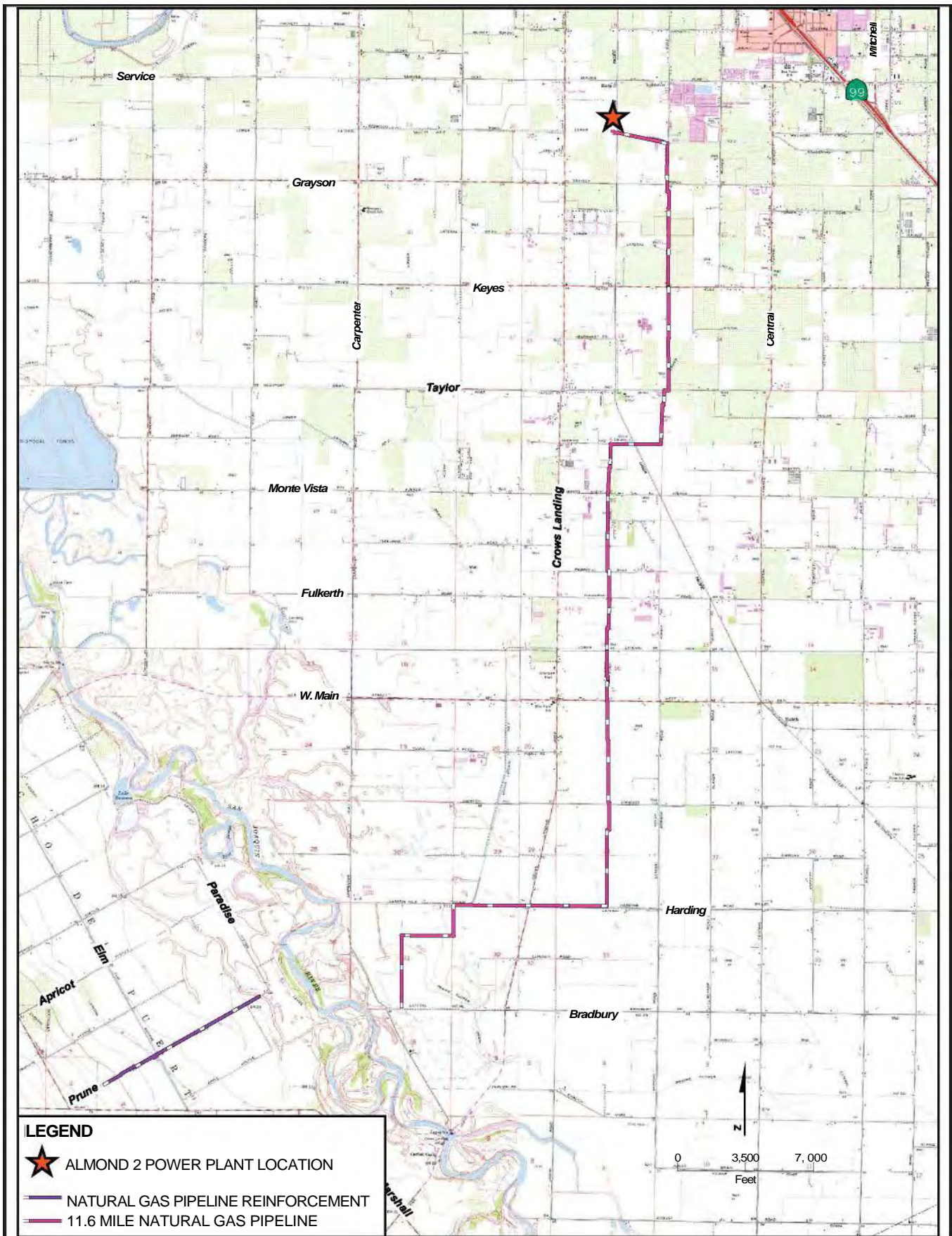
TID2009a –Turlock Irrigation District/ R. Baysinger (tn: 51502). Application for Certification, Volume 1& 2. Dated 5/11/09. Submitted to CEC/Docket Unit on 5/11/09.

**PROJECT DESCRIPTION - FIGURE 1**  
Almond 2 Power Plant Project - Architectural Rendering



PROJECT DESCRIPTION

**PROJECT DESCRIPTION - FIGURE 2**  
**Almond 2 Power Plant Project - Preferred Alignment**



s compiled from various scale source data and maps and is intended

**CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION**  
 SOURCE: CH2Mhill

# AIR QUALITY

Testimony of Tao Jiang and Brewster Birdsall, P.E., QEP

## SUMMARY OF CONCLUSIONS

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Staff finds that with the adoption of the attached conditions of certification, the proposed Almond 2 Power Plant (A2PP) would not result in significant air quality related impacts and that the A2PP would likely conform with applicable federal, state and San Joaquin Valley Air Pollution Control District (SJVAPCD or District) air quality laws, ordinances, regulations, and standards (LORS).

Staff finds that mitigation would be provided in the form of emission reduction credits (ERCs) as required by SJVAPCD rules, to fully offset all nonattainment pollutants and their precursors at a minimum ratio of one-to-one and to reduce the potential impacts of the proposed project to less than significant.

Global climate change and greenhouse gas emissions from the project are discussed and analyzed in **AIR QUALITY APPENDIX AIR-1**. The A2PP would emit approximately 0.51 metric tonnes of carbon dioxide per megawatt hour (MTCO<sub>2</sub>/MWh). The project would not be subject to the emission limits established by SB 1368 (Perata, Chapter 598, Statutes of 2006), known as the greenhouse gas Emission Performance Standard, because A2PP is not designed or intended for base load generation [Tit. 20, Cal. Code Regs., § 2901 (b)]. Mandatory reporting of the GHG emissions would occur while the Air Resources Board develops greenhouse gas regulations and/or trading markets. The project may be subject to GHG reduction or trading requirements as the GHG regulations become more fully developed and implemented.

## INTRODUCTION

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This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants from both the construction and operation of the proposed A2PP project. The new A2PP will be constructed adjacent to the existing 48-MW Turlock Irrigation District (TID) Almond Power Plant (APP) located in Ceres, Stanislaus County, California.

Criteria air pollutants are defined as air contaminants for which the state and/or federal government has established an ambient air quality standard to protect public health. The criteria pollutants analyzed are nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), ozone (O<sub>3</sub>), inhalable particulate matter (PM<sub>10</sub>), and fine particulate matter (PM<sub>2.5</sub>). In addition, Nitrogen oxides (NO<sub>x</sub>, consisting primarily of nitric oxide (NO) and NO<sub>2</sub>), sulfur oxides (SO<sub>x</sub>) and volatile organic compounds (VOC) are also analyzed. NO<sub>x</sub> and VOC readily react in the atmosphere as precursors to ozone. NO<sub>x</sub> and SO<sub>x</sub> readily react in the atmosphere to form particulate matter. Sulfur oxides (SO<sub>x</sub>) readily react in the atmosphere to form particulate matter and are major contributors to acid rain. Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in the context of cumulative impacts (**AIR QUALITY APPENDIX AIR-1**).

In carrying out this analysis, the California Energy Commission (Energy Commission) staff evaluated the following major points:

- Whether the A2PP is likely to conform with applicable federal, state, and SJVAPCD air quality laws, ordinances, regulations and standards (Title 20, California Code of Regulations, section 1744 (b));
- Whether the A2PP is likely to cause significant air quality impacts, including new violations of ambient air quality standards or substantial contributions to existing violations of those standards (Title 20, California Code of Regulations, section 1743); and
- Whether the mitigation measures proposed for the project are adequate to lessen the potential impacts to a level of insignificance (Title 20, California Code of Regulations, section 1742 (b)).

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws, ordinances, regulations, and standards (LORS) and policies pertain to the control of criteria pollutant emissions and the mitigation of air quality impacts. Staff's analysis examines the project's compliance with these requirements, as in **Air Quality Table 1**.

**AIR QUALITY Table 1**  
**Laws, Ordinances, Regulations, and Standards (LORS)**

<b><u>Applicable Law</u></b>	<b><u>Description</u></b>
<b>Federal</b>	<b>U.S. Environmental Protection Agency</b>
Federal Clean Air Act Amendments of 1990, Title 40 Code of Federal Regulations (CFR) Part 50	National Ambient Air Quality Standards (NAAQS).
Clean Air Act (CAA) § 160-169A and implementing regulations, Title 42 United State Code (USC) §7470-7491 40 CFR 51 & 52 (Prevention of Significant Deterioration Program)	Requires prevention of significant deterioration (PSD) review and facility permitting for construction of new or modified major stationary sources of pollutants that occur at ambient concentrations attaining the NAAQS. A PSD permit would not be required for the proposed A2PP project because it would not exceed 100 tons per year of NO <sub>2</sub> , CO, or PM <sub>10</sub> . The PSD program is within the jurisdiction of the U.S. EPA.
CAA §171-193, 42 USC §7501 et seq. (New Source Review)	Requires new source review (NSR) facility permitting for construction or modification of specified stationary sources. NSR applies to sources of designated nonattainment pollutants. This requirement is addressed through SJVAPCD Rule 2201.
40 CFR 60, Subpart KKKK	Standards of Performance for Stationary Combustion Turbines, New Source Performance Standard (NSPS). Requires the proposed simple-cycle system to achieve 25 parts per million (ppm) NO <sub>x</sub> and achieve fuel sulfur standards.
CAA §401 (Title IV), 42 USC §7651(Acid Rain Program)	Requires reductions in NO <sub>x</sub> and SO <sub>2</sub> emissions, implemented through the Title V program. This program is within the jurisdiction of the SJVAPCD with U.S. EPA oversight [SJVAPCD Rule 2540].
CAA §501 (Title V), 42 USC §7661(Federal Operating Permits Program)	Establishes comprehensive federal operating permit program for major stationary sources. Application required within one year following start of operation. This program is within the jurisdiction of the SJVAPCD with U.S. EPA oversight [SJVAPCD Rule 2520].
<b>State</b>	<b>California Air Resources Board and Energy Commission</b>
California Health & Safety Code	Prohibits discharge of such quantities of air contaminants that



<b><u>Applicable Law</u></b>	<b><u>Description</u></b>
(H&SC) §41700 (Nuisance Regulation)	cause injury, detriment, nuisance, or annoyance.
H&SC §40910-40930	Permitting of source needs to be consistent with approved clean air plan. The SJVAPCD New Source Review program is consistent with regional air quality management plans.
California Public Resources Code §25523(a); 20 CCR §1752, 2300-2309 (CEC & CARB Memorandum of Understanding)	Requires that Energy Commission decision on AFC include requirements to assure protection of environmental quality.
California Code of Regulations for Off-Road Diesel-Fueled Fleets (13 CCR §2449, et seq.)	General Requirements for In-Use Off-Road Diesel-Fueled Fleets – Requires owners and operators of in-use (existing) off-road diesel equipment and vehicles to begin reporting fleet characteristics to CARB in 2009 and meet fleet emissions targets for diesel particulate matter and NOx in 2010.
Airborne Toxic Control Measure for Idling (ATCM, 13 CCR §2485)	ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling – Generally prohibits idling longer than five minutes for diesel-fueled commercial motor vehicles.
<b>Local</b>	<b>San Joaquin Valley Air Pollution Control District</b>
SJVAPCD Rule 2201 (New and Modified Stationary Sources)	Establishes the pre-construction review requirements for new, modified or relocated emission sources, in conformance with NSR to ensure that these facilities do not interfere with progress in attainment of the ambient air quality standards and that future economic growth in the San Joaquin Valley is not unnecessarily restricted. Establishes the requirement to prepare a Preliminary Determination of Compliance (PDOC) and Final Determination of Compliance (FDOC) during SJVAPCD review of an application for a power plant. This regulation establishes Best Available Control Technology (BACT) and emission offset requirements. The A2PP project net emission increase of NOx would exceed the federal major modification threshold (40 CFR 51.165). The SJVAPCD classifies the project as a Federal Major Modification for NOx, and public notification requirements are triggered (SJVAPCD2010).
SJVAPCD Rule 2520 (Federally Mandated Operating Permits)	Establishes the permit application and compliance requirements for the federal Title V federal permit program. A2PP must submit an application to modify the existing Title V permit.
SJVAPCD Rule 2540 (Acid Rain Program)	Implements the federal Title IV Acid Rain Program, which requires subject facilities to obtain emission allowances for SOx emissions and requires fuel sampling and/or continuous monitoring to determine SOx and NOx emissions.
SJVAPCD Regulation IV (Prohibitions)	Sets forth the restrictions for visible emissions, odor nuisance, various air emissions, and fuel contaminants. Regulation IV incorporates the NSPS provisions of 40 CFR 60, including standards for stationary combustion turbines (Subpart KKKK). These rules limit emissions of NOx, VOC, CO, particulate matter, and sulfur compounds.
SJVAPCD Rule 4703 (Stationary Gas Turbines)	Limits the proposed stationary gas turbine emissions of NOx to 5 ppmv over a 3-hour averaging period and CO to 25 ppmv. Provided certain demonstrations are made, the emission limits do not apply during startup, shutdown, or reduced load periods (defined as “transitional operation periods”).
SJVAPCD Regulation VIII (Fugitive PM10 Prohibition)	Requires control of fugitive PM10 emissions from various sources.

## **SETTING**

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### **METEOROLOGICAL CONDITIONS**

The climate in California is typically dominated by the eastern Pacific high pressure system centered off the coast of California. In the summer, this system results in low inversion layers and clear skies inland and typically early morning fog by the coast. In winter, this system promotes wind and rainstorms originating in the Gulf of Alaska and striking Northern California.

The climate of the San Joaquin Valley is characterized by hot dry summers and mild winters with precipitation almost exclusively in the winter. Very little precipitation occurs during the summer months because the Pacific high pressure blocks migrating storm systems. Beginning in the fall and continuing through the winter, the storm belt and zone of strong westerly winds begins to greatly influence California. Temperature, winds, and rainfall are variable during fall and winter months, and stagnant conditions occur more frequently than during summer.

Wind speeds are generally higher in summer than in winter and are typically north-northwesterly winds. During the spring, summer, and fall, the stronger winds are caused by a combination of offshore and thermal low pressure resulting from high temperatures in the Central Valley. During the winter months, winds are more variable and are predominantly northerly. Calm conditions occur more during winter, but are relatively infrequent throughout the year. Valley fog often occurs during these calm, stagnant atmospheric conditions, when temperature inversions trap a layer of cool, moist air near the surface. The annual average rainfall at the project site is 12.2 inches and most precipitation (80%) occurs during November through March. Long-term average temperature and precipitation data from the nearest meteorological station located in Modesto, approximately 5 miles east-northeast of the project site, indicates that July is the warmest month of the year, with a normal daily maximum and minimum of 94.3°F and 59.9°F. In the winter, January is the coldest month of the year, with an average daily maximum and minimum of 53.8°F and 37.6°F (WRCC 2009).

Along with the wind flow, atmospheric stability and mixing heights are important factors in the determination of pollutant dispersion. Atmospheric stability is an indicator of the air turbulence and mixing. During the daylight hours of the summer when the earth is heated and air rises, there is more turbulence, more mixing, and thus less stability. During these conditions there is more air pollutant dispersion and therefore usually reduced air quality impacts near any single air pollution source. During the winter months between storms, however, very stable atmospheric conditions occur, resulting in very little mixing. Under these conditions, minimal air pollutant dispersion occurs, and consequently higher air quality impacts may result near sources. Because lower mixing heights generally occur during the winter, along with lower mean wind speeds and less vertical mixing, dispersion occurs less rapidly.

### **AMBIENT AIR QUALITY STANDARDS**

The United States Environmental Protection Agency (U.S. EPA) and the California Air Resource Board (ARB) have both established allowable maximum ambient concentrations of criteria air pollutants. These are based upon public health impacts and

are called ambient air quality standards. The California Ambient Air Quality Standards (CAAQS), established by ARB, are typically lower (more stringent) than the federally established National Ambient Air Quality Standards (NAAQS).

Ambient air quality standards are designed to protect people who are most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The ambient air quality standards are also set to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.

Current state and federal air quality standards are listed in **Air Quality Table 2**. The averaging times for the various ambient air quality standards (the duration over which all measurements taken are averaged) range from one hour to one year. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per unit volume of air, in milligrams (mg or  $10^{-3}$  g) or micrograms ( $\mu\text{g}$  or  $10^{-6}$  g) of pollutant in a cubic meter ( $\text{m}^3$ ) of ambient air, drawn over the applicable averaging period.

**AIR QUALITY Table 2**  
**Federal and State Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Averaging Time</b>	<b>Federal Standard</b>	<b>California Standard</b>
Ozone (O <sub>3</sub> )	8 Hour	0.075 ppm (147 $\mu\text{g}/\text{m}^3$ ) <sup>a</sup>	0.070 ppm (137 $\mu\text{g}/\text{m}^3$ )
	1 Hour	—	0.09 ppm (180 $\mu\text{g}/\text{m}^3$ )
Carbon Monoxide (CO)	8 Hour	9 ppm (10 $\text{mg}/\text{m}^3$ )	9.0 ppm (10 $\text{mg}/\text{m}^3$ )
	1 Hour	35 ppm (40 $\text{mg}/\text{m}^3$ )	20 ppm (23 $\text{mg}/\text{m}^3$ )
Nitrogen Dioxide (NO <sub>2</sub> )	Annual	0.053 ppm (100 $\mu\text{g}/\text{m}^3$ )	0.03 ppm (57 $\mu\text{g}/\text{m}^3$ )
	1 Hour	0.100 ppm <sup>b</sup>	0.18 ppm (339 $\mu\text{g}/\text{m}^3$ )
Sulfur Dioxide (SO <sub>2</sub> )	Annual	0.030 ppm (80 $\mu\text{g}/\text{m}^3$ )	—
	24 Hour	0.14 ppm (365 $\mu\text{g}/\text{m}^3$ )	0.04 ppm (105 $\mu\text{g}/\text{m}^3$ )
	3 Hour	0.5 ppm (1300 $\mu\text{g}/\text{m}^3$ )	—
	1 Hour	—	0.25 ppm (655 $\mu\text{g}/\text{m}^3$ )
Respirable Particulate Matter (PM <sub>10</sub> )	Annual	—	20 $\mu\text{g}/\text{m}^3$
	24 Hour	150 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
Fine Particulate Matter (PM <sub>2.5</sub> )	Annual	15 $\mu\text{g}/\text{m}^3$	12 $\mu\text{g}/\text{m}^3$
	24 Hour	35 $\mu\text{g}/\text{m}^3$	—
Sulfates (SO <sub>4</sub> )	24 Hour	—	25 $\mu\text{g}/\text{m}^3$
Lead	30 Day Average	—	1.5 $\mu\text{g}/\text{m}^3$
	Calendar Quarter	1.5 $\mu\text{g}/\text{m}^3$	—
Hydrogen Sulfide (H <sub>2</sub> S)	1 Hour	—	0.03 ppm (42 $\mu\text{g}/\text{m}^3$ )
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 $\mu\text{g}/\text{m}^3$ )
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

<sup>a</sup> On January 6, 2010, the U.S. EPA proposed to reduce the federal 8-hour ozone standard to 0.06 to 0.07 ppm.

<sup>b</sup> This new federal 1-hour NO<sub>2</sub> standard becomes effective April 12, 2010. The NO<sub>2</sub> NAAQS is based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations. Due to this regulation being promulgated after the A2PP application filing date, and due to a corresponding lack of guidance and modeling tools for conducting impact analyses and a lack of information regarding existing background concentrations, staff has not completed an impact assessment for compliance with this standard.

## EXISTING AMBIENT AIR QUALITY

The federal and state attainment status of criteria pollutants in the San Joaquin Valley are summarized in **Air Quality Table 3**. Violations of federal and state ambient air quality standards for ozone, particulate matter, and CO have occurred historically throughout the region. Since the early 1970s, substantial progress has been made toward controlling these pollutants. Although air quality improvements have occurred, violations of standards for particulate matter and ozone persist.

The project site is located in Ceres, Stanislaus County. The operating monitoring station closest to the proposed site with long-term records of ozone, CO, PM10 and PM2.5 is Modesto-14th Street station. NO<sub>2</sub> was monitored at the Modesto-14<sup>th</sup> Street station and the Turlock-S Minaret Street station. SO<sub>2</sub> was monitored at the Bethel Island station.

**AIR QUALITY Table 3**  
**Attainment Status of San Joaquin Valley Air Pollution Control District**

Pollutants	Attainment Status	
	Federal Classification	State Classification
Ozone (1-hr)	No Federal Standard	<b>Nonattainment (Severe)</b>
Ozone (8-hr)	<b>Nonattainment (Serious)<sup>a</sup></b>	<b>Nonattainment</b>
CO	Attainment	Attainment
NO <sub>2</sub>	Attainment	Attainment
SO <sub>2</sub>	Attainment	Attainment
<b>PM10</b>	Attainment <sup>b</sup>	<b>Nonattainment</b>
<b>PM2.5</b>	<b>Nonattainment</b>	<b>Nonattainment</b>

Source: SJVAPCD 2008 (<http://www.valleyair.org/aqinfo/attainment.htm>).

Notes:

<sup>a</sup> In April 2007, the SJVAPCD Governing Board proposed to re-classify the region as “extreme” nonattainment, and the U.S. EPA is reviewing the request. The January 6, 2010 proposal to change the federal 8-hour ozone standard may affect this designation.

<sup>b</sup> In November 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

## Nonattainment Criteria Pollutants

**Air Quality Table 4** summarizes the existing ambient monitoring data for nonattainment criteria pollutants (ozone and particulate matter) collected by ARB and SJVAPCD from monitoring stations closest to the project site. All data in this table are marked in bold to indicate that the most-stringent current standard was exceeded. Note that an exceedance is not necessarily a violation of the standard, and that only persistent exceedances lead to designation of an area as nonattainment.

**AIR QUALITY Table 4**  
**Highest Measured Concentrations of Nonattainment Pollutants (ppm or µg/m<sup>3</sup>)**

Pollutant	Averaging Time	2003	2004	2005	2006	2007	2008
Ozone (ppm)	1 hour	<b>0.110</b>	<b>0.104</b>	<b>0.115</b>	<b>0.120</b>	<b>0.100</b>	<b>0.127</b>
Ozone (ppm)	8 hour	<b>0.091</b>	<b>0.084</b>	<b>0.094</b>	<b>0.097</b>	<b>0.081</b>	<b>0.106</b>
PM10 (µg/m <sup>3</sup> )	24 hour	<b>70</b>	<b>80</b>	<b>93</b>	<b>96</b>	<b>83</b>	<b>111.1</b>
PM10 (µg/m <sup>3</sup> )	Annual	<b>28.8</b>	<b>29.1</b>	<b>29.1</b>	<b>31.7</b>	<b>27</b>	<b>31.3</b>
PM2.5 (µg/m <sup>3</sup> )	24 hour	<b>64</b>	<b>53</b>	<b>80</b>	<b>71</b>	<b>64</b>	<b>64.5</b>
PM2.5 (µg/m <sup>3</sup> )	Annual	<b>14.5</b>	<b>13.6</b>	<b>13.9</b>	<b>14.8</b>	<b>15</b>	<b>16</b>

Source: ARB, Air Quality Data Statistics (<http://www.arb.ca.gov/adam/welcome.html>). Accessed December 2009.

Notes: Monitoring Station for ozone, PM10, and PM2.5: 2003-2008: Modesto-14th Street.

## Ozone

Ozone is not a direct emission from stationary or mobile sources. It is a secondary pollutant formed through complex chemical reactions between nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC). Ozone formation is highest in the summer and fall when abundant sunshine and high temperatures trigger the necessary photochemical reactions, and lowest in the winter. The days with the highest ozone concentrations commonly occur between June and August, but the region's ozone management season officially runs from April through November (the second and third calendar quarters, Q2 and Q3).

## Respirable Particulate Matter (PM<sub>10</sub>)

PM<sub>10</sub> is a mixture of small solid particles and liquid droplets with the size less than or equal to 10 microns diameter. PM<sub>10</sub> can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NO<sub>x</sub>, SO<sub>x</sub> and VOC from turbines, and ammonia from NO<sub>x</sub> control equipment, given the right meteorological conditions, can form particulate matter in the form of nitrates (NO<sub>3</sub>), sulfates (SO<sub>4</sub>), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted but are formed through complex chemical reactions in the atmosphere.

PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NO<sub>x</sub> emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM<sub>10</sub>, and an even higher contributor to particulate matter of less than 2.5 microns (PM<sub>2.5</sub>). The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) or sodium nitrate.

**AIR QUALITY Table 5** summarizes the ambient PM<sub>10</sub> data collected from the nearest monitoring stations and the highest PM<sub>10</sub> concentrations in the SJVAPCD. As shown in the table, the federal 24-hour standard has never been exceeded at the stations near the project site from 2003 to 2008. However, the CAAQS 24-hour standard has been exceeded several times each year. PM<sub>10</sub> is primarily a winter problem, but high regional PM<sub>10</sub> levels occur at other times of the year as well. Days with high PM<sub>10</sub> concentrations commonly occur in November and December, but the region's PM<sub>10</sub> management season officially runs from October through March (the first and fourth calendar quarters, Q1 and Q4). Northern California wildfires in Monterey County, Santa Clara County, and the Sierra Nevada foothills during June 2008 were probably responsible for the most-recent high PM<sub>10</sub> concentrations.

**AIR QUALITY Table 5**  
**Highest Measured PM10 Concentrations, 2003-2008 ( $\mu\text{g}/\text{m}^3$ )**

	Max. 24-hr Avg.	Days Above CAAQS	Days Above NAAQS	Annual
Modesto-14th Street				
2003	<b>70</b>	26.3	0	<b>28.8</b>
2004	<b>80</b>	36	0	<b>29.1</b>
2005	<b>93</b>	51.4	0	<b>29.1</b>
2006	<b>96</b>	46.3	0	<b>31.7</b>
2007	<b>83</b>	37.7	0	<b>27</b>
2008	<b>111.1</b>	-	0	<b>31.3</b>
Turlock-S Minaret Street				
2003	<b>87</b>	47.9	0	<b>30.6</b>
2004	<b>59</b>	31.2	0	<b>30</b>
2005	<b>83</b>	48.8	0	<b>29.3</b>
2006	<b>97</b>	-	0	<b>34.7</b>
2007	<b>73</b>	54.9	0	<b>30.8</b>
2008	<b>96</b>	-	0	<b>35.2</b>
District-wide				
2003	<b>150</b>	167.2	0	<b>52.4</b>
2004	<b>217</b>	113	0.9	<b>47.9</b>
2005	<b>131</b>	146.3	0	<b>44.3</b>
2006	<b>304</b>	166.8	4.2	<b>55.4</b>
2007	<b>172.1</b>	145.2	1.4	<b>54.8</b>
2008	<b>390.3</b>	182.3	4.8	<b>59.7</b>

Source: ARB, Air Quality Data Statistics (<http://www.arb.ca.gov/adam/welcome.html>), Accessed December 2009.

### Fine Particulate Matter (PM2.5)

PM2.5 refers to particles and droplets with the diameter less than or equal to 2.5 microns. PM 2.5 is believed to pose the greater health risks than PM10 because it can lodge deeply into the lungs due to the small size. PM2.5 includes nitrates, sulfates, organic carbon and element carbon, which mainly result from combustions and atmospheric reactions. Almost all combustion-related particles, including those from wood smoke and cooking, are smaller than 2.5 microns. Nitrate and sulfate particles are formed through complex chemical reactions in the atmosphere. Particulate nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NOx emissions from combustion sources. The nitrate ion concentrations during the winter make up a large portion of the total PM2.5. Ammonium sulfate is also a concern because of the ready availability of ammonia in the atmosphere.

**AIR QUALITY Table 6** summarizes the ambient PM2.5 data collected from the closest monitoring station. The highest PM2.5 concentrations are generally measured in the winter. The wood-smoke particles and nitrate ions during the winter make up a large contribution to the total PM2.5 concentration.

**AIR QUALITY Table 6**  
**Highest Measured PM<sub>2.5</sub> Concentrations, 2003-2008 (µg/m<sup>3</sup>)**

	<b>Max. 24-hr Avg.</b>	<b>Days Above NAAQS</b>	<b>Annual (over 3 year period)</b>
2003	<b>64.0</b>	20.9	<b>14.5</b>
2004	<b>53.0</b>	27.3	<b>13.6</b>
2005	<b>80.0</b>	26.8	<b>13.9</b>
2006	<b>71.0</b>	26.8	<b>14.8</b>
2007	<b>64.0</b>	49.1	<b>15.0</b>
2008	<b>64.5<sup>a</sup></b>	39.4	<b>16.0</b>

Note: <sup>a</sup> Exceptional PM concentration events, such as those caused by wind storms was excluded according to U.S. EPA AirData. Source: ARB, Air Quality Data Statistics (<http://www.arb.ca.gov/adam/welcome.html>), Accessed December 2009. United States Environmental Protection Agency. AirData : Access to Air Pollution Data. ([http://www.epa.gov/aqspubl1/annual\\_summary.html](http://www.epa.gov/aqspubl1/annual_summary.html)). Accessed December 2009.

## Attainment Criteria Pollutants

### Carbon Monoxide

Carbon monoxide (CO) is a product of incomplete combustion due to the insufficiency of oxygen content. Mobile sources are the main sources of CO emissions. Ambient concentrations of CO are highly dependent on motor vehicle activity. CO is a local pollutant, with high concentrations usually found near the emission sources. The highest CO concentrations occur during rush hour traffic in the mornings and afternoons. Ambient CO concentrations attain the air quality standards due to two state-wide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phase I and II of the reformulated gasoline program. New vehicles with oxygen sensors and fuel injection systems have also contributed to reduced CO emissions. **AIR QUALITY Table 7** shows the maximum 8-hour CO concentrations at the closest stations.

**AIR QUALITY Table 7**  
**Maximum Concentrations of Criteria Pollutants in Attainment, 2003-2008 (ppm)**

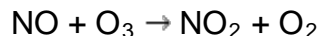
<b>Location</b>	<b>Pollutant (Averaging Time)</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Modesto-14th Street	CO (1 hour)	5.3	4.6	3.7	6.9	3.7	2.8
	CO (8 hour)	3.76	2.98	2.89	3.73	3.16	1.94
	NO <sub>2</sub> (1 hour)	0.091	0.065	0.072	---	---	---
	NO <sub>2</sub> (annual)	0.017	0.015	0.014	---	---	---
Turlock-S Minaret Street	CO (1 hour)	3.4	2.9	2.8	2.6	2.7	1.9
	CO (8 hour)	2.31	1.78	2.34	2.06	1.69	1.48
	NO <sub>2</sub> (1 hour)	0.090	0.061	0.065	0.058	0.053	0.063
	NO <sub>2</sub> (annual)	0.015	0.014	0.013	0.013	0.012	0.012
Bethel Island Road	SO <sub>2</sub> (1 hour)	0.016	0.015	0.017	0.017	0.018	0.012
	SO <sub>2</sub> (24 hour)	0.008	0.006	0.006	0.007	0.005	0.004
	SO <sub>2</sub> (annual)	0.002	0.002	0.002	0.002	0.002	0.001

Source: ARB, Air Quality Data Statistics (<http://www.arb.ca.gov/adam/welcome.html>), Accessed December 2009.

### Nitrogen Dioxide

Nitrogen oxides (NO<sub>x</sub>) include nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). Approximately 75 to 90% of the NO<sub>x</sub> emitted from combustion sources is NO, while the balance is NO<sub>2</sub>. NO is oxidized in the atmosphere to NO<sub>2</sub> by oxygen and ozone. High concentrations of NO<sub>2</sub> usually occur during the fall when atmospheric conditions tend to trap ground-level emissions but lack significant photochemical activity due to less sunlight. In the summer, the conversion rates of NO to NO<sub>2</sub> are high, but the relatively

high temperatures and windy conditions (atmospheric unstable conditions) generally disperse pollutants and also engage NO in reactions with VOCs to form ozone. The formation of NO<sub>2</sub> in the presence of ozone is according to the following reaction:



Urban areas typically have high daytime ozone concentrations that drop substantially at night as the above reaction takes place, and ozone scavenges the available NO. If ozone is unavailable to oxidize the NO, less NO<sub>2</sub> will form because the reaction is “ozone-limited.” This reaction explains why, in urban areas, ground-level ozone concentrations drop at night, while aloft and in downwind rural areas (without sources of fresh NO emissions), ozone concentrations can remain relatively high.

The current CAAQS for NO<sub>2</sub> became effective in early 2008, and the U.S. EPA adopted a new 1-hour standard in early 2010. Although the attainment designations have not yet been established for the new, more stringent standards, the San Joaquin Valley air basin appears likely to remain attainment for NO<sub>2</sub>. The new federal 1-hour standard would become effective some time in 2010, and areas will not be given attainment designations until 2012. Data from 2003 to 2008 shows that the areas near the project site attain all current state and federal NO<sub>2</sub> standards (ARB 2009). See **Air Quality Table 7** for maximum 1-hour and annual NO<sub>2</sub> concentrations at the closest monitoring stations.

### **Sulfur Dioxide**

Sulfur dioxide is typically emitted as a result of the combustion of fuels containing sulfur. Natural gas contains very little sulfur and consequently has very low SO<sub>2</sub> emissions when burned. By contrast, fuels with high sulfur content, such as coal, emit very large amounts of SO<sub>2</sub> when burned. Sources of SO<sub>2</sub> emissions come from every economic sector and include a wide variety of fuels in gaseous, liquid and solid forms. The whole state is designated attainment for all state and federal SO<sub>2</sub> ambient air quality standards. See **Air Quality Table 7** for maximum 1-hour, 24-hour, and annual SO<sub>2</sub> concentrations at the closest monitoring station.

### **Summary of Existing Ambient Air Quality**

In summary, staff recommends using the background ambient air concentrations in **AIR QUALITY Table 8** as the baseline for the modeling and impacts analysis. The highest criteria pollutant concentrations from the last three years of available data collected at the monitoring stations close to the project site are used to determine the recommended background values. Concentrations in excess of their ambient air quality standard are shown in bold.

The pollutant modeling analysis was limited to the pollutants listed in **AIR QUALITY Table 8**. Therefore recommended background concentrations were not determined for the other criteria pollutants (ozone and lead).



**AIR QUALITY Table 8**  
**Staff-Recommended Background Concentrations ( $\mu\text{g}/\text{m}^3$ )**

Pollutant	Averaging Time	Background	Limiting Standard	Percent of Standard
PM <sub>10</sub>	24 hour	111.1	50	222
	Annual	31.7	20	159
PM <sub>2.5</sub>	24 hour	71.0	35	203
	Annual	16.0	12	133
CO	1 hour	7,935	23,000	35
	8 hour	4,144	10,000	41
NO <sub>2</sub>	1 hour	118.7	339	35
	Annual	24.7	57	43
SO <sub>2</sub>	1 hour	47.2	655	7
	24 hour	18.4	105	18
	Annual	5.3	80	7

Source: AFC Table 5.1-26 (TID2009a), updated with ARB 2009.

Note that an exceedance is not necessarily a violation of the standard, and that only persistent exceedances lead to designation of an area as nonattainment.

### **Existing Emissions**

The proposed project would be located in Ceres, Stanislaus County, California, on a 4.6-acre parcel located adjacent to the existing Turlock Irrigation District (TID) Almond Power Plant (APP). The equipment at the existing TID Almond Power Plant consists of one 48 MW General Electric (GE) LM-6000 natural gas-fired, steam-injected combustion turbine generator (permitted heat input capacity of 459 million British thermal units per hour [MMBtu/hr]), and one 240 HP Cummins diesel fire pump engine.

TID would be a common owner and operator of the existing APP and the proposed A2PP, therefore some existing facilities would be shared between the two plants as follows.

#### **Shared Existing Facilities:**

- The anhydrous ammonia system, including the 12,000-gallon storage tank and unloading facilities
- The fire protection system, including the fire water storage tank and diesel-fired emergency fire pump
- The well water for service water and emergency shower / eyewash stations
- The water treatment system
- The process water supply and wastewater discharge system
- The instrument and service air systems
- The oil/water separator
- The demineralized and reverse osmosis water storage tanks
- The administration building, including the control room and office space

**Air Quality Table 9** summarizes the allowable (permitted) emissions for the existing Almond Power Plant and the actual emissions including 2007 and the first nine months of 2008.

**AIR QUALITY Table 9**  
**Existing TID Almond Power Plant, Allowable Emissions and Actual Emissions**  
**(tons/yr)**

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
<b>Existing Allowable Emissions</b>	<b>26.0</b>	<b>5.3</b>	<b>8.8</b>	<b>68.3</b>	<b>5.7</b>
Existing APP, 2007	6.4	1.1	1.9	0.8	0.3
Existing APP, 2008 (partial year)	5.6	0.9	1.5	1.3	0.2

Source: AFC Table 5.1-13 (TID2009a) and Responses to DR2 (CH2M2009f).

## PROJECT DESCRIPTION AND PROPOSED EMISSIONS

The proposed A2PP would include the following new stationary sources of emissions (AFC Section 2.1.2, TID2009a and TID2009x):

- Three LM6000PG SPRINT natural-gas fired combustion turbine generators (CTG) with a nominal capacity of 54.2 MW and a heat input capacity of up to 554.9 MMBtu/hr for each gas turbine, in a simple-cycle configuration; and
- an administration building, including the control room, office space, expanded maintenance shop and warehouse, and communication systems shared by the A2PP and existing Almond Power Plant.

Separate emissions estimates for the proposed project during the construction phase, initial commissioning, and operation are each described next.

### Proposed Construction Emissions

Construction of the A2PP is expected to take about 12 months. Onsite construction activities include site preparation, foundation work, installation of major equipment, and construction/installation of major structures. During the construction period, air emissions would be generated from the exhaust of off-road/non-road construction equipment and on-road vehicles and fugitive dust from activity on unpaved surfaces and material handling. Construction activities would typically occur between 7 a.m. and 3:30 p.m., Monday through Saturday (AFC Section 2.1.14, TID2009a). Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities such as pouring concrete at night during hot weather, working around time-critical shutdowns and constraints. During some of the construction period and during the initial commissioning phase of the project, some activities would continue 24 hours per day, 7 days per week. The project would also include a new switchyard, an 11.6 mile long natural gas pipeline, a 1.8 mile gas pipeline reinforcement, and new and ~~re-rated reconductored~~ transmission lines (AFC Appendix 5.1 E-2, TID2009a, Data Responses, Set 1D, CH2M2009k). These linear facilities would be constructed prior to or simultaneously with the construction of the project.

Fugitive dust emissions would result from (AFC Appendix 5.1E-1, TID2009a):

- Dust entrained during site preparation and grading/excavation at the construction site;
- Dust entrained during on-site travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of soil at areas disturbed during construction activities.

Combustion-related emissions would be the result of:

- Exhaust from the diesel construction equipment used for site preparation, grading, excavation, trenching, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from portable welding machines;
- Exhaust from pickup trucks and diesel trucks used to transport workers and materials around the construction site;
- Exhaust from diesel trucks used to deliver concrete, fuel and construction supplies to the construction site; and
- Exhaust from automobiles used by workers to commute to the construction site.

Estimates for the highest daily emissions and total annual emissions over the 12-month construction period are shown in **Air Quality Table 10**.

**AIR QUALITY Table 10**  
**A2PP, Estimated Maximum Construction Emissions**

<b>Construction Activity</b>	<b>NOx</b>	<b>VOC</b>	<b>PM10</b>	<b>PM2.5</b>	<b>CO</b>	<b>SOx</b>
On-site Construction Equipment (lb/day)	60.4	6.5	3.9	3.9	95.8	0.5
On-site Fugitive Dust (lb/day)		---	11.4	4.7	---	---
Off-site (On-road) Worker Travel, Truck Deliveries, Dust (lb/day)	46.0	5.2	1.2	1.2	32.7	<0.1
Off-site Linear Facility and Pipeline Equipment, Fugitive Dust, Worker Travel and Truck Delivery (lb/day)	68.7	7.5	11.0	3.6	48.0	0.1
<b>Maximum Daily Construction Emissions (lb/day)</b>	<b>175.1</b>	<b>19.2</b>	<b>27.5</b>	<b>13.4</b>	<b>176.5</b>	<b>0.6</b>
On-site Construction Equipment (tpy)	6.9	0.7	0.4	0.4	10.3	0.05
On-site Fugitive Dust (tpy)	---	---	1.1	0.4	---	---
Off-site (On-road) Worker Travel & Truck Deliveries (tpy)	3.4	0.4	0.1	0.1	2.9	0.01
Off-site Linear Facility and Pipeline Equipment and Fugitive Dust, Worker Travel and Truck Delivery (tpy)	2.9	0.3	0.5	0.1	2.0	0
<b>Peak Annual Construction Emissions (tpy)</b>	<b>13.2</b>	<b>1.4</b>	<b>2.1</b>	<b>1.0</b>	<b>15.2</b>	<b>0.06</b>

Source: AFC Appendix 5.1E Tables 5.1E-1 to 5.1E-5, Attachment 5.1E-1 (TID2009a, CH2M2009f, and CH2M2009k). Worst-case totals assume simultaneous maximum emissions during linear facility construction.

Note: Different activities have maximum emissions at different time during the construction period; therefore, total maximum daily, monthly, and annual emissions might be different from the summation of emissions from individual activities.

## **Proposed Initial Commissioning Emissions**

New electrical generation facilities must go through initial commissioning phases before becoming commercially available to generate electricity. During this period, initial firing causes greater emissions than those that occur during normal operations because of the need to tune the combustor, conduct numerous startups and shutdowns, operate under low loads, and conduct testing before emission control systems are functioning or fine-tuned for optimum performance.

The Applicant expects that approximately 288 hours of operation (AFC Table 5.1B-7a) would be needed to accomplish the various following commissioning activities:

- Full Speed No Load Tests (FSNL) – a test of the gas turbine ignition system, a test to ensure that the CTG is synchronized with its electric generator, and a test of the CTG’s speed control system.
- Minimum Load Tests (without SCR Operational) – several days of tuning the CTG combustor to minimize emissions and perform other checks.
- Multiple Load Tests (SCR/Oxidation Catalyst Operational at Various Levels) – several days of installing control systems and tuning to achieve NOx and CO control at design levels.

**Air Quality Table 11** presents the Applicant’s anticipated maximum hourly and daily short-term emissions of criteria pollutants. Maximum hourly and daily emissions for NOx and CO would occur with the gas turbine in the steam blow phase and partial load tests before emission control systems are installed and operational. Emission rates for VOC, PM10, PM2.5, and SOx during initial commissioning are not expected to be higher than normal operating emissions. This is because PM10 and SOx emissions are proportional to fuel use. The total initial commissioning emissions are presented in **Air Quality Table 11**.

**AIR QUALITY Table 11**  
**A2PP, Maximum Initial Commissioning Emissions (hourly and daily)**

<b>Commissioning Source</b>	<b>NOx</b>	<b>VOC</b>	<b>PM10/ PM2.5</b>	<b>CO</b>	<b>SOx</b>
Each CTG (lb/hr)	40.40	8.41	2.5	40.0	1.56
Each CTG (lb/day)	969.6	201.8	60.0	704.6	37.4

Source: AFC Appendix 5.1B Table 5.1B-7a (TID2009a) and FDOC (SJVAPCD 2010).

## **Operation Emission Controls**

### **NOx Controls**

The combustion turbine would use state-of-the-art single annular combustors, with water injection and Selective Catalytic Reduction (SCR) system for NOx control. Exhaust from each turbine would enter the SCR system before being released into the atmosphere. SCR refers to a process that chemically reduces NOx to nitrogen (N<sub>2</sub>) and water vapor (H<sub>2</sub>O) by injecting ammonia (NH<sub>3</sub>) into the flue gas stream in the presence of a catalyst and excess oxygen. The process is termed selective because the ammonia preferentially reacts with NOx rather than oxygen. The catalyst material most commonly used is titanium dioxide, but materials such as vanadium pentoxide, zeolite, or noble metals are also used. Regardless of the type of catalyst used, efficient conversion of

NO<sub>x</sub> to nitrogen and water vapor requires the uniform mixing of ammonia into the exhaust gas stream and a catalyst surface large enough to ensure sufficient time for the reaction to take place.

### **VOC and CO Controls**

Emissions of CO and unburned hydrocarbons, including VOC, will be controlled with an oxidation catalyst installed in conjunction with the SCR catalyst. An oxidation catalyst system chemically reacts with organic compounds and CO with excess oxygen to form carbon dioxide (CO<sub>2</sub>) and water. Unlike the SCR system for reducing NO<sub>x</sub>, an oxidation catalyst does not require any additional chemicals.

### **PM<sub>10</sub>/PM<sub>2.5</sub> and SO<sub>x</sub> Controls**

The exclusive use of pipeline-quality natural gas, a clean-burning fuel that contains very little sulfur or noncombustible solid residue, will limit the formation of SO<sub>x</sub> and particulate matter. Natural gas does contain small amounts of a sulfur-based scenting compound known as mercaptan, which results in some SO<sub>x</sub> emissions when burned. However, in comparison with other fossil fuels used in thermal power plants, SO<sub>x</sub> emissions from natural gas are very low. Particulate matter emissions from natural gas combustion are also very low compared with other fossil fuels. The sulfur content of pipeline-quality natural gas is normally less than 1 grain of sulfur per 100 cubic feet at standard temperature and pressure (gr/100 scf). High-efficiency air inlet filtration and a lube oil vent coalesce would also be used to control particulate emissions.

### **Proposed Operation Emissions**

**Air Quality Table 12** through **Air Quality Table 14** summarize the maximum (worst-case) criteria pollutant emissions associated with A2PP's normal and routine operation. Emissions for the combustion turbine system are based upon:

- NO<sub>x</sub> emissions controlled to 2.5 parts per million by volume, dry basis (ppmvd) corrected to 15% oxygen, averaged over any 1-hour period;
- VOC emissions controlled to 2.0 ppmvd with the use of good combustion practises;
- CO emissions controlled to 4.0 ppmvd at 15% oxygen for any 3-hour period;
- PM<sub>10</sub>/PM<sub>2.5</sub> emissions at 2.5 lb/hr;
- SO<sub>x</sub> emissions based on an emission factor of 0.0028 lb per MMBtu of heat input and hourly or daily levels of fuel sulfur content of up to 1 gr/100 scf; and
- CTG firing up to 8,030 hours annually including 365 hours in startup mode (for the worst-case NO<sub>x</sub>, VOC, and CO estimates) with the option of operating up to 8,760 hours annually in steady-state mode (for the worst-case PM<sub>10</sub>/PM<sub>2.5</sub> and SO<sub>x</sub> estimates).

**Air Quality Table 12** lists the maximum hourly emissions from each CTG estimated by the Applicant. Emissions for NO<sub>x</sub>, CO, and VOC during startup and shutdown events would have higher emissions than during normal operation. Since PM<sub>10</sub> and SO<sub>x</sub> emissions are proportional to fuel use, PM<sub>10</sub> and SO<sub>x</sub> have higher emissions rates during full-load operation.

**AIR QUALITY Table 12**  
**A2PP, Maximum Hourly Emissions Rates (pounds per hour [lb/hr])**

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Each CTG, steady state, full load	5.0	1.4	2.5	4.9	1.56
Each CTG, startups/shutdowns	25.0	2.0	2.5	40.0	1.56
<b>Total, A2PP, Three CTGs</b>	<b>75.0</b>	<b>6.0</b>	<b>7.5</b>	<b>120.0</b>	<b>4.7</b>

Source: AFC Table 5.1-18, Appendix A Table 5.1A-5 (TID2009a).

**Air Quality Table 13** lists the worst-case emissions during any given day of operation of the proposed A2PP. Daily combustion turbine emissions for NOx, VOC, and CO are based on 2 hours in a startup/shutdown mode and 22 hours of full load operation, and for PM10 and SOx daily emissions are based on 24 hours of operation.

**AIR QUALITY Table 13**  
**A2PP, Maximum Daily Emissions (pounds per day [lb/day])**

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Each CTG, steady state, full load	110.5	30.8	55.0	107.7	34.3
Each CTG, startups/shutdowns	50.0	4.0	5.0	80.0	3.1
<b>Total, A2PP, Three CTGs</b>	<b>481.6</b>	<b>104.5</b>	<b>180.0</b>	<b>563.0</b>	<b>112.4</b>

Source: AFC Table 5.1-18, Appendix A Table 5.1A-5 (TID2009a).

**Air Quality Table 14** lists maximum potential annual emissions from the proposed project, based on Applicant and District calculations reviewed by staff. The operating assumptions include CTG firing up to 8,395 hours annually including 365 hours in startup mode (for the worst-case NOx, VOC, and CO estimates) with the option of operating up to 8,760 hours annually in steady-state mode (for the worst-case PM10 and SOx estimates).

**AIR QUALITY Table 14**  
**A2PP, Maximum Annual Emissions (tons per year [tpy])**

Source	NOx	VOC	PM10/ PM2.5	CO	SOx
Each CTG, steady state, full load	19.0	5.3	10.5	18.5	6.2
Each CTG, startups/shutdowns	4.6	0.4	0.5	7.3	0.3
<b>Total, A2PP, Three CTGs</b>	<b>70.7</b>	<b>17.0</b>	<b>32.9</b>	<b>77.5</b>	<b>19.4</b>

Source: AFC Table 5.1-18, Appendix A Table 5.1A-5 (TID2009a).

### Ammonia Emissions

Ammonia (NH<sub>3</sub>) is injected into the flue gas stream as part of the SCR system that controls NOx emissions. In the presence of the catalyst, the ammonia and NOx react to form harmless elemental nitrogen and water vapor. However, not all of the ammonia reacts with the flue gases to reduce NOx; a portion of the ammonia passes through the SCR and is emitted unaltered from the stacks. These ammonia emissions are known as ammonia slip.

The Applicant proposes to limit ammonia slip emissions from the combustion turbine system to 10 ppmvd. However, Energy Commission staff notes that the control system

can be operated and maintained to routinely achieve less than 5 ppmvd for ammonia slip, as established in the Guidance for Power Plant Siting (ARB 1999).

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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### **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE**

Staff characterizes air quality impacts as follows: All project emissions of nonattainment criteria pollutants and their precursors (NO<sub>x</sub>, VOC, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, and NH<sub>3</sub>) are considered significant and must be mitigated. For short-term construction activities that essentially cease before operation of the power plant, our assessment is qualitative and mitigation consists of controlling construction equipment tailpipe emissions and fugitive dust emissions to the maximum extent feasible. For operating emissions, the mitigation includes both the Best Available Control Technology (BACT) and emission reduction credits (ERC) or other valid emission reductions to offset emissions of both nonattainment criteria pollutants and their precursors.

The ambient air quality standards used by staff as the basis for characterizing project impacts are health-based standards established by the ARB and U.S. EPA. They are set at levels that contain a margin of safety to adequately protect the health of all people, including those most sensitive to adverse air quality impacts such as the elderly, persons with existing illnesses, children, and infants.

### **DIRECT/INDIRECT IMPACTS AND MITIGATION**

Ambient air quality impacts occur when project emissions cause the ambient concentration of a pollutant to increase. Project-related emissions are the actual mass of emitted pollutants, which are diluted in the atmosphere before reaching the ground. Analysis begins with quantifying the emissions, then uses an atmospheric dispersion model to determine the probable change in ground-level concentrations.

Dispersion models complete the complex, repeated calculations that consider emissions in the context of various ambient meteorological conditions, local terrain, and nearby structures that affect air flow. For the A2PP, the surface meteorological data used as an input to the dispersion model included four years (2000-2004, excluding 2002) of hourly wind speeds and directions measured at the Modesto meteorological station, combined with upper-air meteorological data from Oakland International Airport monitoring station.

The Applicant conducted the air dispersion modeling based on guidance presented in the *Guideline on Air Quality Models* (EPA, 2005) and the American Meteorological Society/Environmental Protection Agency Regulatory Model known as AERMOD (version 07026) for an analysis of the operating-phase emissions. The U.S. EPA designates AERMOD as a “preferred” model for refined modeling in all types of terrain. For determining NO<sub>2</sub> impacts of short-term emissions (1-hour averaging period), NO<sub>x</sub> emissions are further modeled using the more-rigorous Plume Volume Molar Ratio Method (PVMRM) or the Ozone Limiting Method (OLM). Because project NO<sub>x</sub> emissions would be approximately 90% NO that could oxidize into NO<sub>2</sub> with sufficient time, sunlight, and availability of organic compounds or ozone, use of the PVMRM or OLM is appropriate. On October 23, 2009, the U.S. EPA released an update of the AERMOD model (version 09292), which includes the corrections to the OLM source

group (OLMGROUP) feature of the OLM method. Energy Commission staff independently conducted new air dispersion modeling for NO<sub>2</sub> using the updated OLM method. Concurrent hourly ozone data from Modesto monitoring station is used in modeling the reactive NO<sub>x</sub> and NO<sub>2</sub> impacts. Staff's modeling analysis indicates higher short-term NO<sub>2</sub> impacts than estimated by the Applicant. All results shown for 1-hour NO<sub>2</sub> reflects the *maximum* concentration for any one year. These results are not comparable to the new standard being promulgated in by U.S. EPA, which is expressed as a 3-year average of the 98th percentile value of the daily maximum 1-hour concentrations. Because U.S. EPA does not yet offer modeling software capable of generating concentration statistics in a form that can be used in a compliance demonstration for this new federal standard, staff only includes the California NO<sub>2</sub> standard in this analysis.

Project-related modeled concentrations for all pollutants are added to highest monitored background concentrations to arrive at the total impact of the project. The total impact is then compared with the ambient air quality standards for each pollutant to determine whether the project's emissions would either cause a new violation of the ambient air quality standards or contribute to an existing violation.

### **Construction Impacts and Mitigation**

This section discusses the project's short-term direct construction ambient air quality impacts assessed by the Applicant and, as necessary, independently assessed by Energy Commission staff. The ambient air quality impacts are modeled using AERMOD, and the impacts for NO<sub>2</sub> are modeled using the ozone limiting method (OLM). Construction modeling for A2PP used four years of meteorological data (2000-2004 from Modesto, excluding 2002) prepared by SJVAPCD, with concurrent ozone data also from Modesto for modeling reactive NO<sub>x</sub> and NO<sub>2</sub>.

**Air Quality Table 15** summarizes the results of the modeling analysis for construction activities. The total impact is the sum of the existing background condition plus the maximum impact predicted by the modeling analysis for project activity. The values in **bold** in the Impact and Background columns represent the values that either equal or exceed the relevant ambient air quality standard.

**AIR QUALITY Table 15**  
**A2PP, Construction-Phase Maximum Impacts (µg/m<sup>3</sup>)**

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	17.2	<b>111.1</b>	<b>128.3</b>	50	<b>257</b>
	Annual	2.1	<b>31.7</b>	<b>33.8</b>	20	<b>169</b>
PM2.5	24 hour	9.7	<b>71</b>	<b>80.7</b>	35	<b>231</b>
	Annual	1.1	<b>16.0</b>	<b>17.1</b>	12	<b>143</b>
CO	1 hour	1,345	7,935	9,280	23,000	40
	8 hour	233	4,144	4,377	10,000	44
NO <sub>2</sub>	1 hour <sup>a</sup>	156.2	118.7	274.9	339	81
	Annual <sup>a</sup>	9.4	24.7	34.1	57	60
SO <sub>2</sub>	1 hour	7.3	47.2	54.5	655	8
	24 hour	0.6	18.4	19	105	18
	Annual	0.1	5.3	5.4	80	7

Source: AFC Appendix 5.1E Table 5.1E-7 (TID2009a), with independent staff assessment for NO<sub>2</sub>, December 2009.

Note: a. The maximum 1-hour NO<sub>2</sub> concentration is based on AERMOD OLM output, and the ambient ratio method (ARM) is applied for annual NO<sub>2</sub>, using national default 0.75 ratio.



The maximum modeled project construction impacts are predicted to occur near the northern fence lines for the worst 1-hour impacts and at the western fence line for the 24-hour impacts. For each pollutant, the concentrations would decrease rapidly with distance. The nearest residential receptors are approximately 0.3 miles from the plant, not near the fence line. Areas in the immediate vicinity of the work could experience maximum concentrations over the newly-established federal 1-hour NO<sub>2</sub> ambient air quality standard only if the statistical form of the standard is ignored; application of multi-year averaging of the NO<sub>2</sub> impacts and backgrounds, as specified by the new federal 1-hour NO<sub>2</sub> standard would reveal lower concentrations than shown here.

Staff believes that particulate matter emissions from construction would cause a significant impact because they will contribute to existing violations of PM<sub>10</sub> and PM<sub>2.5</sub> ambient air quality standards, and additionally that those emissions can and should be mitigated to a level of insignificance. Significant secondary impacts would also occur for PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone because construction-phase emissions of particulate matter precursors (including SO<sub>x</sub>) and ozone precursors (NO<sub>x</sub> and VOC) would also contribute to existing violations of these standards. The direct impacts of NO<sub>2</sub>, in conjunction with worst-case background conditions, would not create a new violation of the California 1-hour or annual NO<sub>2</sub> ambient air quality standard. The direct impacts of CO and SO<sub>2</sub> would not be significant because construction of the project would neither cause nor contribute to a violation of these standards. Mitigation for construction emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, NO<sub>x</sub>, and VOC would be appropriate for reducing PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, and ozone impacts.

### **Construction Mitigation**

The Applicant proposes to reduce construction-related emissions of particulate matter, particulate matter precursors, and ozone precursors by implementing measures consistent with local air district recommendations, soil erosion control requirements, and nuisance prohibitions (AFC Section 5.1.3.8, TID2009a). Emissions mitigation and/or control techniques proposed by the Applicant for reducing engine emissions during construction of A2PP include:

- Operational measures, such as limiting time spent with the engine idling by shutting down equipment when not in use;
- Regular preventive maintenance to prevent emission increases due to engine problems;
- Use of low sulfur and low aromatic fuel meeting California standards for motor vehicle diesel fuel; and
- Use of low-emitting gasoline and diesel engines meeting state and federal emissions standards for construction equipment, including, but not limited to, catalytic converter systems and diesel particulate filter systems.

The Applicant-proposed control strategies for fugitive dust emissions during construction of A2PP include:

- Use either water application or chemical dust suppressant application to control dust emissions from onsite unpaved road travel and unpaved parking areas;

- Use vacuum sweeping and/or water flushing of paved road surfaces to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard;
- Limit traffic speeds on all unpaved site areas to 15 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Install tire cleaning stations or rumble plates to clean tires of all trucks exiting construction site; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant.

Staff agrees that the Applicant's proposed mitigation would be effective, although staff believes that additional construction mitigation measures could reduce potential impacts even more.

Additional measures recommended by staff would reduce construction-phase impacts to a less than significant level by further reducing construction emissions of particulate matter and combustion contaminants. Staff believes that the short-term and variable nature of construction activities warrants a qualitative approach to mitigation. Construction emissions and the effectiveness of mitigation varies widely depending on variable levels of activity, the specific work taking place, the specific equipment, soil conditions, weather conditions, and other factors, making precise quantification difficult. Despite this variability, there are a number of feasible control measures that can be implemented to significantly reduce construction emissions. Staff has determined that the use of oxidizing soot filters is a viable emissions control technology for all heavy diesel-powered construction equipment that does not use an ARB-certified low emission diesel engine. In addition, staff proposes that, prior to beginning construction, the Applicant should provide an Air Quality Construction Mitigation Plan (AQCMP) that specifically identifies mitigation measures to limit air quality impacts during construction. Staff includes proposed staff Conditions of Certification **AQ-SC1** through **AQ-SC5** to implement these requirements. These conditions are consistent with both the Applicant's proposed mitigation and the conditions of certification adopted in similar prior licensing cases. Compliance with these conditions would substantially eliminate the potential for significant air quality impacts during construction of the A2PP project.

### **Operation Impacts and Mitigation**

The following section discusses ambient air quality impacts that were estimated by TID and subsequently evaluated by Energy Commission staff. The Applicant performed a number of direct impact modeling analyses, including both fumigation modeling and modeling for impacts during commissioning.

## Routine Operation Impacts

A refined dispersion modeling analysis was performed by the Applicant to identify off-site criteria pollutant impacts that would occur from routine operational emissions throughout the life of the project. A revised modeling was conducted by Energy Commission staff by using the updated OLM method. The worst case 1-hour NO<sub>2</sub> and CO impacts reflect startup impacts, and all other impacts reflect the impacts during normal operation. The modeled impacts are extremely conservative, since the maximum impacts are evaluated under a combination of highest allowable emission rates and the most extreme meteorological conditions, which are unlikely to occur simultaneously. Emissions rates are shown in **Air Quality Table 12** to **Air Quality Table 14**. The predicted maximum concentrations of non-reactive pollutants are summarized in **Air Quality Table 16**. PM10 and PM2.5 values are shown in bold because they exceed ambient air quality standards due to high background levels.

**AIR QUALITY Table 16**  
**A2PP, Routine Operation Maximum Impacts (µg/m<sup>3</sup>)**

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	1.2	<b>111.1</b>	<b>112.3</b>	50	<b>225</b>
	Annual	0.1	<b>31.7</b>	<b>31.8</b>	20	<b>159</b>
PM2.5	24 hour	1.2	<b>71</b>	<b>72.2</b>	35	<b>206</b>
	Annual	0.1	<b>16.0</b>	<b>16.1</b>	12	<b>134</b>
CO	1 hour	65.9	7,935	8,000.9	23,000	35
	8 hour	6.4	4,144	4,150.4	10,000	42
NO <sub>2</sub>	1 hour <sup>a</sup>	41.2	118.7	159.9	339	47
	Annual	0.3	24.7	25.0	57	44
SO <sub>2</sub>	1 hour	1.8	47.2	49.0	655	7
	24 hour	0.5	18.4	18.9	105	18
	Annual	0.1	5.3	5.4	80	7

Source: AFC Table 5.1-26 (TID2009a), with independent staff assessment for NO<sub>2</sub>, December 2009.

Note: a. The maximum 1-hour NO<sub>2</sub> concentration is based on AERMOD OLM output.

The maximum 24-hour PM10 impact occurs in the undeveloped area about 0.1 miles southeast of the project site, and impacts would be substantially lower at the closest single-family residences, which are located approximately 0.3 mile to the northeast. Staff believes that particulate matter emissions from routine operation would cause a significant impact because they will contribute to existing violations of PM10 and PM2.5 ambient air quality standards. Significant secondary impacts would also occur for PM10, PM2.5, and ozone because operational emissions of particulate matter precursors (including SO<sub>x</sub>) and ozone precursors (NO<sub>x</sub> and VOC) would also contribute to existing violations of these standards. The direct impacts of NO<sub>2</sub>, in conjunction with worst-case background conditions, would not create a new violation of the NO<sub>2</sub> ambient air quality standards; application of multi-year averaging of the NO<sub>2</sub> impacts and backgrounds, as specified by the new federal 1-hour NO<sub>2</sub> standard would reveal lower concentrations than shown here. The direct impacts of CO and SO<sub>2</sub> would not be significant because routine operation of the project would neither cause nor contribute to a violation of these standards. Mitigation for emissions of PM10, PM2.5, SO<sub>x</sub>, NO<sub>x</sub>, and VOC would be appropriate for reducing PM10, PM2.5, and ozone impacts.

## Secondary Pollutant Impacts

The project's gaseous emissions of NO<sub>x</sub>, SO<sub>x</sub>, VOC, and ammonia are precursor pollutants that can contribute to the formation of secondary pollutants, ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. Gas-to-particulate conversion in ambient air involves complex chemical and physical processes that depend on many factors, including local humidity, pollutant travel time, and the presence of other compounds. Currently, there are no agency-recommended models or procedures for estimating ozone or particulate nitrate or sulfate formation from a single project or source. However, because of the known relationships of NO<sub>x</sub> and VOC to ozone and of NO<sub>x</sub>, SO<sub>x</sub>, and ammonia emissions to secondary PM<sub>10</sub> and PM<sub>2.5</sub> formation, unmitigated emissions of these pollutants would likely contribute to higher ozone and PM<sub>10</sub>/PM<sub>2.5</sub> levels in the region. Significant impacts of ozone and PM<sub>10</sub>/PM<sub>2.5</sub> precursors would be mitigated with SJVAPCD offsets (**AQ-SC7**).

Ammonia (NH<sub>3</sub>) is a particulate precursor but not a criteria pollutant. Reactive with sulfur and nitrogen compounds, ammonia is especially abundant in the San Joaquin Valley from natural sources, agricultural sources, and as a byproduct of tailpipe controls on motor vehicles. Ammonia particulate forms more readily with sulfates than with nitrates, and particulate formation in the San Joaquin Valley has been found to be limited by the availability of SO<sub>x</sub> and NO<sub>x</sub> in ambient air, rather than the availability of ammonia (SJVAPCD 2008 PM<sub>2.5</sub> Plan). Offsetting SO<sub>x</sub> and NO<sub>x</sub> emissions would both avoid significant secondary PM<sub>10</sub>/PM<sub>2.5</sub> impacts and reduce secondary pollutant impacts to a less than significant level.

Energy Commission staff recommends limiting ammonia slip emissions to the extent feasible. This level of control is appropriate for avoiding unnecessary ammonia emissions, consistent with staff policy to reduce emissions of all nonattainment pollutant precursors to the lowest feasible levels. Levels lower than 10.0 ppmvd can be achieved on a routine basis with a sufficiently designed catalyst and ammonia injection system. Somewhat higher costs of installing sufficient catalyst material would be offset through lower costs of purchasing ammonia that would be wastefully emitted at higher slip levels. Staff reviewed previous cases to determine an NH<sub>3</sub> emission reduction strategy that represents an achievable, feasible, and best available level of ammonia control for the CTGs proposed for A2PP. Supported by the recent Energy Commission decision on the Orange Grove Energy Project (08-AFC-4, Final Commission Decision, April 2009), which would use similar CTGs controlled to 5 ppmvd NH<sub>3</sub>, and consistent with the previously mentioned ARB guidance on ammonia slip, staff recommends a condition of certification establishing catalyst improvements if ammonia slip persistently exceeds 5 ppmvd (**AQ-SC9**).

## Fumigation Impacts

There is the potential that higher short-term concentrations of pollutants may occur during fumigation conditions. Fumigation conditions are generally short-term in nature and only compared to 1-hour standards. The Applicant analyzed the air quality impacts for normal emissions under fumigation conditions using the SCREEN3 Model (AFC Table 5.1-24, TID2009a). For comparison, the same operating scenario identified in the operational impact analysis is considered for fumigation. The short-term project impacts

during fumigation would not exceed the impacts for routine operation shown in **Air Quality Table 16** above. Therefore, no additional mitigation is required for fumigation impacts.

### Commissioning-Phase Impacts

Commissioning impacts would occur over short-terms within the 28 days expected to be needed to complete the commissioning period. The commissioning emissions estimates are based on partial load operations before the emission control systems become operational, as in **Air Quality Table 11**. Impacts due to PM10, PM2.5, and SO<sub>2</sub> during commissioning would occur under similar exhaust conditions as those for startup while in routine operation because these emissions are proportional to fuel use. **Air Quality Table 17** shows that the commissioning-phase impacts of CO and NO<sub>2</sub> would be somewhat higher than those during routine operations. Commissioning-phase impacts to particulate matter and ozone concentrations would be addressed with the mitigation identified above for routine operations.

**AIR QUALITY Table 17**  
**A2PP, Commissioning-Phase Maximum Impacts (µg/m<sup>3</sup>)**

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
CO	1 hour	65.9	7,935	8,001	23,000	35
	8 hour	21.7	4,144	4,166	10,000	42
NO <sub>2</sub>	1 hour <sup>a</sup>	66.6	118.7	185.25	339	55

Source: AFC Table 5.1-27 (TID2009a and SJVAPCD2010), with independent staff assessment for NO<sub>2</sub>, December 2009.

Note: a. The maximum 1-hour NO<sub>2</sub> concentration is based on AERMOD OLM output.

### Visibility Impacts

A visibility analysis of the project's gaseous emissions would not be required because the TID A2PP project would not qualify as a new major stationary source under the federal Prevention of Significant Deterioration (PSD) permitting program. For projects subject to PSD review by the U.S. EPA, a visibility analysis would address the nearest federally-protected Class I area. The nearest Class I areas are as follows (AFC Appendix 5.1B, TID2009a):

- Yosemite National Park 98 kilometers (km)
- Emigrant Wilderness 104 km
- Pinnacles Wilderness 117 km
- Mokelumne Wilderness 123 km
- Desolation Wilderness 154 km
- Point Reyes National Seashore 165 km

Due to its distance from Class I areas being approximately 100 kilometers, and due to the potential emissions of the project being less than the PSD applicability thresholds, Energy Commission staff anticipates that the project's impacts to visibility in Class I areas would be insignificant.

## Mitigation for Routine Operation

### *Applicant's Proposed Mitigation*

The A2PP includes a combination of BACT and emission reduction credits to mitigate air quality impacts. The equipment description, equipment operation, and emission control devices are provided in **Air Quality Project Description**.

#### Emission Controls

A2PP proposes two catalyst systems: the SCR and water injection system to reduce NO<sub>x</sub>; and the oxidation catalyst system to reduce CO and VOC. Operating exclusively with pipeline quality natural gas limits SO<sub>x</sub> and particulate matter emissions. Additionally, inlet air filters and lube oil vent filters would be used to minimize particulate emissions. Appropriately sized stacks is also used to reduce ground-level concentrations of exhaust constituents.

#### Emission Offsets

In addition to emission control strategies included in the project design, SJVAPCD Rule 2201 requires A2PP to provide emission reduction credits to offset the new emissions of NO<sub>x</sub>, VOC and PM<sub>10</sub>. **Air Quality Table 18** summarizes the SJVAPCD Rule 2201 offset requirements for the A2PP, with offsets assumed to originate from shutdowns at sources located more than 15 miles away (distance offset ratio of 1.5-to-1). The SJVAPCD conducts a case-by-case analysis of requirements and distance ratios depending on the specific ERCs held by the Applicant (SJVAPCD 2010).

**AIR QUALITY Table 18**  
**A2PP, SJVAPCD Offset Determination and Requirements (lb/yr)**

Source	NO <sub>x</sub>	VOC	PM <sub>10</sub>	CO	SO <sub>x</sub>
Three CTGs	141,561	33,993	65,703	154,857	38,736
<b>A2PP Potential to Emit</b>	141,561	33,993	65,703	154,857	38,736
<b>Offset Requirements</b>					
Existing APP Potential Emissions	52,146	10,461	17,524	136,436	11,459
SJVAPCD Offset Threshold	20,000	20,000	29,200	200,000	54,750
Offsets Required by SJVAPCD for A2PP <sup>a, b</sup>	141,561	24,454	54,027	---	---
<b>Offsets Required by SJVAPCD at A2PP<sup>c</sup></b>	212,342	36,682	81,042	---	---

Source: SJVAPCD 2010; Independent Staff Assessment.

- Note:
- a. Emission offsets are not required for CO since the Applicant has demonstrated to the satisfaction of the Air Pollution Control Officer (APCO) that the ambient air quality standards are not violated in the areas to be affected, and such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of the standards.
  - b. SJVAPCD's offsetting rules exempt sources that have potential emissions below the offset threshold, allowing a credit for VOC and PM<sub>10</sub> from the existing APP in this case. This reduces the amount of offsets required by SJVAPCD for VOC and PM<sub>10</sub> caused by A2PP. NO<sub>x</sub> emissions must be offset at the level of A2PP's potential to emit because existing APP's potential NO<sub>x</sub> emissions exceed the SVJAPCD offset threshold.
  - c. Includes a distance ratio factor of 1.5 for ERCs that would originate from sources over 15 miles away.

The proposed A2PP project would be required to surrender offsets according to the operating profile proposed by the Applicant (AFC Appendix 5.1A, Tables 5.1A-4 and 5.1A-5, TID2009a). District conditions would limit the facility operation in terms of its

quarterly and annual emissions (Conditions of Certification **AQ-31** to **AQ-36**), its daily emissions (**AQ-28** and **AQ-29**), and its short-term normal operation (**AQ-21** and **AQ-25**), rather than through its heat input rate or other parameters.

#### Emission Offsets for Ozone Impact

**Air Quality Table 19** summarizes NOx and VOC offset requirements and identifies the sources of offsets proposed by TID. The Applicant holds NOx and VOC ERCs that it intends to use to satisfy the District offset requirements. Both NOx and VOC emissions are recognized precursors to the formation of ambient ozone, and NOx is also a recognized precursor to the formation of the nitrate fraction of fine particulate matter.

**AIR QUALITY Table 19**  
**A2PP, NOx and VOC Offset Holdings and Quarterly Offset Requirements (lb/qtr)**

Name of Offset / Site of Reduction	ERC Number	Q1 (lb/qtr)	Q2 (lb/qtr)	Q3 (lb/qtr)	Q4 (lb/qtr)
<b>NOx Offsets Held by TID</b>					
Elk Hills, Tupman, CA	S-3113-2	55,800	55,800	55,800	55,800
<b>NOx Mitigation Total</b>	---	<b>55,800</b>	<b>55,800</b>	<b>55,800</b>	<b>55,800</b>
<b>Proposed NOx Emissions</b>	---	<b>34,905</b>	<b>35,292</b>	<b>35,682</b>	<b>35,682</b>
NOx Fully Offset?	---	Yes	Yes	Yes	Yes
<b>VOC Offsets Held by TID</b>					
E North Ave, Fresno, CA	C-1008-1	10,250	10,250	10,250	10,250
<b>VOC Mitigation Total</b>	---	<b>10,250</b>	<b>10,250</b>	<b>10,250</b>	<b>10,250</b>
<b>Proposed VOC Emissions</b>	---	<b>8,382</b>	<b>8,475</b>	<b>8,568</b>	<b>8,568</b>
VOC Fully Offset?	---	Yes	Yes	Yes	Yes

Source: SJVAPCD 2010; Independent Staff Assessment.

TID appears to be in compliance with the District's NOx and VOC offset requirements and would provide overall total ERCs for ozone precursors at an offset ratio of greater than one-to-one, which satisfies the CEQA mitigation requirements for ozone impacts as established by Energy Commission staff in recent fossil fuel-fired power plant cases, such as Avenal Energy (08-AFC-1).

#### Emission Offsets for Particulate Matter Impact

**Air Quality Table 20** summarizes PM10 offset requirements and identifies the sources of PM10 offsets proposed by TID. These offsets are held by TID and are being offered as mitigation for the PM10/PM2.5 impacts. TID would use its holdings of SOx ERCs through an interpollutant trade to satisfy the District offset requirements for PM10 (SJVAPCD 2010).

**AIR QUALITY Table 20**  
**A2PP, PM10 and SOx Offset Holdings and Quarterly Offset Requirements (lb/qtr)**

Name of Offset / Site of Reduction	ERC Number	Q1 (lb/qtr)	Q2 (lb/qtr)	Q3 (lb/qtr)	Q4 (lb/qtr)
<b>PM10 Offsets Held by TID</b>					
No ERCs	---	---	---	---	---
Surplus SOx ERCs (to offset PM10)	(below)	46,065	30,493	10,496	54,910
Convert Q4 ERC to Q3	---	---	---	6,064	-6,064
<b>PM10 Mitigation Total</b>	---	<b>46,065</b>	<b>30,493</b>	<b>16,560</b>	<b>48,846</b>
<b>Proposed PM10 Emissions</b>	---	<b>16,200</b>	<b>16,383</b>	<b>16,560</b>	<b>16,560</b>
PM10 Fully Offset?	---	Yes	Yes	Yes	Yes
<b>SOx Offsets Held by TID</b>					
Panama Ln, Bakersfield	S-3129-5	55,614	40,150	0	84,936
Convert Q4 ERC to Q3	---	---	---	20,261	-20,261
<b>SOx Mitigation Total</b>	---	<b>55,614</b>	<b>40,150</b>	<b>20,261</b>	<b>64,675</b>
<b>Proposed SOx Emissions</b>	---	<b>9,549</b>	<b>9,657</b>	<b>9,765</b>	<b>9,765</b>
SOx Fully Offset?	---	Yes	Yes	Yes	Yes

Source: SJVAPCD 2010; Independent Staff Assessment.

The Applicant proposes to use SOx ERC certificate to offset PM10/PM2.5 increases associated with the project. The SJVAPCD allows this by establishing an interpollutant offset ratio (District Rule 2201, Section 4.13.3). SOx is accepted as one of the major precursors of PM10 and PM2.5 through reaction with ammonia to form ammonium sulfates. Reductions in SOx, particularly in areas that are ammonia rich such as the San Joaquin Valley, can reduce secondary particulate formation. However, the key issue is determining the appropriate interpollutant offset ratio, which depends on the existing levels of particulate matter precursors and the general atmospheric chemistry of the area in question. The SJVAPCD conducted a district-wide analysis in March 2009 that is attached with the Final Determination of Compliance for A2PP (SJVAPCD 2010), and the district-wide analysis concluded that a one-to-one interpollutant ratio would be protective of managing regional PM10/PM2.5 impacts and progress towards attainment. However, the SJVAPCD's use of a one-to-one interpollutant ratio for Rule 2201 compliance leads to fewer SOx reductions for particulate matter than ratios used by SJVAPCD in some past cases. This issue is discussed further in **Cumulative Impacts and Mitigation**.

A2PP appears to be in compliance with the District's PM10 offset requirements and would provide overall total PM10/PM2.5 precursor ERCs at an offset ratio of greater than one-to-one, which satisfies the CEQA mitigation requirements for particulate matter impacts as established by Energy Commission staff in recent fossil fuel-fired power plant cases, such as Avenal Energy (08-AFC-1).

***Adequacy of Proposed Mitigation***

Energy Commission staff have long held that emission reductions need to be provided for all nonattainment pollutants and their precursors at a minimum overall one-to-one ratio of annual operating emissions. For this project, the District's offset requirements would meet or exceed that minimum offsetting goal for all ozone and particulate matter impacts.



The offsets shown in **Air Quality Table 19** and **Table 20** demonstrate that TID owns and would be required by the SJVAPCD to surrender ERCs in sufficient quantities to offset the project's NOx, VOC, PM10, and SOx emissions, per District requirements and Energy Commission staff policy. Although PM2.5 emissions are not required to be offset separately from PM10 emissions, staff notes that the annual total offsets for PM10 would fully offset PM2.5 emissions. How the offsets provide PM2.5 mitigation is discussed separately in **Secondary Pollutant Impacts**.

While the one-to-one interpollutant offset ratio for SOx and PM10 is lower than what has been historically required by the District on other cases, Energy Commission staff's longstanding position is that all nonattainment pollutant and precursor emissions must be offset by at least one-to-one. Therefore, the proposed emission offset package would mitigate all project air quality impacts to a less than significant level.

Staff's review of the offset package was determined solely based on the merits of this case, including the District offset requirements, the project's emission limits, the specific ERCs proposed, and ambient air quality considerations of the region, and does not in any way provide a precedence or obligation for the acceptance of offset proposals for any other current or future licensing cases.

### ***Staff Proposed Mitigation***

Staff proposes Conditions of Certification **AQ-SC6** to ensure that the license is amended as necessary to incorporate future changes to the air quality permits and to ensure ongoing compliance during commissioning and routine operation through quarterly reports (**AQ-SC8**). Staff also proposes a Condition of Certification (**AQ-SC7**) to ensure that significant impacts of ozone and PM10/PM2.5 precursors would be mitigated with the quantity of SJVAPCD offsets specified by staff and to ensure agency consultation if substitutions are made to the credits.

### **Cumulative Impacts and Mitigation**

"Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, §15355). Such impacts can be relatively minor and incremental yet still be significant because of the existing environmental background, particularly when considering other closely related past, present, and reasonably foreseeable future projects.

Criteria pollutants have impacts that are usually (though not always) cumulative by their nature. Rarely will a project itself cause a violation of a federal or state criteria pollutant standard. However, many new sources contribute to violations of criteria pollutant standards because of elevated background conditions. Air districts attempt to reduce background criteria pollutant levels by adopting attainment plans, which are multi-faceted programmatic approaches to attainment. Attainment plans typically include new source review requirements that provide offsets and use Best Available Control Technology, combined with more stringent emissions controls on existing sources.

The discussion of cumulative air quality impacts includes the following three analyses:

- a summary of projections for criteria pollutants by the air district and the air district's programmatic efforts to abate such pollution;

- an analysis of the project’s “localized cumulative impacts” from direct emissions locally when combined with other local major emission sources; and
- a discussion of greenhouse gas emissions and global climate change impacts (in **AIR QUALITY APPENDIX AIR-1**).

### **Summary of Projections**

The federal and California Clean Air Acts direct local air quality management agencies to implement plans and programs that lead to attainment and maintenance of the ambient air quality standards. The New Source Review program administered by SJVAPCD and other programs for reducing emissions from mobile sources or area-wide sources are part of air quality management plans.

### **Ozone**

The **2004 Extreme Ozone Attainment Demonstration Plan** illustrates how the SJVAPCD would attain the federal 1-hour ozone standard that was revoked in 2005. This plan includes elements that are the foundation for later ozone plans.

The **2007 Ozone Plan** to attain the federal 8-hour ozone standard was approved by ARB on June 14, 2007. This plan would reduce ozone and particulate matter levels in the region, primarily by achieving a 75% reduction in NOx emissions by 2023. Achieving such dramatic reductions would affect all sectors of the region’s economy (SJVAPCD 2007a). The plan relies on four main approaches: tighter District regulations for stationary sources, wider use of incentive-based measures (like the Carl Moyer Program) to accelerate deployment of cleaner sources, new “innovative” programs for trip-reduction and energy conservation, and expanded controls on mobile source tailpipe emissions.

The proposed A2PP is subject to the current SJVAPCD rules and regulations that specify performance standards, offset requirements, and emission control requirements for stationary sources. The regulations also include requirements for obtaining Authority to Construct (ATC) permits and subsequent operating permits. These regulations apply to A2PP and all other projects with emission sources. In general, triennial updates of the attainment plans ensure that population, employment, and transportation trends in the region are taken into account, and compliance with SJVAPCD rules and regulations ensures consistency with the regional air quality management plans. The SJVAPCD has demonstrated in its analysis of the offset requirements and other District rules that the proposed A2PP would be likely to comply with the recently adopted plans through regulatory compliance. Because the project would control ozone precursor emissions and use ERCs to fully offset ozone precursors as required by existing rules and regulations, the project would not be likely to conflict with the District’s 2007 Ozone Plan or regional ozone attainment goals. This facility is likely to become operational before this ozone plan is updated, if this is needed due to changes in the federal ambient air quality ozone standard.

### ***Particulate Matter***

The **2007 PM10 Maintenance Plan** illustrates how the SJVAPCD intends to continue the efforts of the **2003 PM10 Plan** and **2006 PM10 Plan** that implemented aggressive PM10 controls in the region, including Reasonably Available Control Measures (RACM)

for large existing sources of PM10 and fugitive dust. The 2007 PM10 Maintenance Plan includes a request for reclassification to “attainment” for the federal PM10 standard, and it provides for continued attainment for 10 year from the designation. In November 2008, the U.S. EPA redesignated the SJVAPCD to attainment for the federal PM10 standard (73 FR 66759, November 12, 2008).

The **2008 PM2.5 Plan** was adopted by the SJVAPCD Governing Board on April 30, 2008, and it includes measures for attaining the 1997 and 2006 federal PM2.5 standards. The 2008 PM2.5 Plan shows that emission reductions of NOx, directly emitted PM2.5, and SO<sub>2</sub> are needed to demonstrate attainment of the PM2.5 NAAQS in the San Joaquin Valley (p. 6-1 of plan).

Energy Commission staff remains concerned that the proposed A2PP project could interfere with the attainment effort of the 2008 PM2.5 Plan if it relies on SOx emission reduction credits without an adequate trading ratio for allowing PM2.5 increases. The SJVAPCD has determined that the offset requirements would be satisfied so that no net increase of PM10 would occur (SJVAPCD 2010). Interpollutant trading is allowed with “the appropriate scientific demonstration of an adequate trading ratio” (Rule 2201, Section 4.13), and the SJVAPCD 2007 PM10 Maintenance Plan (see Appendix E of the Maintenance Plan) indicates that the minimum ratio would be one-to-one with higher interpollutant ratios if appropriate under Rule 2201. The one-to-one ratio was developed by the SJVAPCD based on modeling conducted in support of the 2008 PM2.5 Plan, but although implementation of trading under District Rule 2201 is subject to federal oversight, there is no evidence in the record indicating whether the methods used by the SJVAPCD in developing the ratio have been specifically reviewed and/or approved by U.S. Environmental Protection Agency.

The U.S. EPA review of the SJVAPCD’s 2008 PM2.5 Plan is ongoing, and the review may lead to a different conclusion on an appropriate interpollutant trading ratio for the SJVAPCD. Although there is no formal federal endorsement of the District’s interpollutant trading approach, Energy Commission staff is able to conclude that the A2PP project would not be likely to conflict with regional particulate matter attainment goals. Staff recognizes that the attainment plan has been previously adopted by ARB, and the SJVAPCD has determined (SJVAPCD 2010) that the interpollutant trading ratio is appropriate. The SJVAPCD shows that A2PP is likely to comply with the particulate matter plans by meeting its permit requirements and complying with the existing applicable rules and regulations.

### **Localized Cumulative Impacts**

The proposed project and other reasonably foreseeable projects could cause impacts that would be locally combined if present and future projects would introduce stationary sources that are not included in the “background” conditions. Under CEQA, reasonably foreseeable future projects are usually those that are either currently under construction or in the process of being approved by a local air district or municipality. Projects that have not yet entered the approval process do not ordinarily qualify as “foreseeable” since the detailed information needed to conduct this analysis is not available. Sources that are presently operational are included in the background concentrations. Background conditions also take into account the effects of non-stationary sources.

Projects with stationary sources located up to six miles from the proposed project site usually need to be considered by the analysis. TID requested that the SJVAPCD identify potential new stationary sources within six miles of the A2PP (Response to Workshop Queries and DR 8 and 9, CH2M2009f). The SJVAPCD reported 72 existing facilities and 159 proposed projects. In addition to the Almond Power Plant and A2PP, only five projects would involve emissions increases of more than 10 pounds per day of any contaminant other than VOC. Although cumulative sources emitting exclusively VOC would contribute to the project-related impacts to secondary ozone formation, these impacts are not modeled in this Staff Assessment because there are no agency-recommended models or procedures for quantifying the cumulative ozone impacts.

The A2PP cumulative analysis considers the existing Almond Power Plant (AFC Appendix 5.1G, TID2009a), and the SJVAPCD response on foreseeable sources identified the following facilities and stationary sources (Response to DR 8 and 9):

- **Existing APP.** The existing APP, adjacent to the proposed A2PP, would experience a reduction in operation (Response to DR 2 and 15, CH2M2009f). However, the existing APP stationary sources included in A2PP's analysis of cumulative impacts is based on current operational patterns, results shown in **Air Quality Table 21**.
- **Facility #N-1090522 (Stanislaus County Bldg. Maint.).** Proposed a 900 hp Caterpillar Model C27 diesel-fired emergency standby IC engine.
- **Facility #N-1081108 (Conagra Foods).** Proposed a new vegetable branding and roasting operation served by one 0.576 MMBtu/hr natural gas fired ribbon burner (branding) and five 0.576 MMBtu/hr natural gas fired ribbon burners (roasting).
- **Facility #N-1804279 (Ceres Memorial Park).** Proposed a new Hartwick Combustion Technologies, Inc. Model APEX-250 crematory incinerator consisting of a 0.6 MMBtu/hr primary burner and a 1.2 MMBtu/hr secondary burner (afterburner).
- **Facility #N-1801297 (Winco Foods).** 1) Proposed a 480 hp Caterpillar Model C9 Tier 3 certified diesel-fired emergency standby IC engine powering an electric generator. 2) Proposed a 1,372 hp Caterpillar Model C32 Tier 2 certified diesel-fired emergency standby IC engine powering an electric generator, respectively

The maximum modeled cumulative impacts are presented below in **Air Quality Table 21**. The total impact is conservatively estimated by the maximum modeled impact plus existing maximum background pollutant levels.

**AIR QUALITY Table 21**  
**A2PP, Ambient Air Quality Impacts from Cumulative Sources ( $\mu\text{g}/\text{m}^3$ )**

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	8.2	111.1	119.3	50	239
	Annual	1.4	31.7	33.1	20	166
PM2.5	24 hour	8.2	71	79.2	35	226
	Annual	1.4	16.0	17.4	12	145
CO	1 hour	66.1	7,935	8,001.1	23,000	35
	8 hour	144.7	4,144	4,288.7	10,000	43
NO <sub>2</sub>	1 hour <sup>a</sup>	167.0	118.7	285.7	339	84
	Annual	0.6	24.7	25.3	57	44
SO <sub>2</sub>	1 hour	3.6	47.2	50.8	655	8
	24 hour	1.5	18.4	19.9	105	19
	Annual	0.5	5.3	5.8	80	7

Source: Response to DR 8 and 9 (CH2M2009f), with independent staff assessment for NO<sub>2</sub>, December 2009.  
Notes: a. The maximum 1-hour NO<sub>2</sub> concentration is based on AERMOD OLM output.

Compared with the impacts from the proposed A2PP project alone, maximum cumulative impacts caused by the existing APP would be substantially higher for PM10/PM2.5. The combined PM10/PM2.5 impacts caused by A2PP, the existing APP and other projects would be dominated by A2PP. Although the proposed A2PP causes higher cumulative impacts than the existing APP for NO<sub>2</sub>, the total NO<sub>2</sub> impacts would be dominated by other projects. Modeled concentrations of NO<sub>2</sub> are highest at the other sources, potentially exceeding newly-established, but not yet effective, federal 1-hour NO<sub>2</sub> standard.

Staff believes that particulate matter emissions from A2PP would be cumulatively considerable because they would contribute to existing violations of the PM10 and PM2.5 ambient air quality standards. Secondary impacts would also be cumulatively considerable for PM10, PM2.5, and ozone because emissions of particulate matter precursors (including SO<sub>x</sub>) and ozone precursors (NO<sub>x</sub> and VOC) would contribute to existing violations of the PM10, PM2.5, and ozone standards. To address the contribution caused by A2PP to cumulative particulate matter and ozone impacts, mitigation would offset all nonattainment pollutants and their precursors at a minimum ratio of one-to-one.

## **COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

The Preliminary Determination of Compliance (PDOC) for A2PP was dated December 2, 2009 (SJVAPCD 2009c) and the Final Determination of Compliance (FDOC) was released and dated February 16, 2010 (SJVAPCD 2010). Compliance with all District Rules and Regulations was demonstrated to the SJVAPCD's satisfaction in the PDOC and FDOC, and the FDOC conditions are presented in the Conditions of Certification. The Applicant filed only minor comments on the PDOC.

## FEDERAL

**40 CFR 51, Nonattainment New Source Review.** The FDOC includes conditions that would implement the federal nonattainment New Source Review (NSR) permit for A2PP.

**40 CFR 52.21, Prevention of Significant Deterioration.** The A2PP project would not be subject to permit requirements under the Prevention of Significant Deterioration (PSD) program because A2PP would not qualify as a new major stationary source of NO<sub>2</sub>, CO, or PM<sub>10</sub>. If, in the future, the project owner changes the project, staff proposes Condition of Certification **AQ-SC6** to ensure that the owner promptly notifies the Energy Commission to incorporate changes in permit conditions, if any.

**40 CFR 60, NSPS Subpart KKKK.** The three CTGs proposed for A2PP would be likely to comply with the applicable emission limits by achieving a NO<sub>x</sub> emission rate of 2.5 ppmvd over any one-hour period except during startup and shutdown periods and during combustor tuning.

## STATE

A2PP has demonstrated that the project would comply with Section 41700 of the California State Health and Safety Code, which restricts emissions that would cause nuisance or injury. Compliance with the FDOC (SJVAPCD 2010) and the Energy Commission staff's Conditions of Certification enable staff's affirmative finding.

## LOCAL

The SJVAPCD issued the PDOC (SJVAPCD 2009c) and FDOC (SJVAPCD 2010) stating that the proposed project is expected to comply with all applicable District rules and regulations. The District rules and regulations specify the emissions control and offset requirements for the new sources associated with A2PP. The SJVAPCD has determined that the project would use the Best Available Control Technology (BACT), and the emission reduction credits (ERCs) approved and certified by the District would fully offset project nonattainment pollutant (including precursors) emissions so that they would be consistent with District rules and regulations.

**SJVAPCD Rules 2201 and 2301, New Source Review and Offsets.** Staff identified concerns on whether the ERCs would be exchanged with an interpollutant ratio that is consistent with U.S. EPA recommendations, as discussed under **Air Quality Cumulative Impacts**.

## CONCLUSIONS

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- Construction impacts would contribute to violations of the ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> ambient air quality standards. Staff recommends Conditions of Certification **AQ-SC1** to **AQ-SC5** to mitigate the project construction-phase impacts to a less than significant level.
- Operation of the project would comply with applicable SJVAPCD rules and regulations, including New Source Review, Best Available Control Technology (BACT) requirements, and requirements to offset emission increases.

- The project would neither cause new violations of any NO<sub>2</sub>, CO, or SO<sub>2</sub> ambient air quality standards nor contribute to existing violations for these pollutants. Therefore, the project's direct NO<sub>2</sub>, CO, and SO<sub>2</sub> impacts are less than significant. However, this assessment does not include evaluation of this project's compliance with the 2010 federal 1-hour NO<sub>2</sub> standard because the standard was promulgated after this application was filed, and there is a corresponding lack of guidance and modeling tools for conducting impact analyses and determining existing background concentrations for compliance with this standard.
- The project NO<sub>x</sub> and VOC emissions would contribute to existing violations of state and federal ozone ambient air quality standards. The ozone precursor offsets required by SJVAPCD and shown in Condition of Certification **AQ-SC7** would mitigate the ozone impact to a less than significant level.
- The project PM<sub>10</sub> and PM<sub>2.5</sub> emissions and the PM<sub>10</sub>/PM<sub>2.5</sub> precursor emissions of SO<sub>x</sub> would contribute to the existing violations of state and federal PM<sub>10</sub> and PM<sub>2.5</sub> ambient air quality standards. The SJVAPCD requirements to offset PM<sub>10</sub> would be satisfied by surrendering SO<sub>x</sub> ERCs under an interpollutant exchange, and these ERCs would mitigate the PM<sub>10</sub>/PM<sub>2.5</sub> impacts to a less than significant level. The offsets would be in sufficient quantities to satisfy Energy Commission staff's longstanding position that all nonattainment pollutant and precursor emissions be offset at least one-to-one. Future projects may be subject to different interpollutant offset ratios because the U.S. EPA review of the SJVAPCD's 2008 PM<sub>2.5</sub> Plan is ongoing, and there is no evidence that the District's interpollutant trading ratios have been specifically reviewed and/or approved by U.S. EPA (see **Cumulative Impacts and Mitigation**).
- Staff recommends Condition of Certification **AQ-SC9** to limit ammonia slip from the simple-cycle system to the extent feasible.
- Global climate change and greenhouse gas (GHG) emissions from the project are discussed and analyzed in **Air Quality Appendix AIR-1**. The A2PP would exceed the Emission Performance Standard established by SB 1368 for base load generation. However, as a simple-cycle power plant, A2PP is not designed or intended for base load generation and is therefore not subject to the Emission Performance Standard. The project would be subject to the Air Resources Board mandatory GHG reporting requirements and any GHG reduction or trading requirements developed by the ARB as GHG regulations are implemented.

## PROPOSED CONDITIONS OF CERTIFICATION

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### Staff-Recommended Conditions of Certification

Staff proposes the following conditions of certification (identified as the **AQ-SCx** series of conditions) to provide mitigation during the construction phase of the project.

**AQ-SC1** Air Quality Construction Mitigation Manager (AQCM): The project owner shall designate and retain an on-site AQCM who shall be responsible for directing and documenting compliance with conditions **AQ-SC3**, **AQ-SC4** and **AQ-SC5** for the entire project site and linear facility construction. The on-site AQCM may delegate responsibilities to one or more AQCM delegates.

The AQCMM and AQCMM delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the compliance project manager (CPM).

**Verification:** At least 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM delegates. The AQCMM and all delegates must be approved by the CPM before the start of ground disturbance.

**AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP):** The project owner shall provide, for approval, an AQCMP that details the steps to be taken and the reporting requirements necessary to ensure compliance with conditions of certification **AQ-SC3**, **AQ-SC4** and **AQ-SC5**.

**Verification:** At least 60 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt. The AQCMP must be approved by the CPM before the start of ground disturbance.

**AQ-SC3 Construction Fugitive Dust Control:** The AQCMM shall submit documentation to the CPM in each monthly compliance report (MCR) that demonstrates compliance with the following mitigation measures for purposes of preventing all fugitive dust plumes from leaving the project site and linear facility routes. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

- a. All unpaved roads and disturbed areas in the project and linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of AQ-SC4. The frequency of watering may be either reduced or eliminated during periods of precipitation.
- b. No vehicle shall exceed 15 miles per hour within the construction site.
- c. The construction site entrances shall be posted with visible speed limit signs.
- d. All construction equipment vehicle tires shall be inspected and washed as necessary to be free of dirt prior to entering paved roadways.
- e. Control devices must be used to prevent trackout from occurring onto paved public roads. One or more of the following techniques must be used:
  1. A grizzly (rails, pipes or grates used to dislodge debris from vehicles before they exit the site) that extends from the intersection with the paved road surface for the full width of the unpaved exit surface for a distance of at least 25 feet; OR



2. A layer of washed gravel at least one inch or larger in diameter and three inches deep, extending from the intersection with the paved road surface for the full width of the unpaved exit surface for a distance of at least 50 feet; OR
  3. At least 100 feet of paved surface which extends from the intersection with the paved public road surface for the full width of the unpaved access road to allow mud and dirt to drop off of vehicles before exiting the site; OR
  4. An alternative trackout control device approved by the District and the CPM.
- ~~e. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.~~
  - ~~f. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.~~
  - gf. All construction vehicles shall enter the construction site through the treated entrance roadways unless an alternative route has been submitted to and approved by the CPM.
  - hg. Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.
  - ih. All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
  - ji. At least the first 500 feet of any ~~public~~ paved roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day ~~when~~ if dirt or run-off from the construction site is visible on the paved public roadways.
  - kj. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered or treated with appropriate dust suppressant compounds.
  - lk. All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks to provide at least two feet of freeboard.
  - ml. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Verification: The project owner shall include in the MCR: (1) a summary of all actions taken to maintain compliance with this condition; (2) copies of any complaints filed with the air district in relation to project construction; and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with

this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

**AQ-SC4** Dust Plume Response Requirement: The AQCMM or an AQCMM delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes with the potential to be transported off the project site, 200 feet beyond the centerline of the construction of linear facilities, or within 100 feet upwind of any regularly occupied structures not owned by the project owner indicate that existing mitigation measures are not providing effective mitigation. The AQCMM or delegate shall then implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed.

Step 1: Within 15 minutes of making such a determination, the AQCMM or delegate shall direct more intensive application of the existing mitigation methods.

Step 2: If Step 1 specified above fails to result in adequate mitigation within 30 minutes of the original determination, the AQCMM or delegate shall direct implementation of additional methods of dust suppression.

Step 3: If Step 2 specified above fails to result in effective mitigation within one hour of the original determination, the AQCMM or delegate shall direct a temporary shutdown of the activity causing the emissions.. The activity shall not restart until the AQCMM or delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM or delegate to shut down an activity, provided that the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMP shall include a section detailing how additional mitigation measures will be accomplished within the specified time limits.

**AQ-SC5** Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

- a. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags, issued by the on-site AQCMM, showing that the engine meets the conditions set forth herein.
- b. All construction diesel engines with a rating of 50 hp or higher shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless certified by the on-site AQCMM that such engine is not available for a particular item of equipment. This good faith effort shall be documented with signed written correspondence by the appropriate construction contractors, along with

documented correspondence with at least two construction equipment rental firms. In the event that a Tier 3 engine is not available for any off-road equipment larger than 50 hp, that equipment shall be equipped with a Tier 2 engine or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 2 levels, unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is “not practical” for the following, as well as other, reasons:

1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 2 equivalent emission levels and either a Tier 1 engine or the highest level of available control is being used; or
  2. The construction equipment is intended to be on site for five days or less.
  3. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not possible.
  4. Equipment owned by specialty subcontractors may be granted an exemption, for single equipment items on a case-by-case basis, if it can be demonstrated that extreme financial hardship would occur if the specialty subcontractor had to rent replacement equipment, or if it can be demonstrated that a specialized equipment item is not available by rental.
- c. The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within 10 working days of the termination and the AQCMM demonstrates that one of the following conditions exists:
1. The use of the control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.
  2. The control device is causing or is reasonably expected to cause significant engine damage.
  3. The control device is causing or is reasonably expected to cause a significant risk to workers or the public.
  4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.
- d. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer’s

specifications.

- e. All diesel heavy construction equipment shall not idle for more than five minutes, to the extent practical.
- f. Construction equipment will employ electric motors when feasible.

**Verification:** The project owner shall include in the MCR: (1) a summary of all actions taken to maintain compliance with this condition; (2) a list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that the equipment has been properly maintained; and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

**AQ-SC6** The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. EPA, and any revised permit issued by the District or U.S. EPA, for the project.

**Verification:** The project owner shall submit any proposed air permit modification to the CPM within five working days of either: 1) submittal by the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

**AQ-SC7** The project owner shall provide emission reductions in the form of offsets or emission reduction credits (ERCs) in the quantities of at least 141,561 lb NO<sub>x</sub>, 33,993 lb VOC, 65,703 lb PM<sub>10</sub>, and 38,736 lb SO<sub>x</sub> emissions. The project owner shall demonstrate that the reductions are provided in the form required by the District.

The project owner shall surrender the ERCs from among those that are listed in the District Final Determination of Compliance Conditions (SJVAPCD 2010) or a modified list, as allowed by this condition. If additional ERCs are submitted, the project owner shall submit an updated table including the additional ERCs to the CPM. The project owner shall request CPM approval for any substitutions, modifications, or additions to the listed credits.

The CPM, in consultation with the District, may approve any such change to the ERC list provided that the project remains in compliance with all applicable laws, ordinances, regulations, and standards, and that the requested change(s) will not cause the project to result in a significant environmental impact. The District must also confirm that each requested change is consistent with applicable federal and state laws and regulations.

**Verification:** The project owner shall submit to the CPM records showing that the project's offset requirements have been met prior to initiating construction. If the CPM approves a substitution or modification to the list of ERCs, the CPM shall file a statement of the approval with the project owner and the Energy Commission docket. The CPM shall maintain an updated list of approved ERCs for the project.

**AQ-SC8** The project owner shall submit to the CPM quarterly operation reports that include operational and emissions information as necessary to demonstrate compliance with the conditions of certification. The quarterly operation report shall specifically note or highlight incidences of noncompliance.

Verification: The project owner shall submit quarterly operation reports to the CPM and APCO no later than 30 days following the end of each calendar quarter. This information shall be maintained on site for a minimum of five years and shall be provided to the CPM and District personnel upon request.

~~**AQ-SC9** The ammonia (NH<sub>3</sub>) emissions from each combustion turbine (N-3299-4-0, -5-0, -6-0) shall not exceed 10.0 ppmvd @ 15% O<sub>2</sub> averaged over a 24 hour rolling average. In addition, the selective catalytic reduction (SCR) system catalyst shall be replaced, repaired, or otherwise reconditioned within 12 months if the ammonia slip exceeds 5 ppmvd @ 15% O<sub>2</sub> over a 24 hour rolling average. The SCR ammonia injection grid replacement, repair, or reconditioning scheduled event may be cancelled if the owner or operator can demonstrate that, subsequent to the initial exceedance, the ammonia slip consistently remains below 5 ppmvd @ 15% O<sub>2</sub> averaged over 24 hours, and that the initial exceedance does not accurately indicate expected future operating conditions.~~

~~Verification: The ammonia injection rate shall be monitored, and ammonia emissions calculated and recorded hourly (AQ-26 and AQ-27). A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).~~

### **District Final Determination Of Compliance Conditions (SJVAPCD 2010)**

The following conditions, **AQ-1** to **AQ-64**, apply to each of the three LM6000 PG SPRINT CTGs individually, and conditions **AQ-65** to **AQ-95** apply to the proposed A2PP facility as a whole. The SJVAPCD released its Final Determination of Compliance dated February 16, 2010, and this staff assessment reflects the SJVAPCD conditions.

### ***EQUIPMENT DESCRIPTION, UNITS N-3299-4-0, N-3299-5-0, and N-3299-6-0***

54.2 MW nominal (ISO) rating simple-cycle peak-demand power generating system consisting of a 523.2 MMBTU/HR (at nominal ISO MW rating) General Electric, aero derivative, model LM6000 PG Sprint, natural gas-fired combustion turbine generator with a water spray premixed combustion system, an oxidation catalyst and a selective catalytic reduction (SCR) system with ammonia injection.

**AQ-1** The permittee shall not begin actual on-site construction of the equipment authorized by this Authority to Construct until the lead agency satisfies the requirements of the California Environmental Quality Act (CEQA). [California Environmental Quality Act]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-2** This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule]

Verification: No verification necessary.

**AQ-3** Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4]

Verification: The project owner shall submit to both the District and CPM the Title V Operating Permit application prior to operation.

**AQ-4** The owner or operator shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-5** The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-6** No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-7** The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-8** Particulate matter emissions from the gas turbine system shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Verification: The project owner shall submit the results of source tests to both the District and CPM in accordance with **AQ-46**.

**AQ-9** No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-10** APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-11** Commissioning activities are defined as, but not limited to, all testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the construction contractor to ensure safe and reliable steady state operation of the gas turbine and associated electrical delivery systems. [District Rule 2201]

Verification: No verification necessary.

**AQ-12** Commissioning period shall commence when all mechanical, electrical, and control systems are installed and individual system startup has been completed, or when a gas turbine is first fired, whichever occurs first. The commissioning period shall terminate when the plant has completed initial source testing, completed final plant tuning, and is available for commercial operation. [District Rule 2201]

Verification: The project owner shall submit a commissioning plan to the CPM and APCO for approval at least 30 days prior to first firing of the gas turbine describing the procedures to be followed during the commissioning period and the anticipated duration of each commissioning activity.

**AQ-13** Emission rates from the gas turbine system during the commissioning period shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 40.40 lb/hr and 969.6 lb/day; VOC (as CH<sub>4</sub>) - 8.41 lb/hr and 201.8 lb/day; CO - 40.00 lb/hr and 704.6 lb/day; PM<sub>10</sub> - 2.50 lb/hr and 60.0 lb/day; or SO<sub>x</sub> (as SO<sub>2</sub>) - 1.56 lb/hr and 37.4 lb/day. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-14** During commissioning period, NO<sub>x</sub> and CO emission rate shall be monitored using installed and calibrated Continuous Emission Monitoring Systems (CEMS). [District Rule 2201]

Verification: The project owner shall submit to the CPM and APCO for approval the commissioning plan as required in **AQ-12**.

**AQ-15** The total mass emissions of NO<sub>x</sub>, VOC, CO, PM<sub>10</sub> and SO<sub>x</sub> that are emitted during the commissioning period shall accrue towards the quarterly emission limits. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-16** During commissioning period, the owner or operator shall keep records of the natural gas fuel combusted in the gas turbine system on an hourly and daily basis. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-17** Startup of this gas turbine system shall not exceed one hour per event. [District Rules 2201 and 4703]

Verification: The project owner shall submit to the District and CPM the startup event duration data demonstrating compliance with this condition as part of the quarterly operation report (**AQ-SC8**).

**AQ-18** Shutdown of this gas turbine system shall not exceed one hour per event. [District Rules 2201 and 4703]

Verification: The project owner shall submit to the District and CPM the shutdown event duration data demonstrating compliance with this condition as part of the quarterly operation report (**AQ-SC8**).

**AQ-19** During all types of operation (with an exception of ammonia injection tuning prior to the initial source test during the commissioning period), including startup and shutdown periods, ammonia injection into the SCR system shall occur once the minimum temperature at the catalyst face has been reached to ensure NO<sub>x</sub> emission reductions can occur with a reasonable level of ammonia slip. The minimum catalyst face temperature shall be determined during the final design phase of this project and shall be submitted to the District at least 30 days prior to commencement of construction. [District Rule 2201]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-20** The District shall administratively add the minimum temperature limitation established pursuant to the above condition in the final Permit to Operate. The District may administratively modify the temperature as necessary following any replacement of the SCR catalyst material. [District Rule 2201]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-21** During start-up or shutdown period, the emissions shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 25.00 lb/hr; CO - 40.00 lb/hr; VOC (as



methane) - 2.00 lb/hr; PM10 - 2.50 lb/hr; SOX (as SO<sub>2</sub>) - 1.56 lb/hr; or NH<sub>3</sub> - 7.44 lb/hr. [District Rules 2201 and 4703]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-22** Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703, 3.29]

Verification: No verification necessary.

**AQ-23** Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status ending when the fuel supply to the unit is completely turned off. [District Rule 4703, 3.26]

Verification: No verification necessary.

**AQ-24** The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703, 5.3.2]

Verification: The project owner shall submit to the District and CPM the startup and shutdown event duration data demonstrating compliance with this condition as part of the quarterly operation report (AQ-SC8).

**AQ-25** Except during startup and shutdown periods, emissions from the gas turbine system shall not exceed any of the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 5.02 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>; CO - 4.89 lb/hr and 4.0 ppmvd @ 15% O<sub>2</sub>; VOC (as methane) - 1.40 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>; PM10 - 2.50 lb/hr; or SO<sub>x</sub> (as SO<sub>2</sub>) - 1.56 lb/hr. NO<sub>x</sub> (as NO<sub>2</sub>) emission limits are based on 1-hour rolling average period. All other emission limits are based on 3-hour rolling average period. [District Rules 2201, 4001 and 4703]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-26** NH<sub>3</sub> emissions shall not exceed 10.0 ppmvd @ 15% O<sub>2</sub> over a 24-hour rolling average period. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-27** Each 3-hour rolling average period will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour rolling average for ammonia slip will commence on the hour. The twenty-four hour rolling average shall be calculated using the most recent twenty-four one-hour periods. [District Rule 2201]

Verification: No verification necessary.

**AQ-28** Emissions from the gas turbine system, on days when a startup and/or shutdown occurs, shall not exceed the following limits: NO<sub>x</sub> (as NO<sub>2</sub>) - 160.4 lb/day; CO - 187.6 lb/day; VOC - 34.8 lb/day; PM<sub>10</sub> - 60.0 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) - 37.4 lb/day, or NH<sub>3</sub> - 178.6 lb/day. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-29** Emissions from the gas turbine system, on days when a startup and/or shutdown does not occur, shall not exceed the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 120.5 lb/day; CO - 117.4 lb/day; VOC - 33.6 lb/day; PM<sub>10</sub> - 60.0 lb/day; SO<sub>x</sub> (as SO<sub>2</sub>) - 37.4 lb/day, or NH<sub>3</sub> - 178.6 lb/day. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-30** Gas turbine system shall be fired on PUC-regulated natural gas with a sulfur content of no greater than 1.0 grain of sulfur compounds (as S) per 100 dscf of natural gas. [District Rule 2201 and 40 CFR 60.4330(a)(2)]

Verification: The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

**AQ-31** NO<sub>x</sub> (as NO<sub>2</sub>) emissions from this gas turbine system shall not exceed any of the following: 1st quarter: 11,635 lb; 2nd quarter: 11,764 lb; 3rd quarter: 11,894 lb; 4th quarter: 11,894 lb. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-32** CO emissions from this gas turbine system shall not exceed any of the following: 1st quarter: 12,728 lb; 2nd quarter: 12,869 lb; 3rd quarter: 13,011 lb; 4th quarter: 13,011 lb. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-33** VOC emissions from this gas turbine system shall not exceed any of the following: 1st quarter: 2,794 lb; 2nd quarter: 2,825 lb; 3rd quarter: 2,856 lb; 4th quarter: 2,856 lb. [District Rule 2201]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-34** NH<sub>3</sub> emissions from the SCR system associated with this gas turbine system shall not exceed any of the following: 1st quarter: 15,181 lb; 2nd quarter: 15,349 lb; 3rd quarter: 15,517 lb; 4th quarter: 15,517 lb. [District Rule 2201]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-35** PM<sub>10</sub> emissions from this gas turbine system shall not exceed any of the following: 1st quarter: 5,400 lb; 2nd quarter: 5,461 lb; 3rd quarter: 5,520 lb; 4th quarter: 5,520 lb. [District Rule 2201]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-36** SO<sub>x</sub> (as SO<sub>2</sub>) emissions from the gas turbine system shall not exceed any of the following: 1st quarter: 3,183 lb; 2nd quarter: 3,219 lb; 3rd quarter: 3,255 lb; 4th quarter: 3,255 lb. [District Rule 2201]

**Verification:** A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-37** A water injection system, a selective catalytic reduction (SCR) system and an oxidation catalyst shall serve this gas turbine system. [District Rule 2201]

**Verification:** The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-38** The gas turbine engine and generator lube oil vents shall be equipped with mist eliminators or equivalent technology sufficient to limit the visible emissions from the lube oil vents to not exceed 5% opacity, except for a period not exceeding three minutes in any one hour. [District Rule 2201]

**Verification:** The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-39** Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

**Verification:** The project owner shall submit the proposed source test plan or protocol for the source tests 15 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall notify the District and CPM no later than 30 days prior to the proposed source test date and time.

**AQ-40** Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with condition **AQ-39**.

**AQ-41** Source testing to measure startup and shutdown NO<sub>x</sub>, CO, and VOC mass emission rates shall be conducted before the end of the commissioning period and at least once every seven years thereafter. CEM relative accuracy for NO<sub>x</sub> and CO shall be determined during startup and shutdown source testing in accordance with 40 CFR 60, Appendix F (Relative Accuracy Audit). If CEM data is not certifiable to determine compliance with NO<sub>x</sub> and CO startup emission limits, then startup and shutdown NO<sub>x</sub> and CO testing shall be conducted every 12 months. If an annual startup and shutdown NO<sub>x</sub> and CO relative accuracy audit demonstrates that the CEM data is certifiable, the startup and shutdown NO<sub>x</sub> and CO testing frequency shall return to the once every seven years schedule. [District Rule 1081]

Verification: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-39**). Testing for startup and shutdown emissions shall be conducted upon initial operation and at least once every seven years.

**AQ-42** Source testing to determine compliance with the NO<sub>x</sub>, CO, VOC and NH<sub>3</sub> emission rates (lb/hr and ppmvd @ 15% O<sub>2</sub>) and PM<sub>10</sub> emission rate (lb/hr) shall be conducted before the end of commissioning period and at least once every 12 months thereafter. [District Rules 2201 and 4703, 40 CFR 60.4400(a)]

Verification: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-39**). Testing for steady-state emissions shall be conducted upon initial operation and at least once every 12 months.

**AQ-43** The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract, or (ii) monitored within 60 days after the end of commissioning period and weekly thereafter. If the sulfur content is less than or equal to 1.0 gr/100 dscf for eight consecutive weeks, then the monitoring frequency shall be every six months. If the result of any six month monitoring demonstrates that the fuel does not meet the fuel sulfur content limit, weekly monitoring shall resume until compliance is demonstrated for eight consecutive weeks. [District Rule 2201 and 40 CFR 60.4360, 60.4365(a) and 60.4370(c)]

Verification: ~~The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-39**). Testing for steady-state emissions shall be conducted upon initial operation and at least once every 12 months.~~ The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

**AQ-44** The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.4400(1)(i)]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with condition **AQ-39**.

**AQ-45** Fuel sulfur content shall be monitored using one of the following methods: ASTM Methods D1072, D3246, D4084, D4468, D4810, D6228, D6667 or Gas Processors Association Standard 2377. [40 CFR 60.4415(a)(1)(i)]

Verification: The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

**AQ-46** The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Verification: The project owner shall submit the report of the source test results to both the District and CPM within 60 days of the last day of tests.

**AQ-47** A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of natural gas combusted in the unit shall be installed, utilized and maintained. [District Rules 2201 and 4703]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-48** The owner or operator shall install, certify, maintain, operate and quality-assure a Continuous Emission Monitoring System (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO and O<sub>2</sub> concentrations. Continuous emissions monitor(s) shall monitor emissions during all types of operation, including during startup and shutdown periods, provided the CEMS passes the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEMS cannot be demonstrated during startup conditions, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.4340(b)(1) and 40 CFR 60.4345(a)]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission to verify the continuous monitoring system is properly installed and operational.

**AQ-49** The NO<sub>x</sub> and O<sub>2</sub> CEMS shall be installed and certified in accordance with the requirements of 40 CFR Part 75. The CO CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance

Specification 4A (PS 4A), or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.4345(a)]

**Verification:** The project owner shall submit to the CPM and APCO CEMS audits demonstrating compliance with this condition as part of the quarterly operation report **(AQ-SC8)**.

**AQ-50** The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.4345(b)]

**Verification:** The project owner shall submit to the CPM and APCO CEMS audits demonstrating compliance with this condition as part of the quarterly operation report **(AQ-SC8)**.

**AQ-51** The CEMS data shall be reduced to hourly averages as specified in §60.13(h) and in accordance with §60.4350, or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.4350]

**Verification:** The project owner shall submit to the CPM and APCO CEMS data reduced in compliance with this condition as part of the quarterly operation report **(AQ-SC8)**.

**AQ-52** In accordance with 40 CFR Part 60, Appendix F, 5.1, the CO CEMS must be audited at least once each calendar quarter, by conducting cylinder gas audits (CGA) or relative accuracy audits (RAA). CGA or RAA may be conducted three of four calendar quarters, but no more than three calendar quarters in succession. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

**Verification:** The project owner shall submit to the CPM and APCO CEMS audits demonstrating compliance with this condition as part of the quarterly operation report **(AQ-SC8)**.

**AQ-53** The owner/operator shall perform a RATA for CO as specified by 40 CFR Part 60, Appendix F, 5.1.1, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]

**Verification:** The project owner shall submit to the CPM and APCO CEMS audits demonstrating compliance with this condition as part of the quarterly operation report **(AQ-SC8)**.

**AQ-54** The NO<sub>x</sub> and O<sub>2</sub> CEMS shall be audited in accordance with the applicable requirements of 40 CFR Part 75. Linearity reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

Verification: The project owner shall submit to the CPM and APCO CEMS audits demonstrating compliance with this condition as part of the quarterly operation report (AQ-SC8).

**AQ-55** Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

**AQ-56** The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system and shall make CEMS data available to the District's automated polling system on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080]

Verification: The project owner shall provide a Continuous Emission Monitoring System (CEM) protocol for approval by the APCO and CPM at least 60 days prior to installation of the CEM. The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

**AQ-57** The owner or operator shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.7(b)]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-SC8).

**AQ-58** The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

**AQ-59** Monitor Downtime is defined as any unit operating hour in which the data for NO<sub>x</sub>, or O<sub>2</sub> concentrations is either missing or invalid. [40 CFR 60.4380(b)(2)]

Verification: No verification necessary.

**AQ-60** The owner or operator shall maintain records of the following items: 1) hourly and daily emissions, in pounds, for each pollutant listed in this permit on the days startup and or shutdown of the gas turbine system occurs, 2) hourly and daily emissions, in pounds, for each pollutant in this permit on the days startup and or shutdown of the gas turbine system does not occur, 3) quarterly emissions, in pounds, for each pollutant listed in this permit. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-61** The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, total hours of operation, the type and quantity of fuel used, date/time and duration of each start-up and each shutdown event. [District Rule 2201 and 4703, 6.2.6, 6.2.8, 6.2.11]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-62** The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703, 6.2.4]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-63** The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Date, time intervals, data and magnitude of excess NO<sub>x</sub> emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.4375(a) and 60.4395]

Verification: The project owner shall submit to the District and CPM the report of CEM operations, emission data, and monitor downtime data in the quarterly operation report (**AQ-SC8**) that follows the definitions of this condition.

**AQ-64** The owner or operator shall submit to the District information correlating the NO<sub>x</sub> control system operating parameters to the associated measured NO<sub>x</sub> output. The information must be sufficient to allow the District to determine compliance with the NO<sub>x</sub> emission limits of this permit when the CEMS is not operating properly. [District Rule 4703, 6.2.5]



Verification: The project owner shall submit to the District and CPM the report of CEM operations, emission data, and monitor downtime data in the quarterly operation report (**AQ-SC8**).

**AQ-65** Prior to operating under ATCs N-3299-4-0, N-3299-5-0 and N-3299-6-0, the permittee shall mitigate the following quantities of NOx: 1st quarter: 34,905 lb, 2nd quarter: 35,292 lb, 3rd quarter: 35,682 lb, and 4th quarter: 35,682 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

**AQ-66** NOx ERC S-3113-2 (or a certificate split from this certificate) shall be used to supply the required NOx offsets, unless a revised offsetting proposal is received and approved by the District. Following the revisions, this Authority to Construct permit shall be re-issued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to re-issuance of this Authority to Construct permit. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

**AQ-67** Prior to operating under ATCs N-3299-4-0, N-3299-5-0 and N-3299-6-0, the permittee shall mitigate the following quantities of VOC: 1st quarter: 6,113 lb, 2nd quarter: 6,113 lb, 3rd quarter: 6,114 lb, and 4th quarter: 6,114 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

**AQ-68** VOC ERC C-1008-1 (or a certificate split from this certificate) shall be used to supply the required VOC offsets, unless a revised offsetting proposal is received and approved by the District. Following the revisions, this Authority to Construct permit shall be re-issued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to re-issuance of this Authority to Construct permit. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

**AQ-69** Prior to operating under ATCs N-3299-4-0, N-3299-5-0 and N-3299-6-0, the permittee shall mitigate the following quantities of PM10: 1st quarter: 13,506 lb, 2nd quarter: 13,507 lb, 3rd quarter: 13,507 lb, and 4th quarter: 13,507 lb.

Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/06). [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

**AQ-70** SOx ERC S-3129-5 (or a certificate split from this certificate) shall be used to supply the required PM10 offsets, unless a revised offsetting proposal is received and approved by the District. Following the revisions, this Authority to Construct permit shall be re-issued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to re-issuance of this Authority to Construct permit. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

**AQ-71** The District has authorized to use SOx reductions to offset emissions increase in PM10 at SOx/PM10 interpollutant offset ratio of 1.00. [District Rule 2201]

Verification: No verification necessary.

**AQ-72** Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]

Verification: A summary of significant construction activities and monitoring records required shall be included in the construction monthly compliance report (**AQ-SC3**).

**AQ-73** An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]

Verification: The final Dust Control Plan shall be included within the Air Quality Construction Mitigation Plan and submitted to the District and CPM not less than 30 days prior to the start of any construction activity (**AQ-SC2**), and a summary of significant construction activities and monitoring records required shall be included in the construction monthly compliance report (**AQ-SC3**).

**AQ-74** An owner/operator shall prevent or clean up any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 or Rule 8011. [District Rules 8011 and 8041]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-75** Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-76** Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-77** Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-78** Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20% opacity. [District Rule 8011 and 8071]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-79** On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with 3 axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20% opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-80** Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-81** Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031 and 8071]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

**AQ-82** The owners and operators of each affected source and each affected unit at the source shall have an Acid Rain permit and operate in compliance with all permit requirements. [40 CFR 72]

Verification: ~~The project owner shall submit to both the District and CPM the Acid Rain Program application after completing commissioning.~~ make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-83** The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75. [40 CFR 75]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-84** The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR 75]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-85** The owners and operators of each source and each affected unit at the source shall: (i) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR 73]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-86** Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR 77]

Verification: No verification necessary.

**AQ-87** Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR 72]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-88** An allowance shall not be deducted in order to comply with the requirements under 40 CFR part 73, prior to the calendar year for which the allowance was allocated. [40 CFR 73]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-89** An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR 72.7 and 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization. [40 CFR 72]

Verification: No verification necessary.

**AQ-90** An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right. [40 CFR 72]

Verification: No verification necessary.

**AQ-91** The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77. [40 CFR 77]

Verification: The project owner shall submit to both the District and CPM the proposed offset plan as required by the federal rule.

**AQ-92** The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) Pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77. [40 CFR 77]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-93** The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site

beyond such five-year period until such documents are superceded because of the submission of a new certificate of representation changing the designated representative. [40 CFR 72]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-94** The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR 75]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

**AQ-95** The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR 75 Subpart I. [40 CFR 75]

Verification: ~~The project owner shall submit to both the District and CPM the Acid Rain Program application after completing commissioning.~~ make the site available for inspection by representatives of the District, ARB, and the Commission upon request.

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# AIR QUALITY APPENDIX AIR-1

## Greenhouse Gas Emissions

Testimony of Tao Jiang and Brewster Birdsall, P.E., QEP

### SUMMARY OF CONCLUSIONS

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The Almond 2 Power Plant (A2PP) project is a proposed addition to the state's electricity system. It would be an efficient, new, dispatchable natural gas-fired simple-cycle power plant that would produce greenhouse gas (GHG) emissions while generating electricity for California consumers. Its addition to the system would displace other less efficient plants and facilitate the integration of renewable resources. Because the project will improve the efficiency of existing system resources, the addition of A2PP would contribute to a reduction of the California and overall Turlock Irrigation District (TID) system GHG<sup>1</sup> emissions and GHG emission rate average.

Staff notes that mandatory reporting of the GHG emissions provides the necessary information for the California Air Resources Board (ARB) to develop greenhouse gas regulations and/or trading markets required by the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Safety Code sections 38500 et seq.). The project may be subject to additional reporting requirements and GHG reductions or trading requirements as these regulations are more fully developed and implemented.

The Energy Commission adopted an order initiating an informational (OII) proceeding (08-GHG OII-1) to explore methods of assessing the greenhouse gas impacts of proposed new power plants in accordance with the California Environmental Quality Act (CEQA). This analysis provides the staff's conclusions regarding greenhouse gas emissions for this siting case. Future power plant siting cases are likely to be reviewed with the benefit of new information and policy direction from the Energy Commission and other agencies including ARB. This analysis recognizes that "prudent use" of natural gas for electricity generation will serve to optimize the system (for integrating intermittent renewable generation and providing reliability), but, without further analysis and policy direction by the Commission to refine this general understanding, this analysis leaves the implications for optimizing the system to future cases (CEC 2009a).

The operation of A2PP would affect the overall electricity system operation and GHG emissions in several ways:

- A2PP would provide flexible, dispatchable power necessary to integrate some of the growing generation from intermittent renewable sources, such as wind and solar generation.
- A2PP would displace some less efficient local generation in the dispatch order of gas-fired facilities that are required to provide electricity reliability in the TID system.

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<sup>1</sup> Fuel-use closely correlates to carbon dioxide (CO<sub>2</sub>) emissions from natural gas-fired power plants. And since CO<sub>2</sub> emissions from the fuel combustion dominate greenhouse gas (GHG) emissions from power plants, the terms CO<sub>2</sub> and GHG are used interchangeably in this section.



- A2PP would facilitate to some degree the replacement of out-of-state coal electricity generation that must be phased out in conformance with the State's new Emissions Performance Standard.
- A2PP could facilitate to some extent the replacement of generation provided by aging power plants that use once-through cooling.

The proposed A2PP would be designed to provide flexible, dispatchable power with simple-cycle units that are quick-starting and fast-ramping. The project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, staff believes that the project would result in a net reduction in GHG emissions from power plants, would not worsen, but would improve, current conditions, and would, thus, not result in impacts that are cumulatively significant.

Staff concludes that the short-term emission of greenhouse gases during construction would be sufficiently reduced by "best practices" and would not be significant.

The project would not be subject to the limits of the greenhouse gas Emission Performance Standard (EPS) (Title 20, California Code of Regulations, Section 2900 et seq.) because A2PP is a simple-cycle power plant, designed and intended to provide electricity at an annualized plant capacity factor of less than 60% (CH2M2009h).

## INTRODUCTION

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Greenhouse gas (GHG) emissions are not criteria pollutants, but they are discussed in the context of cumulative impacts. In December 2009, the U.S. Environmental Protection Agency (EPA) declared that greenhouse gases (GHGs) threaten the public health and welfare of the American people (the endangerment finding), and this became effective on January 14, 2010. Regulating GHG at the federal level may be furthered by the Prevention of Significant Deterioration (PSD) program and New Source Review (NSR) rule changes proposed by U.S. EPA on September 30, 2009. These requirements could eventually apply to new facilities whose carbon dioxide-equivalent emissions exceed 25,000 tons per year (U.S.EPA2009c). Federal rules that became effective December 29, 2009 (40 CFR 98) already require reporting of GHG. As federal rulemaking evolves, staff focuses on analyzing the ability of the project to comply with existing state-level policies and programs for GHG. The state has demonstrated its intent to address global climate change through research, adaptation,<sup>2</sup> and GHG inventory reductions. In that context, staff evaluates the GHG emissions from the proposed project, presents information on GHG emissions related to electricity generation, and describes the applicable GHG standards and requirements.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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The following federal, state, and local laws and policies in **Greenhouse Gas Table 1** pertain to the control and mitigation of greenhouse gas emissions. Staff's analysis examines the project's compliance with these requirements.

<sup>2</sup> While working to understand and reverse global climate change, it is prudent to also adapt to potential changes in the state's climate (for example, changing rainfall patterns).

**Greenhouse Gas Table 1**  
**Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable Law	Description
<b>Federal</b>	
Mandatory Reporting of Greenhouse Gases (40 CFR 98, Subpart D)	This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO <sub>2</sub> equivalent emissions per year.
<b>State</b>	
California Global Warming Solutions Act of 2006, AB 32 (Stats. 2006; Chapter 488; Health and Safety Code sections 38500 et seq.)	California Global Warming Solutions Act of 2006. This act requires the California Air Resources Board (ARB) to enact standards that will reduce GHG emissions to 1990 levels. Electricity production facilities will be regulated by the ARB.
California Code of Regulations, tit. 17, Subchapter 10, Article 2, sections 95100 et. seq.	ARB regulations implementing mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006 (Stats. 2006; Chapter 488; Health and Safety Code sections 38500 et seq.)
California Code of Regulations, tit. 20, section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009	The regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes carbon dioxide per megawatt-hour (0.5 MTCO <sub>2</sub> /MWh) or 1,100 pounds carbon dioxide per megawatt-hour (1,100 lb CO <sub>2</sub> /MWh).

## GLOBAL CLIMATE CHANGE AND CALIFORNIA

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of greenhouse gases, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Indeed, the California Legislature finds that “[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California” (Health & Safety Code, sec. 38500).

In 1998, the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003, the Energy Commission recommended that the state require reporting of greenhouse gases or global climate change<sup>3</sup> emissions as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). Three years later, California enacted the California Global Warming Solutions Act of 2006 (AB 32). It requires the California Air Resources Board (ARB) to adopt standards that will reduce statewide GHG emissions to statewide GHG emissions levels in 1990, with such reductions to be achieved by 2020.<sup>4</sup> To achieve this, ARB has a mandate to define the 1990 emissions levels and achieve the maximum technologically feasible and cost-effective GHG emission reductions.

The ARB adopted early action GHG reduction measures in October 2007, adopted mandatory reporting requirements and the 2020 statewide target in December 2007,

<sup>3</sup> Global climate change is the result of greenhouse gases, or emissions with global warming potentials, affecting the energy balance and, thereby, climate of the planet. The terms greenhouse gases (GHG) and global climate change (GCC) gases are used interchangeably.

<sup>4</sup> Governor Schwarzenegger has also issued Executive Order S-3-05 establishing a goal of 80% below 1990 levels by 2050.

and adopted a statewide scoping plan in December 2008 to identify how emission reductions will be achieved from significant sources of GHG via regulations, market mechanisms, and other actions. ARB staff is developing regulatory language to implement its plan and holds ongoing public workshops on key elements of the recommended GHG reduction measures, including market mechanisms (ARB 2006). The regulations must be effective by January 1, 2011, and mandatory compliance commences on January 1, 2012. The mandatory reporting requirements are effective for electric generating facilities over 1 megawatt (MW) capacity, and the due date for initial reports by existing facilities this first year was June 1, 2009.

Examples of strategies that the state might pursue for managing GHG emissions in California, in addition to those recommended by the Energy Commission and the Public Utilities Commission, were identified in the California Climate Action Team's Report to the Governor (CalEPA 2006). The scoping plan approved by the ARB in December 2008 builds upon the overall climate policies of the Climate Action Team report and shows the recommended strategies to achieve the goals for 2020 and beyond. Some strategies focus on reducing consumption of petroleum across all areas of the California economy. Improvements in transportation energy efficiency (fuel economy) and land use planning and alternatives to petroleum-based fuels are slated to provide substantial reductions by 2020 (CalEPA 2006). The scoping plan includes a 33% Renewables Portfolio Standard (RPS), aggressive energy efficiency targets, and a cap-and-trade system that includes the electricity sector (ARB 2008c).

It is possible that GHG reductions mandated by ARB will be non-uniform or disproportional across emitting sectors, in that most reductions will be based on cost-effectiveness (i.e., the greatest effect for the least cost). For example, the ARB proposes a 40% reduction in GHG from the electricity sector, even though the sector currently only produces about 25% of the state's GHG emissions. In response, in September 2008 the Energy Commission and the California Public Utilities Commission provided recommendations (CPUC 2008) to ARB on how to achieve such reductions through both programmatic and regulatory approaches and identified points of regulation within the sector should ARB decide that a multi-sector cap and trade system is warranted.

The Energy Commission's *2007 Integrated Energy Policy Report* (IEPR) also addresses climate change within the electricity, natural gas, and transportation sectors (CEC 2007a). For the electricity sector, it recommends such approaches as pursuing all cost-effective energy efficiency measures and meeting the Governor's stated goal of a 33% Renewables Portfolio Standard.

SB 1368,<sup>5</sup> also enacted in 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibit California utilities from entering into long-term commitments with any base load facilities that exceed the Greenhouse Gas Emission Performance Standard of 0.500 metric tonnes CO<sub>2</sub> per megawatt-hour<sup>6</sup> (1,100 pounds CO<sub>2</sub>/MWh). Specifically, the SB 1368 Emission Performance Standard (EPS) applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five

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<sup>5</sup> California Code of Regulations, Title 20 § 2900 and Public Utilities Code § 8340 et seq.

<sup>6</sup> The Emission Performance Standard only applies to carbon dioxide and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.

years or more, including contracts with power plants located outside of California. If a project, in-state or out of state, plans to sell base load electricity to California utilities, the utilities will have to demonstrate that the project complies with the EPS. *Base load* units are defined as those designed and intended to provide electricity at an annualized plant capacity factor of at least 60%. Compliance with the EPS is determined by dividing the annual average carbon dioxide emissions by the annual average net electricity production in MWh. This determination is based on capacity factors, heat rates, and corresponding emissions rates that reflect the *expected* operations of the power plant and not on full load heat rates [20 CCR §2903(a)].

In addition to these programs, California is involved in the Western Climate Initiative, a multi-state and international effort to establish a cap and trade market to reduce greenhouse gas emissions in the western United States and the Western Electricity Coordinating Council (WECC). The timelines for the implementation of this program are similar to those of AB 32, with full roll-out beginning in 2012. As with AB 32, the electricity sector has been a major focus of attention.

## **ELECTRICITY PROJECT GREENHOUSE GAS EMISSIONS**

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Electricity use can be as simple as turning on a switch to operate a light or fan. The system to deliver the adequate and reliable electricity supply is complex and variable. But it operates as an integrated whole to meet demand, such that the dispatch of a new source of generation unavoidably curtails or displaces one or more less efficient or less competitive existing sources. Within the system, generation resources provide electricity, or energy, generating capacity, and ancillary services to stabilize the system and facilitate electricity delivery, or movement, over the grid. *Capacity* is the instantaneous output of a resource, in megawatts. *Energy* is the capacity output over a unit of time, for example an hour or year, generally reported as megawatt-hours or gigawatt-hours (GWh). Ancillary services<sup>7</sup> include regulation, spinning reserve, non-spinning reserve, voltage support, and black start capability. Individual generation resources can be built and operated to provide only one specific service. Alternatively, a resource may be able to provide one or all of these services, depending on its design and constantly changing system needs and operations.

California is actively pursuing policies to reduce GHG emissions that include adding non-GHG emitting renewable generation resources to the system mix. In this context, and because fossil-fueled resources produce GHG emissions, it is important to consider the role and necessity of also adding fossil-fuel resources. A report prepared as a response to the GHG OII (CEC 2009a) defines five roles that gas-fired power plants are likely to fulfill in a high-renewables, low-GHG system (CEC 2009b, pp 93 and 94):

1. Intermittent generation support
2. Local capacity requirements
3. Grid operations support
4. Extreme load and system emergency
5. General energy support.

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<sup>7</sup> See page CEC 2009b, page 95.

The Energy Commission staff-sponsored report reasonably assumes that non-renewable power plants added to the system would almost exclusively be natural gas-fueled. Nuclear, geothermal, and biomass plants are generally base load and not dispatchable. Solid fueled projects are also generally base load, not dispatchable and carbon sequestration technologies needed to reduce the GHG emission rates to meet the EPS are not yet developed (CEC 2009b, p. 92). Further, California has almost no sites available to add highly dispatchable hydroelectric generation.

Generation of electricity using any fossil fuel, including natural gas, can produce greenhouse gases with the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. For fossil fuel-fired power plants, the GHG emissions include primarily carbon dioxide, with much smaller amounts of nitrous oxide (N<sub>2</sub>O, not NO or NO<sub>2</sub>, which are commonly known as NO<sub>x</sub> or oxides of nitrogen), and methane (CH<sub>4</sub> – often from unburned natural gas). Also included are sulfur hexafluoride (SF<sub>6</sub>) from high voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO<sub>2</sub> emissions from the carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials. Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO<sub>2</sub>E) metric tonnes (MT) for ease of comparison.

## CONSTRUCTION

Construction of industrial facilities such as power plants requires coordination of a variety of equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. Construction of A2PP would involve 12 months of activity. The Applicant provided a GHG emission estimate for the entirety of the construction phase (CH2M2009f). The GHG emissions estimate, presented below in **Greenhouse Gas Table 2**, includes the total emissions for the 12 months of construction activity in terms of CO<sub>2</sub>-equivalent.

**Greenhouse Gas Table 2**  
**A2PP, Estimated Potential Construction Greenhouse Gas Emissions**

Construction Source	Construction-Phase GHG Emissions (MTCO <sub>2</sub> E) <sup>a</sup>
Onsite construction	1,070
Deliveries to construction site	342
Worker travel to/from construction site	1,282
Construction of linear facilities	18
Deliveries to linear facilities construction areas	8
Worker travel to/from linear facilities construction areas	160
<b>Construction Total</b>	<b>2,880</b>

Source: AFC Table 5.1E-5 and Response to Data Request 7, Attachment DR7-1 (CH2M2009f, CH2M2009k).  
Notes: a. One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms

## OPERATIONS

The proposed A2PP a nominal 174-megawatt (MW) facility consisting of three General Electric (GE) Energy LM6000PG SPRINT natural gas-fired turbine generators and associated equipment. ~~While TID does not intend to run A2PP as a base load facility, TID proposes to permit A2PP to have an annual plant availability of 92 to 98%. It would be possible for plant availability to exceed 98% for a given 12-month period. However, the exact operational profile of this peaking plant will depend on the variable demand within TID's own Balancing Authority. TID does not intend to operate A2PP as a baseload unit. TID's stated objectives for A2PP support this intent. Some of the basic project objectives are to provide fast-starting, load-following peaking generating units to help maintain TID's Balancing Authority tie line schedules with neighboring Balancing Authorities; to help provide firming sources for TID's existing and future intermittent renewable resources in support of TID's Renewable Portfolio Standard (RPS) and greenhouse gas (GHG) goals; and to allow for better economic dispatch of TID's existing generation fleet system-wide.~~

The design of A2PP supports these objectives. The chosen design for the A2PP facility, fast starting, simple-cycle CTGs, allows A2PP to respond to sudden increases in load, or firm the sudden drop off in generation from intermittent renewable resources. In addition, with the construction of A2PP, TID will be able to enhance reliability within its Balancing Authority. A baseload plant would not be able to fulfill these objectives. This is why TID instead seeks to operate A2PP as a peaking facility."

The primary sources of GHG would be the natural gas fired combustion turbines. There would also be a small amount of GHG emissions from sulfur hexafluoride (SF<sub>6</sub>) leaking from new electrical component equipment. The employee and delivery traffic GHG emissions from off-site activities are negligible in comparison with the gas turbine GHG emissions.

**Greenhouse Gas Table 3** shows what the proposed project, as permitted, could potentially emit in greenhouse gases on an annual basis. All emissions are converted to CO<sub>2</sub>-equivalent and totaled. Electricity generation GHG emissions are generally dominated by CO<sub>2</sub> emissions from the carbon-based fuels; other sources of GHG are typically small and also are more likely to be easily controlled or reused/recycled, but are nevertheless documented here as some of the compounds have very high relative global warming potentials. A small amount of additional SF<sub>6</sub> containing equipment will be required for this project, and the leakage of SF<sub>6</sub> and its CO<sub>2</sub> equivalent emissions have been estimated.

**Greenhouse Gas Table 3  
A2PP, Estimated Potential Greenhouse Gas (GHG) Emissions**

<b>Emissions Source</b>	<b>Operational GHG Emissions (MTCO<sub>2</sub>E/yr)<sup>a</sup></b>
Combustion Turbine Generators (Three CTGs)	727,633
Switchyard Breakers	38
<b>Total Project GHG Emissions, excluding Off-Site Emissions (MTCO<sub>2</sub>E/yr)</b>	<b>727,671</b>
Estimated Annual Energy Output (MWh/yr) <sup>b</sup>	1,425,217
<b>Estimated Annualized GHG Performance (MTCO<sub>2</sub>/MWh)</b>	<b>0.510</b>

Sources: AFC Appendix Table 5.1A-6 (TID2009a).

Notes: a. One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

b. Based on maximum permitted capacity of 8,760 hours of annual operation. (TID2009a, AFC Table 5.1A-6).

The proposed project would be permitted, on an annual basis, to emit over 727,671 metric tonnes of CO<sub>2</sub>-equivalent per year if operated at its maximum permitted level. The proposed A2PP, at 0.51 MTCO<sub>2</sub>/MWh, would slightly exceed the limits of SB 1368 and the Greenhouse Gas Emission Performance Standard of 0.500 MTCO<sub>2</sub>/MWh for base load generation. However, A2PP is not designed or intended for base load generation, even though TID has requested permission to run the facility at greater than a 60% capacity factor. This simple-cycle facility is not expected to operate at greater than 33% capacity factor, and Energy Commission staff experience indicates that this type of facility is only likely to exceed 30% annual capacity factor in an emergency or crisis situation. Therefore, although the facility would be allowed to operate at greater than 60% capacity factor if needed, staff agrees with the Applicant that A2PP is not designed or intended to do so.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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Staff assesses the cumulative effects of GHG emissions caused by both construction and operation. As the name implies, construction impacts result from the emissions occurring during the construction of the project. The operation impacts result from the emissions of the proposed project during operation. Staff is continuing to monitor development of AB 32 Scoping Plan implementation efforts and general trends and developments affecting GHG regulation in the electricity sector.

The impact of GHG emissions caused by this natural gas-fired facility is characterized by considering how the power plant would affect the overall electricity system. The integrated electricity system depends on generation resources to provide energy and satisfy local capacity needs. Energy Commission staff follows the concept of a “blueprint” to describe the long-term roles of fossil-fueled power plants in California’s electricity system (CEC 2009a). The five separate roles that gas-fired power plants are most likely to fulfill in the future of a high-renewables, low-GHG system include: 1) Intermittent generation support; 2) Local capacity requirements; 3) Grid operations support; 4) Extreme load and system emergencies support; and 5) General energy support (CEC 2009b, p. 93). A2PP is analyzed here for its role in providing local capacity and generation and general energy support for expected generation retirements or replacements.

### **CONSTRUCTION IMPACTS**

Staff does not believe that the minor GHG emission increases from construction activities would be significant for several reasons. First, the period of construction would be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures that staff recommends to address criteria pollutant emissions, such as limiting idling times and requiring, as appropriate, using equipment that meets the latest criteria pollutant emissions standards would further minimize greenhouse gas emissions to the extent feasible. The use of newer equipment will increase fuel efficiency and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment.

## DIRECT/INDIRECT OPERATION IMPACTS AND MITIGATION

New, efficient, natural gas-fired generation promotes the state's efforts to improve GHG electrical generation efficiencies and, therefore, reduce the amount of natural gas used by electricity generation and greenhouse gas emissions. As the *2007 Integrated Energy Policy Report* (CEC 2007a, p. 184) noted:

New natural gas-fueled electricity generation technologies offer efficiency, environmental, and other benefits to California, specifically by reducing the amount of natural gas used—and with less natural gas burned, fewer greenhouse gas emissions. Older combustion and steam turbines use outdated technology that makes them less fuel- and cost-efficient than newer, cleaner plants. The 2003 and 2005 IEPRs noted that the state could help reduce natural gas consumption for electric generation by taking steps to retire older, less efficient natural gas power plants and replace or repower them with new, more efficient power plants.

Thus, in the context of the Energy Commission's *Integrated Energy Policy Report*, the A2PP furthers the state's strategy to promote generation system efficiency and reduce fuel use and GHG emissions. As stated in the *2009 Framework for Evaluating Greenhouse Gas Implications of Natural Gas-Fired Power Plants in California* (CEC 2009b, p.23):

When one resource is added to the system, all else being held equal, another resource will generate less power. If the new resource has a lower cost or fewer emissions than the existing resource mix, the aggregate system characteristics will change to reflect the cheaper power and lower GHG emissions rate.

Net GHG emissions for the integrated electric system will decline when new gas-fired power plants are added to: 1) permit the penetration of renewable generation to the 33% target; 2) improve the overall efficiency of the electric system; or 3) serve load growth or capacity needs more efficiently than the existing fleet (CEC 2009b, p. 98).

### **The Role of A2PP in Local Generation Displacement**

The proposed A2PP would have a net heat rate of approximately 9,835 Btu/kWh<sup>8</sup>, which leads to an estimated GHG performance factor of approximately 0.51 MTCO<sub>2</sub>/MWh. The heat rate, energy output and GHG emissions of other local generation resources are listed in **Greenhouse Gas Table 4**. Compared to the other existing simple-cycle and peaker power plants in the TID Balancing Authority area, the proposed A2PP would be more efficient, and emit fewer GHG emissions during any hour of operation. Local generating units with the best (lowest) heat rate or lowest GHG performance factor generally operate more than other units with higher heat rates, as shown by the relative amount of energy (GWh) produced in 2008 from the local units. However, dispatch order can change, or deviate from economic or efficiency dispatch, in any one year or due to other concerns such as permit limits, contractual obligations, droughts, heat waves, local reliability needs or emergencies. These deviations, however, are likely to occur infrequently and are unplanned.

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<sup>8</sup> Based on the High Heating Value (HHV) of the fuel(s) used. HHV is used for all heat rate and fuel conversions to GHG mass emissions that are discussed in this document.



**Greenhouse Gas Table 4**  
**San Joaquin and Stanislaus Counties, Local Generation Heat Rates and**  
**2008 Energy Outputs**

Plant Name	Heat Rate (Btu/kWh) <sup>a</sup>	2008 Energy Output (GWh)	GHG Performance (MTCO2/MWh)
Lodi Energy Center (under agency review)	7,112	Potential approval in 2010	0.377
Walnut Energy Center	7,822	1,578	0.415
Woodland 1	8,761	416	0.465
Tracy Combined Cycle (under agency review)	8,056	Potential approval in 2010	0.474
Lodi STIG	9,000	72	0.477
Almond Power Plant	11,074	62	0.587
MID Ripon	11,908	33	0.631
McClure 1, 2	15,222	18	0.807
Tracy Peaker Plant	12,310	11	0.652
Walnut Power Plant (Peaker)	19,098	1	1.013
Proposed TID A2PP (at permitted limit)	9,835	1,425 (max est.)	0.510

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER); shows the proposed TID A2PP at the permitted capacity of 8,760 hours annually although it is only expected to operate up to 5,000 hours on annualized basis (CH2M2009h).

Notes: a. Based on the Higher Heating Value or HHV of the fuel.

The proposed A2PP would not be physically within a major local reliability area like the Greater Bay Area. However, it would provide local reliability and displace other power plants within the TID Balancing Authority area, which allows TID to better use the existing Walnut Energy Center and displacement of energy from the existing, less-efficient Almond and Walnut power plants (CH2M2009h).

### **The Role of A2PP in the Integration of Renewable Energy**

As California moves towards an increased reliance on renewable energy, the bulk of renewable generation available to, and used in California, will be intermittent wind generation with some intermittent solar (CEC 2009b, p.3). To accommodate the increased variability in generation due to increasing renewable penetration, compounded by increasing load variability, control authorities such as the California Independent System Operator (CAISO) need increased flexibility from other generation resources such as hydro generation, dispatchable pump loads, energy storage systems, and fast ramping and fast starting fossil fuel generation resources (CAISO 2007, p. 14).

A2PP would provide flexible, dispatchable and fast ramping<sup>9</sup> power consistent with the CAISO use of this term, and it would not obstruct penetration of renewable energy. A2PP will serve as an important firming source for intermittent renewable resources in support of TID's RPS and GHG goals (CH2M2009f). TID claims that A2PP would allow more efficient use of TID's wind resource from the Pacific Northwest and other renewable resources. In 2004, TID Board adopted its own 20% RPS standard by 2017. The wind project has brought 28% RPS to TID's profile. Therefore, TID has met its own RPS goal to date.

<sup>9</sup> The CAISO categorizes *fast-ramping* as a generator capable of going from lowest power to highest in under 20 minutes, or greater than 10 MW per minute.

The proposed simple-cycle LM6000PG gas turbines for A2PP provide TID with quick starting and fast ramping power. TID investigated potentially using combined cycle turbines with quick-startup packages, but found them to be too large to meet TID's load increment criteria (CH2M2009f).

The amount of dispatchable fossil fuel generation will have to be significantly increased to meet the statewide 20% RPS (CAISO 2007, p.113); the 33% RPS will require even more dispatchable resources to integrate the renewables. However, this does not suggest the existing and new fossil fuel capacity will operate more. **Greenhouse Gas Table 5** shows how the build-out of either the 20% or the 33% statewide RPS goal will affect generation from new and existing non-renewable resources. Should California reach its goal of meeting 33% of its retail demand in 2020 with renewable energy, non-renewable, most likely fossil-fueled, energy needs will fall by over 36,000 GWh/year. In other words, all growth will need to come from renewable resources to achieve the 33% RPS. And some existing and new fossil units will generate less energy than they currently do, given the expected growth in retail sales.

These assumptions are conservative in that the forecasted growth in retail sales assumes that the impacts of planned increases in expenditures on (uncommitted) energy efficiency are already embodied in the retail sales forecast.<sup>10</sup> Energy Commission staff estimates that as much as 18,000 GWh of additional savings due to uncommitted energy efficiency programs may be forthcoming.<sup>11</sup> This would reduce non-renewable energy needs by a further 12,000 GWh given a 33% RPS.

**Greenhouse Gas Table 5**  
**Estimated Changes in Non-Renewable Energy Potentially Needed to Meet California Loads, 2008 to 2020**

<b>California Electricity Supply</b>	<b>Annual GWh</b>	
Statewide Retail Sales, 2008, actual <sup>a</sup>	264,794	
Statewide Retail Sales, 2020, forecast <sup>a</sup>	289,697	
Growth in Retail Sales, 2008-20	24,903	
Growth in Net Energy for Load, 2008-20 <sup>b</sup>	29,840	
<b>California Renewable Electricity</b>	<b>GWh @ 20% RPS</b>	<b>GWh @ 33% RPS</b>
Renewable Energy Requirements, 2020 <sup>c</sup>	57,939	95,600
Current Renewable Energy, 2008	29,174	
Change in Renewable Energy, 2008-20 <sup>c</sup>	28,765	66,426
Resulting Change in Non-Renewable Energy	176	-36,586

Source: Energy Commission staff 2010.

Notes:

- a. 2009 IEPR Demand Forecast, Form 1.1c. Excludes pumping loads for entities that do not have an RPS.
- b. 2009 IEPR Demand Forecast, Form 1.5a.
- c. RPS requirements are a percentage of retail sales.

<sup>10</sup> Energy efficiency savings are already represented in the current Energy Commission demand forecast adopted December 2009 (CEC2009c).

<sup>11</sup> See *Incremental Impacts of Energy Efficiency Policy Initiatives Relative to the 2009 Integrated Energy Policy Report Adopted Demand Forecast* (CEC-200-2010-001-D, January, 2010), page 2. Table 1 indicates that additional conservation for the three investor-owned utilities may be as high as 14,374 GWh. Increasing this value by 25% to account for the state's publicly-owned utilities yields a total reduction of 17,967 GWh.

## **The Role of A2PP in Retirements/Replacements**

A2PP would be permitted to run continuously and provide more than 1,400 GWh of natural gas-fired generation that could replace resources that are or will likely be precluded from serving California loads. State policies, including GHG goals, are discouraging or prohibiting new contracts and new investments in coal-fired generation, generation that relies on water for once-through cooling, and aging power plants (CEC 2007a). Some of the existing plants that are likely to require significant capital investments to continue operation in light of these policies may be unlikely to undertake the investments and will retire or be replaced.

### **Replacement of Coal-Fired Generation**

Coal-fired resources are effectively prohibited from entering into new long-term, base load contracts for California deliveries as a result of the Emissions Performance Standard adopted in 2007 pursuant to SB 1368. Between now and 2020, more than 18,000 GWh of energy procured by California utilities under existing contracts will have to be replaced; these contracts are listed in **Greenhouse Gas Table 6**.

This represents almost half of the energy associated with California utility contracts with coal-fired resources that will expire by 2030. If the State enacts a carbon adder<sup>12</sup>, all the coal contracts (including those in **Greenhouse Gas Table 6**, which expire by 2020, and other contracts that expire beyond 2020 and are not shown in the table) may be retired at an accelerated rate as coal-fired energy becomes uncompetitive. Also shown are the approximate 500 MW of in-state coal and petroleum coke-fired capacity that may not be able to secure long-term contracts with California utilities due to the SB 1368 Emission Performance Standard. As these contracts expire, new and existing generation resources will replace the lost energy and capacity. Some will come from renewable generation; some will come from new and existing natural gas fired generation. New generation resources generally will emit significantly less GHG than the coal and petroleum coke-fired generation, which average about 1.0 MTCO<sub>2</sub>/MWh, or two times more than the proposed A2PP, resulting in a significant net reduction in GHG emissions from the California electricity sector.

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<sup>12</sup> A carbon adder or carbon tax is a specific value added to the cost of a project per ton of associated carbon or carbon dioxide emissions. Because it is based on, but not limited to, actual operations and emission and can be trued up at year end, it is considered a simple mechanism to assign environmental costs to a project.

**Greenhouse Gas Table 6**  
**Expiring Long-term Contracts with Coal-fired Generation 2009 – 2020**

Utility	Facility <sup>a</sup>	Contract Expiration	Annual GWh Delivered to CA
PG&E, SCE	Misc In-state Qual. Facilities <sup>a</sup>	2009-2019	4,086
LADWP	Intermountain	2009-2013	3,163 <sup>b</sup>
City of Riverside	Bonanza, Hunter	2010	385
Department of Water Resources	Reid Gardner	2013 <sup>c</sup>	1,211
SDG&E	Boardman	2013	555
SCE	Four Corners	2016	4,920
Turlock Irrigation District	Boardman	2018	370
LADWP	Navajo	2019	3,832
<b>TOTAL</b>			<b>18,522</b>

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings.

Notes: a. All facilities are located out-of-state except for the Miscellaneous In-state Qualifying Facilities.

b. Estimated annual reduction in energy provided to LADWP by Utah utilities from their entitlement by 2013.

c. Contract not subject to Emissions Performance Standard, but the Department of Water Resources has stated its intention not to renew or extend.

### **Retirement of Generation Using Once-Through Cooling**

New, dispatchable resources like A2PP would also be required to provide generation capacity (that is, the ability to meet fluctuating, intermittent electricity loads) in the likely event that facilities utilizing once-through cooling (OTC) are retired. The State Water Resource Control Board (SWRCB) has proposed significant changes to OTC units, which would likely require retrofit, retirement, or significant curtailment of dozens of generating units. In 2008, these units collectively produced about 58,000 GWh. While those OTC facilities owned and operated by utilities and recently-built combined cycle plants may well install dry or wet cooling towers, it is unlikely that the aging, merchant plants will do so. Most of these units operate at low capacity factors, suggesting a limited ability to compete in the current electricity market. Although the timing would be uncertain, new resources would out-compete aging plants and would likely displace the energy provided by OTC facilities and accelerate the retirements.

Any additional costs associated with complying with the SWRCB regulation would be amortized over a limited revenue stream today and into the foreseeable future. Their energy and much of their dispatchable, load-following capability will have to be replaced. These units constitute over 15,000 MW of merchant capacity and 17,800 GWh of merchant energy. Of this, much but not all of the capacity and energy are in local reliability areas, requiring a large share of replacement capacity – absent transmission upgrades – to locations in the same local reliability area. **Greenhouse Gas Table 7** provides a summary of the utility and merchant energy supplies affected by the OTC regulations.

**Greenhouse Gas Table 7**  
**Units Utilizing Once-Through Cooling: Capacity and 2008 Energy Output <sup>a</sup>**

Plant, Unit Name	Owner	Local Reliability Area	Aging Plant?	Capacity (MW)	2008 Energy Output (GWh)	GHG Performance (MTCO <sub>2</sub> /MWh)
Diablo Canyon 1, 2	Utility	None	No	2,232	17,091	Nuclear
San Onofre 2, 3	Utility	L.A. Basin	No	2,246	15,392	Nuclear
Broadway 3 <sup>b</sup>	Utility	L.A. Basin	Yes	75	90	0.648
El Centro 3, 4 <sup>b</sup>	Utility	None	Yes	132	238	0.814
Grayson 3-5 <sup>b</sup>	Utility	LADWP	Yes	108	150	0.799
Grayson CC <sup>b</sup>	Utility	LADWP	Yes	130	27	0.896
Harbor CC	Utility	LADWP	No	227	203	0.509
Haynes 1, 2, 5, 6	Utility	LADWP	Yes	1,046	1,529	0.578
Haynes CC <sup>c</sup>	Utility	LADWP	No	560	3,423	0.376
Humboldt Bay 1, 2 <sup>a</sup>	Utility	Humboldt	Yes	107	507	0.683
Olive 1, 2 <sup>b</sup>	Utility	LADWP	Yes	110	11	1.008
Scattergood 1-3	Utility	LADWP	Yes	803	1,327	0.618
<b>Utility-Owned</b>				<b>7,776</b>	<b>39,988</b>	<b>0.693</b>
Alamitos 1 - 6	Merchant	L.A. Basin	Yes	1,970	2,533	0.661
Contra Costa 6, 7	Merchant	S.F. Bay Area	Yes	680	160	0.615
Coolwater 1-4 <sup>b</sup>	Merchant	None	Yes	727	576	0.633
El Segundo 3, 4	Merchant	L.A. Basin	Yes	670	508	0.576
Encina 1-5	Merchant	San Diego	Yes	951	997	0.674
Etiwanda 3, 4 <sup>b</sup>	Merchant	L.A. Basin	Yes	666	848	0.631
Huntington Beach 1, 2	Merchant	L.A. Basin	Yes	430	916	0.591
Huntington Beach 3, 4	Merchant	L.A. Basin	No	450	620	0.563
Mandalay 1, 2	Merchant	Ventura	Yes	436	597	0.528
Morro Bay 3, 4	Merchant	None	Yes	600	83	0.524
Moss Landing 6, 7	Merchant	None	Yes	1,404	1,375	0.661
Moss Landing 1, 2	Merchant	None	No	1,080	5,791	0.378
Ormond Beach 1, 2	Merchant	Ventura	Yes	1,612	783	0.573
Pittsburg 5-7	Merchant	S.F. Bay Area	Yes	1,332	180	0.673
Potrero 3	Merchant	S.F. Bay Area	Yes	207	530	0.587
Redondo Beach 5-8	Merchant	L.A. Basin	Yes	1,343	317	0.810
South Bay 1-4	Merchant	San Diego	Yes	696	1,015	0.611
<b>Merchant-Owned</b>				<b>15,254</b>	<b>17,828</b>	<b>0.605</b>
<b>Total In-State OTC</b>				<b>23,030</b>	<b>57,817</b>	

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings

Notes:

- OTC Humboldt Bay Units 1 and 2 are included in this list. They must retire in 2010 when the new Humboldt Bay Generating Station (not ocean-cooled), currently under construction, enters commercial operation.
- Units are aging but are not OTC.
- The Los Angeles Department of Water and Power (LADWP) reported a 2007 aggregate energy number of 4,003 GWh for all the Haynes units. Staff allocated the energy between the units based on Haynes' current and historical output allocations in the LADWP filings for 2009 IEPR.

New generation resources that can either provide local support or energy will emit significantly less GHGs than the OTC fleet. Existing aging and OTC natural gas generation average 0.6 to 0.7 MTCO<sub>2</sub>/MWh, or more than 20% higher emissions than

the proposed A2PP. When project provides energy and capacity, depending on its location, it can provide a significant net reduction in GHG emissions from the electricity sector. A project located in a load pocket, for example, the Greater Bay Area Local Capacity Area, would more likely provide local reliability support as well as facilitate the retirement of aging and/or OTC power plants to a degree that the A2PP project could not.

## **CUMULATIVE IMPACTS**

*Cumulative impacts* are defined as “two or more individual effects which, when considered together, are considerable or...compound or increase other environmental impacts” (CEQA Guidelines § 15355). “A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts” (CEQA Guidelines § 15130[a][1]). Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

This entire assessment is a cumulative impact assessment. The project would emit greenhouse gases and, therefore, has been analyzed as a potential cumulative impact in the context of its effect on the electricity system, resulting GHG emissions from the system, and existing GHG regulatory requirements and GHG energy policies.

## **COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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Ultimately, ARB’s AB 32 regulations are likely to address both the degree of electricity generation sector emissions reductions (through cap-and-trade), and the method by which those reductions will be achieved (e.g., through command-and-control). However, the exact approach to be taken is currently under development. That regulatory approach may address emissions not only from the newer, more efficient, and lower emitting facilities licensed by the Energy Commission, but also from the older, higher-emitting facilities not subject to any GHG reduction standard that this agency could presently impose. This programmatic approach is likely to be more effective in reducing GHG emissions overall from the electricity sector than one that merely relies on displacing out-of-state coal plants (“leakage”) or older “dirtier” facilities.

The Energy Commission and the Public Utilities Commission provided recommendations (CPUC 2008) to ARB on how to achieve such reductions through both programmatic and regulatory approaches and identified the regulation points should ARB decide that a multi-sector cap-and-trade system is warranted. As ARB codifies accurate GHG inventories and methods, it may become apparent that emission reductions from the generation sector are less cost-effective than other sectors, and that other sectors of sources can achieve reductions with relative ease and cost-effectiveness.

The project would be subject to ARB’s mandatory reporting requirements and potentially other future requirements mandating compliance with AB 32 that are being developed by ARB. How the project would comply with these ARB requirements is speculative at this time, but compliance would be mandatory. The ARB’s mandatory GHG emissions

reporting requirements do not indicate whether the project, as defined, would comply with the potential GHG emissions reduction regulations being formulated under AB 32. The project may have to provide additional reports and GHG reductions, depending on the future regulations expected from ARB. Similarly, this project would be subject to federal mandatory reporting of GHG.

Reporting of GHG emissions would enable the project to demonstrate consistency with the policies described above and the regulations that ARB adopts and to provide the information to demonstrate compliance with any applicable EPS that could be enacted in the next few years. The A2PP would exceed the Emission Performance Standard in SB 1368 for base load generation, but as a simple-cycle power plant A2PP is not designed or intended for base load generation. Therefore, the SB 1368 limitation does not apply to this facility.

## NOTEWORTHY PUBLIC BENEFITS

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Electricity is produced by operation of inter-connected generation resources and, by knowing the fuel used by the generation sector, the resulting GHG emissions can be known. The operation of A2PP would affect the overall electricity system operation and GHG emissions in several ways:

- A2PP would provide flexible, dispatchable power necessary to integrate some of the growing generation from intermittent renewable sources, such as wind and solar generation.
- A2PP would displace some less efficient local generation in the dispatch order of gas-fired facilities that are required to provide electricity reliability in the TID system.
- A2PP would facilitate to some degree the replacement of out-of-state coal electricity generation that must be phased out in conformance with the State's new Emissions Performance Standard.
- A2PP could facilitate to some extent the replacement of generation provided by aging power plants that use once-through cooling.

The project would likely lead to a net reduction in GHG emissions across the electricity system providing energy and capacity to California. Thus, staff believes that the project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. Moreover, it would be consistent with AB 32 goals.

The energy displaced by the proposed A2PP would result in a reduction in GHG emissions from the electricity system compared to other peaking generation. In other system roles, as described in **Greenhouse Gas Table 8**, the proposed A2PP would be able to minimize its GHG impacts by filling most of the expected future roles for gas-fired generation, in a high-renewables, low-GHG system.

**Greenhouse Gas Table 8**  
**A2PP, Summary of Role in Providing Energy and Capacity Resources**

Services Provided by Generating Resources	Discussion, A2PP
Integration of Renewable Energy	<ul style="list-style-type: none"> <li>• Would provide fast startup capability (within 2 hours).</li> <li>• Would provide rapid ramping capability.</li> <li>• Would have ability to provide regulation and reserves, and energy when renewable resources are unavailable.</li> </ul>
Local Generation Displacement	<ul style="list-style-type: none"> <li>• Would be able to satisfy/partially satisfy local capacity area (LCA) resource requirements.</li> <li>• Would provide voltage support.</li> <li>• <i>Would not</i> provide black start capability.</li> </ul>
Ancillary Services, Grid System, and Emergency Support	<ul style="list-style-type: none"> <li>• Would provide fast start-up capability (within 2 hours).</li> <li>• Would have low minimum load levels.</li> <li>• Would provide rapid ramping capability.</li> <li>• Would have ability to provide regulation and reserves.</li> <li>• <i>Would not</i> provide black start capability.</li> </ul>
General Energy Support	<ul style="list-style-type: none"> <li>• Would provide general energy support.</li> <li>• Could facilitate some retirements and replacements</li> <li>• Would provide cost-competitive energy.</li> <li>• Would be able to help a load-serving entity (LSE) meet resource adequacy (RA) requirements.</li> </ul>

Source: Energy Commission staff; based on: Expected Roles for Gas-Fired Generation (CEC2009b, p. 7).

## CONCLUSIONS

A2PP would be an efficient, new, dispatchable natural gas-fired simple-cycle power plant that would cause GHG emissions while generating electricity for California consumers. AB 32 emphasizes that GHG emission reductions must be “big picture” reductions that do not lead to “leakage” of such reductions to other states or countries. The project’s GHG emissions per MWh would be lower than those of other peaking generation that the project would displace and, thus, would contribute to continued improvement of the California and overall Western Electricity Coordinating Council system’s GHG emissions and GHG emission rate average.

The project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, staff believes that the project would result in a cumulative overall reduction in GHG emissions from the state’s power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant.

Staff notes that mandatory reporting of GHG emissions per Air Resources Board greenhouse gas regulations would occur, and this would enable the ARB to gather the information needed to regulate the A2PP in trading markets if required by the regulations implementing the California Global Warming Solutions Act of 2006 (AB 32). The project may be subject to additional reporting requirements and GHG reduction or trading requirements as these regulations are more fully developed and implemented by ARB and U.S. EPA.



Staff does not believe that the minor GHG emission increases from construction activities would be significant for several reasons. First, the period of construction would be short-term and the emissions intermittent during that period, not ongoing during the life of the project. Additionally, control measures, or best practices, that staff recommends for minimizing criteria pollutants, such as limiting construction vehicle idling times and requiring, as appropriate, equipment that meets the latest emissions standards, would further minimize greenhouse gas emissions since staff believes that the use of newer equipment would increase fuel efficiency and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. For all these reasons, staff concludes that the short-term emission of greenhouse gases during construction would be substantially reduced and would, therefore, not be significant.

The A2PP would exceed the Emission Performance Standard in SB 1368 for base load generation, but as a simple-cycle power plant, A2PP is not designed or intended for base load generation. Therefore, the SB 1368 requirements do not apply to A2PP.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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None proposed. The project owner would comply with mandatory ARB GHG emissions reporting regulations (California Code of Regulations, tit. 17, section 95100 et. seq.) and/or future GHG regulations formulated by the ARB and U.S. EPA, such as limits set by GHG emissions cap and trade markets.

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# BIOLOGICAL RESOURCES

Testimony of David Bise

## SUMMARY OF CONCLUSIONS

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This section summarizes the Energy Commission staff's analysis and conclusions about the impacts of the Almond 2 Power Plant (A2PP) project on biological resources, briefly describes appropriate mitigation for those impacts, and identifies issues that require resolution before finalizing the mitigation recommendations. The proposed A2PP site is located within a previously disturbed area adjacent to the existing Almond power plant. The proposed site and the adjacent laydown area have been previously graded or excavated and are sparsely vegetated with primarily ruderal plant species. They, therefore, have limited habitat value for sensitive or special status plant and wildlife species. The 13.4-mile gas pipeline alignment associated with the project is proposed for road shoulders and margins of active and fallow agricultural fields. The pipeline alignment also crosses several active agricultural canals. These environments provide limited habitat for special status species including fairy shrimp species, western pond turtle, giant garter snake, western burrowing owl, Swainson's hawk, northern harrier, loggerhead shrike, American badger, and San Joaquin kit fox. The pipeline alignment and transmission line corridor may result in temporary impacts and habitat loss for these and other local wildlife species.

Staff has proposed conditions of certification intended to reduce project-related impacts to plant and wildlife species to less than significant levels. Implementation of Applicant mitigation measures and staff's proposed conditions of certification would reduce impacts to these species to below the level of significance.

The project proponent, in coordination with PG&E who will construct, own, and operate the natural gas pipeline, has not received confirmation from the Army Corps of Engineers (ACOE), the regional water quality control board, or the California Department of Fish and Game (CDFG) as to whether waters of the U.S., state waters, or features subject to CDFG jurisdiction are present ~~on the proposed A2PP site or within the disturbance areas of the associated gas pipeline or transmission lines~~. The project Applicant ~~has will also be performing~~ a rare plant survey for the proposed gas pipeline alignment in the spring of 2010. The findings of the rare plant survey and the determination as to whether jurisdictional waters will be impacted by construction of the ~~gas pipeline A2PP or its associated infrastructure~~ will be required and incorporated into the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP).

## INTRODUCTION

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This section of the Staff Assessment (SA) provides the California Energy Commission staff's analysis of potential impacts to biological resources from the construction and operation of the proposed A2PP. Information provided in this document addresses potential impacts to special-status plant and wildlife species and areas of critical biological concern associated with construction and operation of the A2PP, the 13.4-mile natural gas pipeline, and the associated transmission lines. This analysis also

describes the biological resources at the project site and at the locations of associated linear pipeline and transmission features. This document explains the need for impact avoidance and minimization measures and mitigation, evaluates the adequacy of mitigation proposed by the Applicant, and specifies additional mitigation measures to reduce impacts to biological resources to less-than-significant levels. It also describes compliance with applicable laws, ordinances, regulations, and standards (LORS) and recommends conditions of certification.

This analysis is based, in part, upon information provided in the A2PP Application for Certification (TID 2009a) and other submittals, responses to staff data requests (CH2MHILL 2009k), a site visit by Energy Commission staff on January 15, 2010, and communications with representatives from the CDFG, USFWS, and independent research.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

During project construction and operation, A2PP would need to comply with the laws, ordinances, regulations, and standards (LORS) presented in **Biological Resources Table 1** below.

**Biological Resources Table 1  
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable Law	Description
<b>Federal</b>	
Endangered Species Act (Title 16, United States Code, sections 1531 et seq.; Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for the protection of threatened and endangered plant and animal species and their critical habitat. The administering agency is USFWS.
Fish and Wildlife Coordination Act (Title 16, United States Code, section 661)	Requires all federal agencies to coordinate with the USFWS in the preservation of fish and wildlife implementing federal actions.
Permit for take under the Bald and Golden Eagle Protection Act, (Title 50, Code of Federal Regulations, section 22.26)	Authorizes limited take of bald eagles and golden eagles under the Bald and Golden Eagle Protection Act, where the taking is associated with, but not the purpose of the activity, and cannot practicably be avoided.
Permit for take under the Bald and Golden Eagle Protection Act, (Title 50, Code of Federal Regulations, section 22.27)	Authorizes intentional take of eagle nests where: necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure; the activity, or mitigation for the activity, will provide a net benefit to eagles; and only allows inactive nests to be taken except in the case of safety emergencies.
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	This law provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.

<b>Applicable Law</b>	<b>Description</b>
Migratory Bird Treaty Act (Title 16, United States Code, sections 703–711)	Prohibits the take or possession of any migratory nongame bird (or any part of such migratory nongame bird), including nests with viable eggs. As defined, includes nearly every nongame bird in the state. The administering agency is USFWS.
<b>State</b>	
California Endangered Species Act (Fish and Game Code, sections 2050 et seq.)	Protects California's rare, threatened, and endangered species. The administering agency is CDFG.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals that are classified as rare, threatened, or endangered in California. The administering agency is CDFG.
California Species Preservation Act of 1970 (California Fish and Game Code 900-903)	Requires the protection and enhancement of birds, mammals, fishes, amphibians, and reptiles of California. Administering agency is CDFG.
Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Designates certain bird, mammal, reptile, amphibian, and fish species as fully protected, and prohibits take of such species. The administering agency is CDFG.
Native Plant Protection Act (Fish and Game Code, section 1900 et seq.)	Designates rare, threatened, and endangered plants in California and prohibits the taking of listed plants. The administering agency is CDFG.
Nest or Eggs (Fish and Game Code, section 3503)	Prohibits take, possession, or needless destruction of the nest or eggs of any bird. The administering agency is CDFG.
Birds of Prey (Fish and Game Code section 3503.5)	Specifically protects California's birds of prey in the orders Falconiformes and Strigiformes by making it unlawful to take, possess, or destroy any such birds or to take, possess, or destroy the nests or eggs of any such bird. The administering agency is CDFG.
Migratory Birds (Fish and Game Code, section 3513)	Prohibits take or possession of any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird. The administering agency is CDFG.
<b>Local</b>	
Stanislaus County General Plan	The Stanislaus County General Plan provides goals and objectives including preservation of natural areas in open space and parks, conserve water and protect water quality, provide for long-term protection and use of agricultural lands, provide recreational opportunities for county residents, reserve lands subject to natural disasters as open space in order to protect property and life, and preserve air quality. The plan sets forth policies to meet these goals (Stanislaus County 2010).
City of Ceres General Plan	The City of Ceres general plan provides goals and objectives for management of natural resources including native plant and wildlife species. Preservation of agricultural lands is a primary objective of the plan.

## SETTING

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### REGIONAL SETTING

The A2PP site is located within the City of Ceres in Stanislaus County. The project site is located in the northern San Joaquin Valley. Land use in the vicinity of the project is primarily agricultural and light industrial with the urban areas of Modesto and Stockton to the north of the project site. The San Joaquin River is located approximately 7.5 miles southwest of the site. Natural waterways in the vicinity of the site generally drain to the San Joaquin River (TID 2009a).

### PROJECT SITE AND VICINITY DESCRIPTION

The Turlock Irrigation District (TID) is proposing to construct a 174-MW natural gas fired power plant (A2PP). The proposed A2PP site is located on a 4.6-acre site immediately adjacent to the existing 48-MW Almond I Power Plant. An existing WinCo distribution center is located to the west, a farm supply company is located to the north, light industrial areas are located to the east, and agricultural fields are located to the south (TID 2009a). Associated project elements with the A2PP project include a proposed 13.4-mile natural gas pipeline (11.6 miles of new pipeline and 1.8 miles of reinforcement of existing pipeline) connecting the A2PP to the existing PG&E Line 215 to the south of the A2PP, two new 115-kilovolt (kV) transmission lines, one 0.9 mile long and one 1.2 miles long, and ~~reconductoring~~ re-rerating of 2.9 miles of an existing 69-kV line.

### Existing Vegetation, Wildlife, and Habitats

#### Power plant

Biological surveys were conducted by the Applicant in 2009 for the A2PP (TID 2009a). The project site is composed of three parcels of land: the first parcel, a vacant disturbed parcel of land approximately 3.2 acres previously used by WinCo as a construction borrow pit which is now filled and graded to the current site elevation; the second, a portion of the 1.4 acre existing APP currently in use as a storm water retention pond for the A1PP which will be filled to accommodate portions of the A2PP; and the third, portions of the existing WinCo distribution center site to be used for transmission lines and the proposed A2PP switchyard. ~~The proposed power plant site is located within the existing fenced location for the current Almond I Power Plant. It was initially used as a borrow pit for construction of the WinCo distribution center to the west. It has subsequently been filled and~~ The A2PP site is essentially devoid of vegetation with the exception of some ruderal plant species (TID 2009a). The associated laydown area for use during A2PP construction is located on an old borrow pit immediately to the north of the A2PP site that was excavated in 2008. The proposed laydown area is located on a 6.4-acre soil borrow pit immediately west of the proposed power plant site that was utilized during construction of the adjacent WinCo distribution center. The laydown area contains an artificial basin that was created from soil borrow activities for the WinCo distribution center. A biological survey of t The proposed relocated laydown area is currently having was conducted on a wetland delineation performed March 2, 2010, to determine if jurisdictional waters are present on this portion of the site (TID 2009a). The relocated staging area is generally vegetated with a mixture of non-native, weedy grasses and forbs including foxtail barely (*Hordeum jubatum*), wild oats (*Avena fatua*), wild radish (*Raphanus raphanistrum*), and little mallow (*Malva parviflora*). ~~ruderal~~

vegetation such as ~~false barley (*Hordeum murinum*)~~, Russian thistle (*Salsola tragus*), ~~pampas grass (*Cortaderia jubata*)~~, red-stem filaree (*Erodium* sp.), and wild radish (*Raphanus raphanistrum*) (TID 2009a).

### Transmission Lines

The proposed new transmission lines will be located in road shoulders and active and fallow agricultural fields and orchards. While these areas are not sensitive habitat types, they do provide potential nesting and foraging habitat for some special-status wildlife species.

The existing line that is proposed for ~~reconductoring~~ re-rating is partially located in a previously disturbed right-of-way (ROW) that includes a portion of an existing railroad line that is heavily disturbed and is maintained by the railroad to keep the tracks clear and to allow for track maintenance. The remainder of the alignment is located in commercial and residential areas that have been previously developed. The ~~reconductored~~ re-rated transmission line has very limited to no potential to support special-status plant or wildlife species. Local bird species would be expected to periodically use the line for perching and foraging.

### Natural Gas Pipeline

The proposed gas line alignment will be located in road shoulders and active and fallow agricultural fields and orchards. While these areas are not sensitive habitat types, they do provide potential nesting and foraging habitat for some special-status wildlife species.

### Special-Status Species

**Biological Resources Table 2** below lists the special-status species being considered in this staff assessment. A 2010 records search of the California Natural Diversity Database (CNDDDB) for the nine-quad area centered on the project area returned occurrence records for a number of special-status plant and wildlife species (CDFG 2010). Of those, 15 are being considered for project-related impacts in this staff assessment. Reasons for their inclusion in **Biological Resources Table 2** are provided in the table, and species that were excluded from further consideration are discussed immediately following the table. In this staff assessment, special-status species are defined as plant and animal species that are state or federally listed or proposed for listing; state fully protected; candidates for state or federal listing; state species of special concern; and California Native Plant Society (CNPS) List 1A and 1B plants.

**Biological Resources Table 2  
Special-status Species Potentially Occurring  
In or Near the A2PP Project Area**

Common Name (Scientific Name)	Status (State/Federal/CNPS)	Potential for Occurrence
<b>Plants</b>		
Lesser saltscare ( <i>Atriplex minuscula</i> )	___/___/1B	None; found in alkaline flats associated with sandy soils. Marginal habitat present within study area. Species surveyed for in 2009 with negative results.

Common Name (Scientific Name)	Status (State/Federal/CNPS)	Potential for Occurrence
Heartscale ( <i>Atriplex cordulata</i> )	___/___/1B	None; found in alkaline flats associated with sandy soils. Marginal habitat present within study area. Species surveyed for in 2009 with negative results.
Vernal pool smallscale ( <i>Atriplex persistens</i> )	___/___/1B	None; found in alkaline flats associated with sandy soils. Marginal habitat present within study area. Species surveyed for in 2009 with negative results.
Alkali milk-vetch ( <i>Astragalus tener</i> var. <i>tener</i> )	___/___/1B	None; found in alkaline flats associated with sandy soils. Marginal habitat present within study area. Species surveyed for in 2009 with negative results.
Succulent owl's clover ( <i>Castilleja campestris</i> ssp. <i>succulenta</i> )	CE/FT/1B	None; found in vernal pools. Suitable habitat not present.
Beaked clarkia ( <i>Clarkia rostrata</i> )	___/___/1B	None; found in woodland habitats generally at higher elevations than project site. Surveyed for in 2009 with negative results.
Hoover's spurge ( <i>Chamaesyce hooveri</i> )	___/FT/1B	None; found in vernal pools. Suitable habitat not present.
Colusa grass ( <i>Neostapfia colusana</i> )	CE/FT/1B	None; found in vernal pools. Suitable habitat not present.
San Joaquin Valley Orcutt grass ( <i>Orcuttia inaequalis</i> )	CE/FT/1B	None; found in vernal pools. Suitable habitat not present.
Hairy Orcutt grass ( <i>Orcuttia pilosa</i> )	CE/FE/1B	None; found in vernal pools. Suitable habitat not present.
Hartweg's golden sunburst ( <i>Pseudobahia bahiifolia</i> )	CE/FE/1B	None; found in grasslands near cismontane woodlands in sandy soils. Suitable habitat not present.
Greene's tuctoria ( <i>Tuctoria greenei</i> )	___/FE/1B	None; found in vernal pools. Suitable habitat not present.
Merced monardella ( <i>Monardella leucocephala</i> )	___/___/1A	Low; found in foothill grasslands with sandy soils. Surveyed in 2009 with negative results. Presumed extinct in California. <u>Surveyed in spring 2010 with negative results. Follow-up surveys to be conducted in spring of 2010.</u>
Big tarplant ( <i>Blepharizonia plumosa</i> )	___/___/1B	None; found in valley grasslands. Native habitat essentially absent from project area. Surveyed for in 2009 with negative results.
Delta button celery ( <i>Eryngium racemosum</i> )	CE/___/1B	None; found in riparian clay flats. Suitable habitat not present.
Hispid bird's beak ( <i>Cordylanthus mollis</i> ssp. <i>hispidus</i> )	___/___/1B	None; found in moist alkaline meadows in valley grasslands. Suitable habitat not present.



Common Name (Scientific Name)	Status (State/Federal/CNPS)	Potential for Occurrence
Sanford's arrowhead ( <i>Sagittaria sanfordii</i> )	___/___/1B	None; vegetated canals contain marginal habitat for the species. Species surveyed for in 2009 with negative results.
<b>Invertebrates</b>		
Valley elderberry longhorn beetle ( <i>Desmocerus californicus dimorphus</i> )	___/FE/___	None; two elderberry shrubs were found adjacent to the proposed gas pipeline alignment. The stems on both shrubs are all less than one inch in diameter and therefore do not provide suitable habitat for the species according to USFWS guidelines.
Molestan blister beetle ( <i>Lytta molesta</i> )	CSC/___/___	None; species is associated with vernal pools of the Central Valley. No vernal pools are present on the site. Areas of ponded water within study area do not contain vernal pool vegetation upon which this species is dependent.
Conservancy fairy shrimp ( <i>Branchinecta conservatio</i> )	___/FE/___	Low; no vernal pools are present within the project area. There is one cattle wallow <u>within adjacent to</u> the preferred pipeline alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however, this site is highly disturbed from active grazing</u>
Longhorn fairy shrimp ( <i>Branchinecta longiantenna</i> )	___/FE/___	Low; no vernal pools are present within the project area. There is one cattle wallow <u>within adjacent to</u> the preferred pipeline alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however, this site is highly disturbed from active grazing</u>
Vernal pool fairy shrimp ( <i>Branchinecta lynchi</i> )	___/FT/___	Low; no vernal pools are present within the project area. There is one cattle wallow <u>within adjacent to</u> the preferred pipeline alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however, this site is highly disturbed from active grazing</u>
Vernal pool tadpole shrimp ( <i>Lepidurus packardii</i> )	___/FE/___	Low; no vernal pools are present within the project area. There is one cattle wallow <u>within adjacent to</u> the preferred pipeline alignment that <u>could</u> provides marginal habitat for fairy shrimp; <u>however, this site is highly disturbed from active grazing</u>

Common Name (Scientific Name)	Status (State/Federal/CNPS)	Potential for Occurrence
<b>Fish</b>		
Green sturgeon ( <i>Acipenser medirostris</i> )	CSC/FT/___	None; the project site and the associated areas for the transmission line and gas pipeline do not contain suitable habitat for this species. The Harding Drain and the Prairie Flower Drain near the southern terminus of the gas pipeline have a hydrological connection to the San Joaquin River. However, the Harding Drain and Prairie Flower Drain do not represent suitable habitat for this species and direct impacts to all canals for the gas pipeline will be avoided during construction.
Delta smelt ( <i>Hypomesus transpacificus</i> )	CT/FT/___	None; the project site and the associated areas for the transmission line and gas pipeline do not contain suitable habitat for this species. The Harding Drain and the Prairie Flower Drain near the southern terminus of the gas pipeline have a hydrological connection to the San Joaquin River. However, the Harding Drain and Prairie Flower Drain do not represent suitable habitat for this species and direct impacts to all canals for the gas pipeline will be avoided during construction.
Central Valley steelhead ( <i>Oncorhynchus mykiss</i> )	___/FT/___	None; the project site and the associated areas for the transmission line and gas pipeline do not contain suitable habitat for this species. The Harding Drain and Prairie Flower Drain near the southern terminus of the gas pipeline have a hydrological connection to the San Joaquin River. However, the Harding Drain and Prairie Flower Drain do not represent suitable habitat for this species and direct impacts to canals for the gas pipeline will be avoided during construction.
Central Valley spring-run Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )	___/FT/___	None; the project site and the associated areas for the transmission line and gas pipeline do not contain suitable habitat for this species. The Harding Drain and Prairie Flower Drain near the southern terminus of the gas pipeline have a hydrological connection to the San Joaquin River. However, the Harding Drain and Prairie Flower Drain do not represent suitable habitat for this species and direct impacts to all canals for the gas pipeline will be avoided during construction.

Common Name (Scientific Name)	Status (State/Federal/CNPS)	Potential for Occurrence
Sacramento splittail ( <i>Pogonichthys macrolepidotus</i> )	CSC/___/___	None; the project site and the associated areas for the transmission line and gas pipeline do not contain suitable habitat for this species. The Harding Drain and Prairie Flower Drain near the southern terminus of the gas pipeline have a hydrological connection to the San Joaquin River. However, the Harding Drain and Prairie Flower Drain do not represent suitable habitat for this species and all direct impacts to canals for the gas pipeline will be avoided during construction.
Hardhead ( <i>Mylopharodon conocephalus</i> )	CSC/___/___	None; the project site and the associated areas for the transmission line and gas pipeline do not contain suitable habitat for this species. The Harding Drain and Prairie Flower Drain near the southern terminus of the gas pipeline have a hydrological connection to the San Joaquin River. However, the Harding Drain and Prairie Flower Drain do not represent suitable habitat for this species and all direct impacts to canals for the gas pipeline will be avoided during construction.
<b>Amphibians</b>		
California red-legged frog ( <i>Rana draytonii</i> )	CSC/FT/___	None; the site and the associated infrastructure do not include permanent water sources or other suitable habitat for this species.
California tiger salamander ( <i>Ambystoma californiense</i> )	CSC/FT/___	None; the site and the associated infrastructure do not include appropriate breeding habitat (vernal pools) or upland refugia habitats (annual grasslands) suitable for this species.
<b>Reptiles</b>		
Giant garter snake ( <i>Thamnophis gigas</i> )	ST/FT/___	Moderate; canals within gas pipeline alignment provide low to moderate suitable habitat for the species.
Western pond turtle ( <i>Emys marmorata</i> )	CSC/___/___	Moderate; canals within gas pipeline alignment provide low to moderate suitable habitat for the species.
<b>Birds</b>		
Tricolored blackbird ( <i>Agelaius tricolor</i> )	CSC/___/___	Low; some emergent vegetation is present in canals that will be crossed by the gas pipeline. Vegetation will not be impacted.
Burrowing owl ( <i>Athene cunicularia</i> )	CSC/___/___	High; several ground squirrel burrows are present within or directly adjacent to the pipeline alignment that are suitable for use by this species.

Common Name (Scientific Name)	Status (State/Federal/CNPS)	Potential for Occurrence
Swainson's hawk ( <i>Buteo swainsoni</i> )	ST/___/___	Present; species was observed nesting within 0.5 0.4 mile of the preferred gas pipeline alignment during biological assessments (TID 2009a CDFG 2010). Areas adjacent to the natural gas pipeline alignment are suitable foraging habitat for this species.
Northern harrier ( <i>Circus cyaneus</i> )	CSC/___/___	High; agricultural fields adjacent to pipeline alignment provide suitable foraging and nesting habitat.
White-tailed kite ( <i>Elanus leucurus</i> )	SFP/___/___	High; agricultural fields adjacent to pipeline alignment provide suitable foraging and nesting habitat.
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	CSC/___/___	Present; agricultural fields adjacent to pipeline alignment provide suitable foraging and nesting habitat.
<b>Mammals</b>		
American badger ( <i>Taxidea taxus</i> )	CSC/___/___	Low; margins of agricultural fields along gas pipeline provide marginal habitat for this species.
San Joaquin kit fox ( <i>Vulpes macrotis mutica</i> )	ST/FE/___	Low; margins of agricultural fields along gas pipeline alignment provide marginal habitat for this species. One burrow, that has since collapsed, was found in 2009 along the pipeline alignment that is potentially large enough for kit fox although the burrow did not have the characteristic shape of a kit fox burrow <u>and more likely was an enlarged California ground squirrel burrow</u> (TID 2009a).

**Status Codes:**

**State**

CSC: California Species of Special Concern. Species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

SE: State listed as endangered

ST: State listed as threatened

SFP: Fully protected

WL: Watch List: includes species formerly on California Species of Special Concern List (Remsen 1978) but which did not meet the criteria for the current list of special concern bird species (Shuford and Gardali 2008).

**Federal**

FE: Federally listed endangered: species in danger of extinction throughout a significant portion of its range

FT: Federally listed, threatened: species likely to become endangered within the foreseeable future

BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities

<<http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>>

**California Native Plant Society (CNPS 2010)**

List 1A: Presumed Extinct in California

List 1B: Rare, threatened, or endangered in California and elsewhere

0.1: Seriously threatened in California (high degree/immediacy of threat)

0.2: Fairly threatened in California (moderate degree/immediacy of threat)

0.3: Not very threatened in California (low degree/immediacy of threats or no current threats known)

**Potential to Occur:**

**Present:** Species was observed during focused surveys or during biological assessment of site.

**High:** Suitable habitat is present within the proposed site: occurrence records exist for species in proximity to the site; species expected to occur on site

**Moderate:** Low quality suitable habitat is present within or near the proposed site; species was not identified during reconnaissance surveys of the site; species may occur on site

**Low:** Suitable habitat is not present on site; species not expected to occur on site

## Special-status Species Excluded from Further Consideration

The following species were considered for the A2PP analysis but were excluded from consideration in the impact assessment for the reasons described in **Biological Resources Table 2**: lesser saltscale (*Atriplex minuscula*), heartscale (*Atriplex cordulata*), vernal pool smallscale (*Atriplex persistens*), alkali milk-vetch (*Astragalus tener* var. *tener*), succulent owl's clover (*Castilleja campestris* ssp. *succulenta*), beaked clarkia (*Clarkia rostrata*), Hoover's spurge (*Chamaesyce hooveri*), Colusa grass (*Neostapfia colusana*), San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*), hairy Orcutt grass (*Orcuttia pilosa*), Hartweg's golden sunburst (*Pseudobahia bahiifolia*), Greene's tuctoria (*Tuctoria greenei*), big tarplant (*Blepharizonia plumosa*), Delta button celery (*Eryngium racemosum*), Sanford's arrowhead (*Sagittaria sanfordii*), hispid bird's beak (*Cordylanthus mollis* ssp. *hispidus*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), Molestan blister beetle (*Lytta molesta*), green sturgeon (*Acipenser medirostris*), delta smelt (*Hypomesus transpacificus*), Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*), Sacramento splittail (*Pogonichthys macrolepidotus*), hardhead (*Mylopharodon conocephalus*), California red-legged frog (*Rana draytonii*), and California tiger salamander (*Ambystoma californiense*).

## Special-status Plants

A 2010 CNDDDB and CNPS database search of the nine-quad area centered on the project area returned occurrence records for 17 special-status plants known to occur in the vicinity of the project site, the associated transmission corridors, and the gas pipeline corridor. They are included in **Biological Resources Table 2** above. Of these 17 species, only the Merced monardella (*Monardella leucocephala*) has an extremely limited potential to occur within the study area. Merced monardella is presumed extinct in California. However, it is known historically that the A2PP project area has some marginal habitat for the species. An initial special-status plant survey was conducted in the fall of 2009 (CH2MHILL 2009k, Appendix E). ~~A follow-up spring surveys have been proposed by the Applicant and are expected to be~~ was conducted in May 2010 to ensure that special-status plants, including this species, are not present within any designated construction areas or laydown areas.

## Merced Monardella

Merced monardella was historically associated with annual grasslands with sandy soils in Merced and Stanislaus counties. This species is presumed extinct in California. The last known occurrence for this species is from 1941. The blooming period is between May and August (CNPS 2010). Given this species status in California, the potential for this species to occur within the A2PP project area is extremely low. A follow-up survey ~~was will be~~ conducted in the spring of 2010 which confirmed ~~to ensure~~ that this species does not occur on the project site or other areas that will be disturbed during project construction.

## **Special-status Wildlife**

Wildlife species considered for this analysis include those from the 2010 CNDDDB search of the nine-quad area centered on the project area, the USFWS list for the *Ceres and Crow's Landing* quadrangles, habitats present within the proposed project area as described in the AFC (TID 2009a), and a site visit conducted by staff in January 2010.

### ***Fairy Shrimp***

Four species of fairy shrimp including Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp are known to occur in the vicinity of the A2PP site. These species typically inhabit vernal pools and seasonal wetland habitats that remain inundated for a minimum of 21 days to allow the completion of a lifecycle for the species. The preferred pipeline alignment does not contain vernal pools. However, the outer edge of the gas pipeline alignment corridor does contain is 25 feet from one disturbed "cattle wallow" that may ponds water during significant rain events for a sufficient time to possibly support a life cycle for fairy shrimp species. The cattle wallow is within an active cow pasture that is irrigated from March through October, which seasonality may preclude the presence of fairy shrimp. This habitat is considered marginal for fairy shrimp due to the level of disturbance associated with this habitat from road traffic and agricultural activities and the lack of typical seasonal wetland vegetation within the feature.

### ***Giant Garter Snake***

The giant garter snake is found in agricultural wetlands, canals, freshwater lakes, and low-gradient streams in the Central Valley of California. Giant garter snakes are essentially aquatic during their active period (April-October) (USFWS 2009). Between November and March, they typically hibernate in small mammal burrows or soil cracks on the banks of streams, rivers, or canals. Giant garter snakes feed on small fish and amphibians. The breeding season is typically March through April and young are born from July through September (USFWS 2009). No giant garter snakes were observed during the biological assessment for the project site (TID 2009a). A habitat assessment of all the canals was performed by the project Applicant in 2009 (CH2MHILL 2009k). The Some of the unlined canals within the gas pipeline alignment were determined to provide low to marginal habitat for this species though no Giant Garter Snakes were observed during Applicant's field visits. Canals which do not provide water, vegetation, and refugia were considered unsuitable habitat.

### ***Western Pond Turtle***

The western pond turtle is found in suitable habitat throughout California west of the Sierra-Cascade ranges. Suitable habitat consists of ponds, canals, and low gradient streams with sufficient emergent vegetation to provide cover. Pond turtles feed on aquatic vegetation, small fishes, and frogs (Zeiner et. al 1988). Pond turtles typically require basking sites within suitable habitats. Nests are typically built along the beds of streams or ponds or in immediately adjacent upland areas out of the floodplain (Zeiner et. al 1988). No western pond turtles were found on the project site during the biological assessment. However, some of the unlined canals along the gas pipeline route contain marginal habitat for this species.

### ***Tricolored Blackbird***

The tricolored blackbird is in cismontane California, especially in the Central Valley. It is associated with freshwater marshes with emergent vegetation. Tricolored blackbirds feed primarily on insects, seeds, and grains. The species typically nests in dense emergent wetland vegetation such as tules or cattails (Zeiner et al. 1988). It is typically a colonial nester and therefore requires large wetland areas for breeding. No tricolored blackbirds were found during the biological assessment (TID 2009a). Some of the canals that are proposed to be crossed by the gas pipeline provide marginal foraging habitat for this species. It is unlikely that breeding colonies would be supported by these canals because of the limited amount of emergent wetland vegetation contained in them.

### ***Western Burrowing Owl***

Western burrowing owls (WBOs) inhabit arid lands throughout much of the western United States and southern interior of western Canada (Haug et al. 1993). In many other areas, this species has declined because of habitat modification, poisoning of its prey, and introduced nest predators. The WBO is diurnal and usually non-migratory in this portion of its range.

WBOs are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox (*Vulpes macrotis*), and other wildlife. WBOs have a strong affinity for previously occupied nesting and wintering habitats. They often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al. 2008). The breeding season (defined as from pair bonding to fledging) generally occurs from February to August with peak breeding activity from April through July (Haug et al. 1993).

WBOs tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a large portion of their diet. Small mammals, especially mice and voles (*Microtus*, *Peromyscus*, and *Mus* spp.), are also important food items for WBOs. Other prey animals include reptiles and amphibians, young cottontail rabbits (*Sylvilagus* sp.), bats, and birds, such as sparrows and horned larks (*Eremophila alpestris*). Consumption of insects increases during the breeding season (Haug et al. 1993). WBOs in California are generally nonmigratory and most abundant in the Central and Imperial valleys, primarily in agricultural areas. Small, scattered populations occur in the Mojave Desert.

No WBOs were found by the project Applicant during surveys in 2009. The A2PP site generally does not have suitable habitat for WBOs due to the level of disturbance. The proposed ~~reconductoring~~ re-rated alignment has potential habitat for WBO, especially within the railroad berm that is located adjacent to the existing transmission line. The gas pipeline alignment also contains suitable habitat for this species and several small mammal burrows are present within or immediately adjacent to the alignment that are suitable for use by WBOs (TID 2009a).

### ***Swainson's Hawk***

The Swainson's hawk was once one of the most common birds of prey in the grasslands of California and nested in the majority of the lowland areas of the state. Currently, the nesting range is primarily restricted to portions of the Sacramento and San Joaquin valleys, northeast California, and the Western Mojave, including the Antelope Valley (Zeiner et. al. 1988). The Swainson's hawk requires large amounts of foraging habitat, preferably grassland or pasture habitats. Its preferred prey includes voles (*Microtus* spp.), gophers, birds, and insects such as grasshoppers (Zeiner et. al. 1988). It has adapted to the use of some croplands, particularly alfalfa, as well as grain, tomatoes, and beets (Estep 1989). Crops such as cotton, corn, rice, orchards, and vineyards are not suitable because they either lack suitable prey, or prey is unavailable to the hawks due to crop structure. Swainson's hawks often establish territories in riparian systems adjacent to suitable foraging habitats as well as utilizing lone trees or groves of trees in agricultural fields. Suitable foraging and nesting habitat occurs within the project area, on the natural gas pipeline alignment. Nesting Swainson's hawks have been observed within 0.45 mile of the proposed pipeline alignment (CDFG 2010 TID 2009a).

### ***Northern Harrier***

Northern harriers are found in open grasslands and meadow habitats. Harriers feed primarily on small mammals, birds, and amphibians. Nests are placed on the ground or in low-growing shrubs (Zeiner et. al. 1988). The breeding season is typically April through September. Reduction in wetlands and grassland habitats has reduced nesting and foraging acreage for this species in California. No northern harriers were observed during biological surveys of the area (TID 2009a). Fallow agricultural fields within and directly adjacent to the gas pipeline alignment provide potential nesting and foraging habitat for this species.

### ***White-tailed kite***

The white-tailed kite is a yearlong resident in Central Valley lowlands. It is often found near agricultural fields. It preys on small mammals, birds, and insects. It forages in open grasslands, meadows, and open agricultural fields. Kites nest in the tops of oaks, willows, or other trees near foraging habitat (Zeiner et. al. 1988). No white-tailed kites were observed during the biological assessment of the site (TID 2009a). However, the agricultural fields adjacent to the gas pipeline alignment provides suitable foraging habitat for this species and there are suitable nesting trees directly adjacent to the pipeline alignment.

### ***Loggerhead Shrike***

Loggerhead shrikes are widespread in California and can be locally common in some areas. Loggerhead shrikes initiate their breeding season in February and may continue with raising a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef 1996). This species can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically



present. In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef 1996). This species was observed within the project site during biological assessments (TID 2009a).

### ***American Badger***

American badgers were once fairly widespread throughout open grassland habitats of California. They are now uncommon, permanent residents throughout most of the state, with the exception of the northern North Coast area. They are most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush scrub and sagebrush. Mating occurs in late summer or early fall and two to three young are born 183 to 265 days later in March or April (Long 1973). Badgers are fossorial mammals. They dig large burrows in dry, friable soils and use multiple dens/cover burrows within their home range. They typically use a different den every day, although they can use a den for a few days at a time (Sullivan 1996). Cover burrows are an average of 30 feet in length, and are approximately three feet in depth. Natal dens are larger and more complex than cover dens. In undisturbed, high-quality habitat, badger dens can average 0.64 dens per acre, but are much lower in highly disturbed areas (Sullivan 1996). The American badger is likely to den in the vicinity of the project site and could potentially den or forage within the gas pipeline alignment although disturbance associated with agricultural activities likely reduces the potential for occurrence. No American badgers were observed during biological surveys of the study area.

### ***San Joaquin Kit Fox***

The San Joaquin kit fox, a federally endangered and state-threatened species, is primarily nocturnal, but are commonly seen during the day in late spring and early summer (Orloff et al. 1986). This species typically occurs in valley and foothill grassland, or mixed shrub/grassland habitats throughout low, rolling hills and valleys and also utilize habitats that have been altered by humans (e.g., agricultural land, oil fields). San Joaquin kit foxes can inhabit the margins and fallow lands near irrigated row crops, orchards, and vineyards, and may forage occasionally within these agricultural areas (Cypher et al 2007). Warrick et al. (2007) found that San Joaquin kit foxes in an agricultural setting typically denned in small patches of grassland, but that 40-50% of their nocturnal locations were in row crops or orchards. Kit foxes change dens frequently, sometimes only using a den for two or three days. They often enlarge ground squirrel burrows for use as a den and may use vacant badger dens for shelter (USFWS 1998), ~~both of which~~ Ground squirrel burrows occur within the proposed project area. Loss and degradation of habitat by agricultural, industrial, and urban development and associated practices continue to decrease available habitat. Hunting, road kill, and reduction of prey populations by poisoning have contributed to the species decline (USFWS 1998). One ~~potential kit fox~~ small burrow was found during surveys conducted in 2009 (TID 2009a) within 50 feet of the proposed pipeline alignment; however, this burrow was likely an enlarged California ground squirrel burrow. The burrow has collapsed since being originally found in 2009.

## **Water Resources, Wetlands, Waters of the US, Waters of the State**

The project Applicant is submitting PG&E submitted a wetland delineation for the plant site, laydown area and the pipeline alignment in April 2010 to the ACOE and CDFG (tn56391 4/23/10TID 2009a). The wetland delineation determined that there were no wetlands on the A2PP site nor the original laydown area. There are also no wetlands in the relocated laydown area. The ACOE and CDFG will make a determination regarding the extent of jurisdictional features within the project site. The site contains “puddles” and other seasonally wet areas that could potentially be considered waters of the state. These seasonal features are to be mapped and avoided during project construction with the exception of There is one “cattle wallow” located west of the pipeline construction corridor that may contain suitable habitat for fairy shrimp species. The cattle wallow is within an active cow pasture that is irrigated from March through October which seasonality may preclude the presence of fairy shrimp. The Applicant met with the USFWS in June 2010 to discuss avoidance measures that would result in no impacts to the cattle wallow. Any canal crossings for the gas pipeline will be constructed with “bore and jack” or directional drilling techniques (TID 2009a) to avoid directly impacting these areas. Therefore, direct impacts to these features are not expected to occur. However, CDFG has indicated that the project will likely require a streambed alteration agreement for crossings under the Harding Drain and the Prairie Flower Drain which have hydrological connections to the San Joaquin River. It is also assumed that these crossings will be under the jurisdiction of the ACOE due to this hydrologic connection to a navigable water. However, this has not yet been confirmed by the ACOE.

The A2PP’s water source will be the City of Ceres Wastewater Treatment Plant (WWTP). The A2PP facility will access the water through an existing pipeline for the Almond I facility.

Stormwater runoff will be routed to a new onsite detention pond that will be constructed within the 4.6-acre site. The detention pond will only be used to store runoff similar to the existing detention pond for the existing Almond I Power Plant. The current pond only stores water for a few days immediately after storm events to a depth of 2 or 3 inches. There is no significant bird utilization of the current pond due to this limited water storage time and no mitigation measures are currently employed for this existing detention pond to avoid impacts to migratory birds.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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The following section discusses potential impacts that could occur to biological resources and describes mitigation to reduce impacts to biological resources where applicable.

### **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE**

Significant impacts to biological resources would occur if special-status species or species otherwise protected by state and federal statute are likely to be impacted by construction or operation of the proposed project. A proposed project would have a significant impact to biological resources if it would:

- interrupt migration,

- reduce native fish, wildlife, and plant habitat,
- cause a fish or wildlife population to drop below self-sustaining levels, or
- disturb or degrade wetlands, marshes, riparian areas, or other wildlife habitat.

Harassment of a protected species that caused adverse behavioral changes would also be considered significant; harassment is considered “take” under state and federal endangered species acts.

## **DIRECT AND INDIRECT IMPACTS AND MITIGATION**

Direct impacts are a result of construction or operation of the project and occur at the same time and place as project activities. Direct impacts of A2PP could include permanent or temporary direct loss of habitat associated with construction of the gas pipeline, mortality of animals occupying burrows when ground is broken or equipment is parked over burrows or disturbance during construction and operation that causes nest abandonment. These impacts would be temporary because the pipeline alignment would be revegetated after construction and the pipeline alignment does not contain any sensitive vegetation communities. Indirect impacts are caused by the project, but occur later in time or are farther removed in distance. Indirect impacts from the project could include lighting of the new facility or noise impacts that discourage wildlife usage adjacent to the A2PP.

This section analyzes the potential for direct and indirect impacts of construction and operation of the proposed project to biological resources and suggests impact avoidance, minimization, and mitigation measures to reduce the severity of potentially adverse impacts. Applicant-proposed conditions from the AFC were incorporated into staff’s Conditions of Certification where appropriate.

### **Construction Impacts and Mitigation**

The proposed project consists of various components related to construction of a new 174-MW power plant adjacent to the current 48-MW Almond I power plant, construction of two new 115-kilovolt (kV) lines, ~~reconductoring~~ re-rating of an existing 69-kV line, and construction of a 13.4-mile natural gas pipeline. Construction of the A2PP would occur within a previously disturbed site.

- **Power Plant Site**

The proposed plant site is located on a 4.6-acre site within the existing fenced facility for the Almond I plant site. The site is generally disturbed and supports only ruderal vegetation which does not provide habitat for sensitive plant or wildlife species.

Common wildlife species that are acclimated to human disturbance may utilize some of the perimeter areas of the power plant for roosting or perching. No significant impacts to biological resources are expected during construction of the A2PP.

Therefore, no further discussion of potential impacts associated with construction of the A2PP will be done in this section. Some impacts associated with operation of the A2PP may occur that are discussed later in this section.

- **Laydown Area**

The proposed laydown area is located on a ~~6.4~~ 1.85-acre soil borrow pit immediately ~~west north~~ of the proposed power plant site that was utilized during construction of the adjacent WinCo distribution center. ~~There is some evidence of wetland vegetation and hydrology within the borrow area due to the topography associated with the borrow pit. The Applicant is in the process of preparing and submitting a wetland delineation to ACOE and CDFG to determine if waters of the U.S. or waters of the state are present within the proposed laydown area. Impacts to federal or state jurisdictional wetlands would require appropriate permits and would include mitigation requirements for issuance of a permit. The mitigation requirements of the permits will be included in the conditions of certification for the A2PP and the final BRMIMP. The laydown area does not provide habitat for sensitive plant or wildlife species and will not be permanently impacted. Therefore, no further discussion of the laydown area will be included in this impacts section and no specific mitigation is prescribed for this area. As mentioned previously, if jurisdictional wetlands are present within the laydown area, mitigation would be required for impacts to these features.~~

- Transmission Lines

The two segments of new transmission lines will be located in disturbed or developed road shoulders or agricultural fields. Corridor 1 will be 0.9 mile long and will permanently impact 0.0017 acre of land for transmission tower footings. Corridor 2 will be 1.2 miles long and will permanently impact 0.0023 acre of land for transmission tower footings. There will also be temporary impacts associated with parked equipment to string wire between towers for both alignments. This construction may result in temporary impacts to wildlife species located within the transmission corridors.

A portion of an existing transmission corridor from the Almond 1 site will be ~~reconducted~~ re-rated. The existing transmission corridor is located in disturbed or developed areas. This activity may result in temporary disturbance to wildlife species within the corridor from ~~stringing~~ equipment parked between existing towers. No permanent impacts are associated with ~~reconducting~~ re-rating the existing line.

- Natural Gas Pipeline

A 13.4-mile natural gas pipeline (11.6 miles of new pipeline and 1.8 miles of pipeline reinforcement) is proposed to connect the A2PP to the existing PG&E Line 215 pipeline (TID 2009a). The pipeline is proposed to be placed in the shoulders of existing roads and the edges of active and fallow agricultural fields. No natural or sensitive vegetation communities would be impacted by pipeline construction. However, these agricultural fields provide potential habitat for some special-status wildlife species and marginal habitat for special-status plants. These plants and animals could be impacted during pipeline construction. These impacts would be expected to be temporary since the pipeline corridor would be revegetated after construction is complete. Details of potential impacts are provided below.

The pipeline alignment will cross several irrigation canals between the A2PP and the existing PG&E Line 215. Any canal crossings for the pipeline will be performed using directional drilling technique such as jack and bore to avoid direct impacts to the canals. However, depending on the drilling technique used, there is the potential for

a “frac-out”, or drilling mud spill, to occur during the drilling process. Drilling mud has the potential to negatively affect downstream water quality if it enters canals. The Harding Drain and Prairie Flower Drain at the southern terminus of the gas pipeline alignment have a hydrological connection to the San Joaquin River. Therefore, introduction of drilling mud in the Harding Drain or in Prairie Flower Drain would have a significant impact on water quality and subsequently on aquatic species within the San Joaquin River. Staff has required the preparation of a frac-out containment plan (BIO-8) to avoid significant water quality impacts that could occur to the San Joaquin River Basin during pipeline construction if a frac-out occurred.

### **Construction Impacts to General Vegetation**

Construction impacts to vegetation within the pipeline corridor could occur in a variety of ways, including the direct removal of plants during construction. As these impacts are generally localized and are primarily temporary, they are not usually considered significant unless the habitat type is regionally unique or is known to support special-status species. The preferred gas pipeline alignment is primarily within active and fallow agricultural fields and dairy farms. The area is surrounded by uplands being actively used for agriculture or otherwise disturbed habitats. The exact impact acreage to vegetation communities from the gas pipeline cannot be calculated at this time because the gas pipeline placement within the right-of-way may be moved slightly to avoid impacts to sensitive wildlife species (TID 2009a). Since these impacts are temporary and would not affect sensitive vegetation communities, these impacts are not considered significant and no mitigation is proposed in regards to impacts to general vegetation.

Construction activities associated with construction of two new transmission corridors would require the permanent removal of 0.004 acre of ruderal upland vegetation associated with placement of transmission towers (TID 2009a). Temporary impacts to ruderal vegetation may occur during stringing of new wire for the new transmission lines and during ~~reconductoring~~ re-rating of the existing line. Significant impacts to native vegetation are not expected and no mitigation is proposed for these activities.

### **Construction Impacts to Jurisdictional Waters**

~~The extent of impacts to jurisdictional waters from project construction is currently unknown. The project Applicant is submitting PG&E submitted a wetland delineation to the ACOE and CDFG in April 2010 to determine the extent of jurisdictional features within the project footprint and whether impacts will occur to jurisdictional features. Harding Drain and Prairie Flower Drain are likely to be subject to ACOE and CDFG jurisdiction based on initial consultation with those agencies. If impacts to jurisdictional features cannot be avoided during construction, the appropriate permits and conditions will be required. Staff’s proposed condition of certification BIO- 614 (Compliance with CDFG SAA and ACOE Section 404 Measures) is designed to requires the Applicant to prepare a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and include the requirements of a CDFG SAA, and a Regional Water Quality Control Board and a ACOE permits in the BRMIMP. include any necessary measures to avoid or minimize impacts to jurisdictional waters and to fully mitigate impacts to jurisdictional features.~~

The Harding Drain and Prairie Flower Drain, which will be crossed by the gas pipeline, have a direct hydrological connection to the San Joaquin River (TID 2009a). Therefore, direct impacts to the water quality of the San Joaquin River could occur during drilling under these features if a frac-out occurred that resulted in the spilling of drilling mud into the canals. Staff has required the preparation of a frac-out containment plan (**BIO-8**) to avoid significant water quality impacts to the San Joaquin River Basin during pipeline construction.

### **Construction Impacts to General Wildlife**

Direct loss of small mammals, reptiles, and other less-mobile species could occur during construction of the proposed gas pipeline and transmission corridors. This would result primarily from the use of construction vehicles, which could collapse underground burrows or drive over animals. Construction activities (including construction noise, lighting, and increased human presence) could disrupt breeding or foraging activities of some common wildlife species for the duration of construction.

### **Construction Impacts to Special-status Species**

#### ***Plants***

Project construction would occur entirely within agricultural areas or in ruderal uplands that are unlikely to support special-status plants. No special-status plants were found during focused surveys at the project site in 2009 (TID 2009a, CH2MHILL 2009k Appendix E). A follow-up survey for special-status plants is expected to be conducted in the spring of 2010. There is an extremely low probability that special-status plant species occur within the impact areas. In the event that special status plant species are found and they cannot be avoided, mitigation will be proposed. The gas pipeline alignment is the only area of the project that has even a low potential for special status plants to occur within the project footprint. The pipeline corridor may be able to be shifted slightly within the proposed right of way to avoid any special status plants. However, if avoidance is not possible, then mitigation for special-status plant species will be implemented (**BIO-16**). An additional condition of certification would be prepared for the staff assessment addendum that addresses project-related impacts to special-status plants, if necessary, based on the results of the 2010 plant surveys.

#### ***Wildlife***

The proposed natural gas pipeline corridor and its immediate vicinity provides potential habitat for giant garter snake, western pond turtle, burrowing owl, loggerhead shrike, Swainson's hawk, northern harrier, white-tailed kite, San Joaquin kit fox, and American badger. Some of the canals that would be crossed by the gas pipeline alignment provide limited potential habitat for giant garter snake and western pond turtle (TID 2009a). There is one ponded area within adjacent to the preferred gas pipeline alignment that could provides marginal habitat for various fairy shrimp species that are known to occur in the vicinity of the A2PP site. The outer edge of the gas pipeline alignment corridor is approximately 25 feet from one disturbed cattle wallow that may pond water during significant rain events for a sufficient time to possibly support a life cycle for fairy shrimp species. The cattle wallow is within an active cow pasture that is irrigated from March through October which seasonality may preclude the presence of fairy shrimp.

Portions of the gas pipeline alignment could support denning and burrowing animals such as western burrowing owls, San Joaquin kit foxes, and American badgers. These species often use or enlarge burrows, or dens, created by California ground squirrels, and both could potentially be within or directly adjacent to the pipeline alignment. Dens within the pipeline alignment would likely be destroyed or be otherwise indirectly impacted by pipeline construction noise and dust. Animals occupying those dens, both within and adjacent to impacted areas could be disturbed or harmed during construction and may be subjected to ongoing impacts related to pipeline monitoring and maintenance after construction is completed. Staff's proposed conditions of certification **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Biological Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (Impact Avoidance Measures), **BIO-9** (Avoid Harassment or Harm to San Joaquin Kit Fox), **BIO-10** (Pre-construction Nesting Bird Surveys and Nest Monitoring), and **BIO-11** (Burrowing Owl Impact Avoidance and Minimization Measures) outline impact minimization and avoidance measures to avoid construction impacts to fossorial (burrowing) wildlife and other wildlife that could potentially be impacted by project construction. The Applicant has proposed several mitigation measures during construction (TID 2009a, CH2MHILL 2009k) to reduce or avoid impacts to potentially occurring special-status wildlife species. These proposed measures are based upon agency guidelines for construction in areas that support habitat for giant garter snake (GGS), western pond turtle, western burrowing owl, Swainson's hawk, and San Joaquin kit fox. These same agency guidelines are the basis for many of staff's proposed conditions of certification and therefore mitigation proposed by the Applicant is generally reflected in staff's proposed conditions.

Northern harriers, loggerhead shrikes, Swainson's hawks, burrowing owls, and other bird species protected by Fish and Game codes and the Migratory Bird Treaty Act could potentially nest or forage within or adjacent to the natural gas pipeline alignment. Construction of the pipeline during the nesting season could disrupt nesting behaviors or otherwise adversely affect reproductive success of species protected by CDFG Fish and Games codes or the Migratory Bird Treaty Act. Staff's proposed conditions of certification **BIO-5**, **BIO-6**, **BIO-7**, **BIO-10**, and **BIO-11** outline a number of impact avoidance and minimization measures for all of these bird species, including specific measures for burrowing owls and Swainson's hawks based on prescribed agency guidelines. **BIO-10** would require pre-construction surveys, which would detect the presence of nesting birds within or adjacent to the pipeline ROW and describe measures for monitoring of active nests up to 0.5 mile from construction areas. Applicant-proposed impact avoidance and minimization measures and staff's proposed conditions of certification would avoid impacts to nesting bird species or mitigate them to less-than-significant levels.

Some of the canals proposed for crossing by the natural gas pipeline have suitable habitat for GGS and western pond turtle. Construction within 200 feet of canals with suitable habitat for GGS and western pond turtle could result in mortality of individuals resulting from being crushed by construction equipment or from water quality degradation during pipeline drilling under the canals. Staff's proposed conditions of

certification **BIO-8**, **BIO-12** (Giant Garter Snake and Western Pond Turtle Pre-construction Clearance Surveys), and **BIO-13** (Giant Garter Snake Avoidance and Minimization Measures) are based on existing agency guidelines for working within potential habitat for these species. These measures are expected to reduce impacts to GGS and western pond turtle to less than significant levels.

~~The Adjacent to the preferred gas pipeline alignment contains there is one disturbed “cattle wallow” area that ponds water for a sufficient duration to possibly provide marginal habitat for federally listed fairy shrimp species. However, the area is also irrigated from March through October which could preclude the presence of fairy shrimp. The Applicant met with the USFWS in June 2010 to discuss the avoidance measures that would result in no impacts to the cattle wallow. Trenching through this feature during pipeline construction could result in mortality of adults if construction takes place during the rainy season or loss of cysts if construction takes place when the feature is dry. Construction could also result in soil compaction that may result in loss of suitability of the feature to provide suitable habitat for fairy shrimp in subsequent years due to changes in hydrology of the feature. Staff’s proposed Condition of Certification **BIO-15** (Fairy Shrimp Surveys or Avoidance and Compensation Measures) would be expected to reduce project-related impacts to listed fairy shrimp species to less than significant levels.~~

### **Construction Noise and Vibration**

Birds communicate primarily through vocalizations and auditory cues. Increased noise levels can interfere with normal communication, potentially interfering with maintenance of contact between mated birds, obscuring warning and distress calls that signify predators and other threats, and affecting feeding behavior and protection of young. High noise levels may also render an otherwise suitable nesting area unsuitable. Animals rely on hearing to avoid predators, obtain food, and communicate. Long-term exposure to noise can cause excessive stimulation to the nervous system and chronic stress that is harmful to health and reproductive fitness (Fletcher 1980, 1990). Behavioral and physiological responses to noise and vibration have the potential to cause injury, energy loss (from movement away from noise source), a decrease in food intake, habitat avoidance and abandonment, and reproductive losses (National Park Service 1994).

Studies have shown that noise levels over 60 dBA can affect the behavior of certain bird species. The applicant states that average noise levels from construction could be as high as 71 dBA at 375 feet from the noise source and as high as 59 dBA at 1,500 feet from the noise source (TID 2009a, Table 5.7-10). A2PP would comply with applicable LORS that deal with noise and vibration impacts to humans. Noise and vibration levels that do not cause physical injury or harm to humans would, at a minimum, not be expected to cause injury or harm to animals. However, there are other noise- and vibration-related impacts that could occur to wildlife. The construction-related vibration most likely to be perceived by wildlife off site would be pile driving, should it be employed (TID 2009a, pg. 5.7-19).

Staff’s assessment of potential noise and vibration impacts incorporated the following seven biological considerations: 1) that existing habitat in the project area is degraded



and of low quality; 2) that the project area is essentially surrounded by agriculture or some level of development and subsequent disturbance; 3) that wildlife would probably avoid the project area during the loudest construction activities; 4) that wildlife would likely habituate to construction noise to some degree or would maintain a distance comfortable to them; 5) that the project site does not provide essential habitat from which individuals would be excluded by project construction; 6) that sensitive wildlife are generally not expected to occur near the project area; and 7) that parts of the surrounding area are already relatively noisy due to the existing Almond 1 power plant that currently occupies a portion of the site, ~~and agricultural activities that occur along the gas pipeline alignment, and roadway traffic.~~ These considerations would not necessarily apply to every species or every eventuality, but they are generally true.

Staff proposes Condition of Certification **BIO-7** (Impact Avoidance Measures) to minimize impacts to nesting birds. The SA also incorporates staff's proposed measures into **NOISE-3** which requires a noise control program during construction. While this measure generally applies to human receptors, the measure will mitigate some construction noise impacts for wildlife as well. With implementation of these measures, and given the general wildlife considerations outlined above, staff believes that noise and vibration impacts from normal project construction would be temporary and less than significant.

### **Construction Lighting**

Artificial lighting can significantly disturb wildlife. Among other adverse effects, it can prevent nocturnal insects from eating, mating, and migrating (Eisenbeis 2002, Frank 2002); it can increase predation on nocturnal insects by entrapping them at night lights (Svensson and Rydell 1998, Frank 2002); it can affect frog, salamander, and mammal reproduction, foraging, predator avoidance, and social interactions (Grigione 2002, Buchanan 2002); it can reduce dispersal, foraging, and reproductive opportunities (Grigione 2002); and it can attract birds flying at night or in inclement weather and cause both misorientation and disorientation (Rich and Longcore 2006).

Lighting for project construction would occur as necessary to maintain project schedules or to perform construction activities that are temperature sensitive. To the extent feasible, construction lighting will be directed to the center of the construction site and shielded to prevent fugitive light from escaping the site (TID 2009a, pg. 5.13-22). No mitigation measures are proposed for impacts to biological resources related to lighting because of the existing level of disturbance and lighting associated with the project area.

### **Reconductoring Re-Rating Impacts**

~~Reconductoring Re-rating would include one segment of existing 69-kilovolt (kV) PG&E TID sub-transmission line totaling approximately 2.9 miles. Reconductoring would involve replacing existing conductors with those of larger ampacity. Pull sites generally include a small staging area for a truck-mounted wire puller and support vehicles. Reconductoring would remove old conductors and install new ones. Re-rating would involve lowering the existing underbuilt 12-kV conductors to increase the clearance required for the increased thermal sag at higher ambient temperatures. A new hole will be drilled in the existing pole and the crossarm that supports the 12-kV conductors will~~

be lowered. No other tower work would be involved. Ground-disturbing activities would be limited to parking vehicles along the alignments, and would require minimal vegetation disturbance and ground leveling. Most of the alignment follows existing roads and active agricultural fields, so ~~pull-sites~~ lowering the cross-arms of the existing poles would most likely be in previously disturbed areas. The towers and substations along the ~~reconductoring~~ re-rating segment provide potential roosting and nesting opportunities for common and special-status birds. Special-status animals, such as burrowing owls and kit foxes, could potentially use areas near ~~pull-sites~~ transmission line poles that contain suitable burrows. These fossorial species could potentially be subject to mortality from construction equipment parking on burrows and crushing or entombing wildlife within their burrows. Staff discusses potential impacts to biological resources associated with the A2PP and makes recommendations for minimizing impacts to biological resources during project construction but does not propose additional specific conditions of certification for ~~reconductoring~~ re-rating because potential impacts to biological resources are similar to those for other proposed infrastructure for the A2PP project. Impact avoidance measures **BIO-5**, **BIO-7**, **BIO-9**, **BIO-10**, and **BIO-11** would be required prior to initiation of ~~reconductoring~~ re-rating activities.

## **Operations Impacts**

Potential direct impacts of A2PP operation would result from operational noise and vibration and from lights at night as well as the potential for collision of bat and bird species into stacks of the A2PP. These impacts are discussed below.

### **Detention Basin**

Noncontact storm water from the plant site would be directed to an onsite detention basin, which would hold water temporarily following rain events. The basin would be within a fenced site but could potentially support bird foraging activity. The current detention pond associated with the Almond 1 plant does not pond water for more than 1 or 2 days and no significant bird activity has been associated with the current detention basin (TID staff, personal communication). The proposed detention basin would be operated in the same capacity as the current basin. Therefore, staff believes that the detention basin is unlikely to hold water long enough to attract significant numbers of birds. Staff believes that the A2PP detention basin would be neither an increased attractant nor an increased deterrent to local wildlife and therefore no mitigation is proposed for operation of the onsite detention basin.

### **Operational Noise and Vibration**

A power plant operates as a steady, continuous, broadband noise source, unlike the intermittent sounds that comprise the majority of the noise environment. As such, power plant noise contributes to, and becomes part of, the background noise level, or the sound heard when most intermittent noises cease. Where power plant noise is audible, it will tend to define the background noise level. For this reason, staff compares the projected power plant noise to the existing ambient background noise levels at specific locations. If this comparison identifies a significant adverse impact, then feasible mitigation must be incorporated in the project to reduce or remove the impact. Since the Almond I power plant currently operates on the site, the noise from operation of the A2PP would not be expected to significantly differ from the existing background noise of

the area. Therefore, no impact to biological resources related to operational noise is expected and no specific mitigation measures are proposed for A2PP operational noise.

Vibration from an operating power plant could be transmitted through the ground (groundborne vibration) and through the air (airborne vibration). Vibration associated with plant operation could make adjacent uplands less suitable for occupation by burrowing birds and animals. Groundborne vibration could affect both predators and prey, or airborne vibration could be sufficiently disturbing that foraging animals would lose adjacent areas as foraging habitat. Since the site is directly adjacent to the currently operating Almond 1 power plant, ground vibrations from operation of the A2PP are expected to be similar to the current background level. Therefore, impacts to biological resources from operation of the proposed A2PP are expected to be minimal. Given this fact, staff believes that operational noise and vibration would not have a significant adverse effect on local wildlife. No impact avoidance, minimization, or mitigation measures are proposed beyond those conditions of certification proposed in the **NOISE** section of this Staff Assessment.

### **Operational Lighting**

Lights on tall towers can result in collision (see **Avian Collision** below). San Joaquin kit foxes are primarily active at night and could be adversely affected by night lighting that attracts them into plant areas that can result in mortality or injury from plant activity or plant vehicles. This section discusses night lighting that would illuminate the ground, e.g., night lighting for human access and public safety. **Avian Collision** below discusses night lighting of tall structures. A2PP may require night lighting for security. As described in the AFC (TID 2009a, pg. 5.13-22), the project developer proposes to install lighting fixtures that include shields and hoods to minimize fugitive light. Low pressure sodium lamps and non-glare fixtures will be utilized. For areas where lighting is not required for normal operation, safety, or security, switched lighting circuits would be provided, allowing these areas to remain dark at most times. Refer to the **Visual** section of the Staff Assessment for specific lighting requirements.

Assessment of impacts of night lighting for ground-dwelling wildlife is based on the following biological considerations: 1) that the existing site is already degraded; 2) the project site does not provide essential habitat from which individuals would be excluded by operational lights; 3) that sensitive wildlife are not expected to occur near the project area; 4) that A2PP would occupy an existing plant site with existing night lighting; and 5) that affected wildlife would either habituate to any increase in lighting or would maintain their own comfortable distance. Given these existing conditions, staff believes that the impact of operational night lighting on ground-dwelling wildlife would be less than significant and no specific mitigation measures are proposed.

### **Avian Collision**

Human structures that are significantly taller than the natural landscape pose a collision risk for birds in flight, especially on dark nights and in foggy or stormy weather with low cloud ceilings, especially if structures are lighted, and especially if the structures are tall, narrow, and difficult to detect, such as communication towers and guy wires. Lights on towers can be especially harmful because they can attract, disorient, or misorient flying birds, drawing them off course and confusing them. These effects are well documented

(Rich and Longcore 2006). A2PP proposes new stacks that would be 80 feet in height (TID 2009a, Fig. 2.1-2). This is the tallest feature associated with the new project construction. Structures over 200 feet high create the largest hazard for avian collision, so the 80-foot tall stacks of the proposed A2PP are not considered to be a significant collision hazard. The A2PP is also not located near a large wetland or other land use that causes birds to flock in large groups. Therefore avian collision impacts with the A2PP are not expected to be significant.

Lighting will be present on the exhaust stacks (TID 2009a, pg. 5.13-24). Task lighting would be provided but it would only be used when work is being performed, which would not be expected to occur at night. The extent of lighting is expected to be similar to that of the existing Almond power plant. Therefore, staff believes that avian collision risk would be less than significant.

### **Avian Electrocution**

The existing 69-kV ~~PG&E TID~~ transmission lines and the two proposed 115-kV lines and towers may pose a risk of avian electrocution and collision. However, there is a low likelihood of electrocutions occurring at voltages greater than 60-kV because phase-to-phase and phase-to-ground clearances for lines greater than 60-kV are typically sufficient to prevent bird electrocution (APLIC 2006). Potential electrocution impacts would be mitigated by incorporating the construction design recommendations provided in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). Specifically, transmission lines that have a minimum of 5.5 feet between conductor wires would minimize the potential for avian electrocution. This measure has been incorporated into staff's proposed Condition of Certification **BIO-7** to minimize the risk of avian mortality from electrocution. The Applicant also has prepared an avian protection plan that is designed to avoid or minimize electrocution impacts to avian species from TID transmission lines (TID 2009a, Appendix 5.2E). This plan specifies transmission line designs to minimize or avoid potential impacts to perching raptors. With these measures avian electrocution risk would be less than significant.

### **Air Emissions**

Certain plant species and communities are highly sensitive to air pollutants such as carbon monoxide (CO), oxides of sulfur (SO<sub>x</sub>), and nitrogen oxides (NO<sub>x</sub>). Some sensitive plants live in nitrogen-limited, low-biomass plant communities that may be rare, endemic, or declining in California. Nitrogen-limited plant communities include, among others, coastal sage scrub, serpentine grassland, desert scrub, vernal pools, and bogs and other wetland habitats. This competitive advantage could be lost when air pollution increases nitrogen deposition in that community. Increased nitrogen could then give a nonnative species a competitive advantage over a native species allowing it to take over. Impacts could extend to wildlife such as a butterfly that depends for survival on the native species that no longer has the competitive advantage (Weiss 1999).

Staff believes that air emissions would not represent a significant project effect to sensitive plants or plant communities. This is because the project would minimize air pollutant emissions using best-available control technology and would comply with applicable air-quality standards, and because there are no nitrogen-limited or otherwise sensitive vegetation communities near the project site. With Applicant-proposed

measures and staff's proposed conditions of certification in the **AIR QUALITY** section of this staff assessment, staff believes that air emissions of the A2PP would not significantly affect biological resources.

## CUMULATIVE IMPACTS

Cumulative impacts refer to a proposed project's incremental effect viewed over time, together with other closely related past, present, and reasonably foreseeable future projects (Public Resources Code § 21083; California Code of Regulations, Title 14, §§ 15064[h], 15065[c], 15130, and 15355). Cumulative impacts can occur when individually minor but collectively significant projects take place over time.

Direct, indirect, and cumulative impacts to sensitive species and the loss of habitat are significant issues in the San Joaquin Valley. As mentioned previously, the San Joaquin Valley has experienced significant loss of habitat associated with conversion of natural vegetation communities to agriculture and the increase in population and subsequent expansion of urban areas. However, the A2PP site and its associated infrastructure are generally located in areas that have been previously disturbed or developed or are currently being utilized for agriculture or industrial development. As such, no loss of sensitive habitats or natural vegetation communities will occur with implementation of the A2PP project beyond what has already historically occurred. Vegetation within the gas pipeline shall be revegetated once construction is complete (TID 2009a), so no net loss of vegetation will occur with construction of the project. Staff concludes that with implementation of the Applicant's proposed mitigation measures and compliance with staff's proposed conditions of certification, the A2PP will not result in significant cumulative impacts to special status species, their habitat, or other sensitive biological resources.

## COMPLIANCE WITH LORS

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This section is based on the laws, ordinances, regulations, and standards (LORS) provided in **Biological Resources Table 1** above. The proposed project must comply with state and federal laws, ordinances, regulations, and standards that address state and federally listed species, as well as other sensitive species and their habitats. The proposed project must comply with state and federal laws, ordinances, regulations, and standards (LORS) (see summary in **Biological Resources Table 2**) that address state and federally listed species, as well as other sensitive species and habitats, and must secure the appropriate permits to satisfy these LORS. The Energy Commission has a one-stop permitting process for all thermal power plants rated 50 MW or more under the Warren-Alquist Act (Pub. Resources Code § 25500). Under the Act, the Energy Commission's certificate is "in lieu of" other state, local, and regional permits (*Ibid.*), but not federal permits. A summary of the LORS expected to be necessary for the A2PP and the status of any permit applications is provided in **Biological Resources Table 3**.

Biological Resources Table 3  
Permits/Consultations potentially Required

### State LORS Permit

Status

Comment

A 2081 permit for impacts to giant garter snake, Swainson's hawk and San Joaquin kit fox may be required. A Streambed Alteration Agreement for canal crossings may be required.

Not yet determined if 2081 will be required for these state-listed species.

If 2081 is required, conditions of 2081 permit will be included in the final BRMIMP.

~~Applicant~~ PG&E ~~will is currently~~ submitting an SAA application to CDFG.

If SAA is required, conditions of SAA will be included in the final BRMIMP for those conditions not currently contained in **BIO-14**.

### **Federal LORS**

Section 7 Consultation under the federal endangered species act may be required for project-related impacts to giant garter snake, fairy shrimp species, and possibly San Joaquin kit fox.

The project Applicant in coordination with PG&E as the owner and operator of the natural gas pipeline, has informally consulted with USFWS.

It is assumed that the project will require a 404 permit with ACOE (see below). During review of the 404 permit application, it is assumed that ACOE will consult with USFWS regarding potential project-related impacts to the federally listed giant garter snake, fairy shrimp species, and San Joaquin kit fox. Assuming a 404 permit is required and if potential take is determined for any federal listed species, conditions for mitigation of take will be issued in the biological opinion for the project. If a 404 permit is not required by the project and the USFWS finds the possibility of take, then a habitat conservation plan will be required to be prepared through Section 10 of the federal endangered species act for potential take of federally listed species.

Clean Water Act 404 permit through the ACOE.

~~The project Applicant is currently~~ preparing PG&E recently submitted a wetland delineation ~~for submittal~~ to ACOE.

If waters of the U.S. will be impacted by the proposed project, then the appropriate 404 permit will be applied for and issued. Conditions of the 404 permit will be incorporated into the final BRMIMP.

Construction and operation of the A2PP would take place entirely within areas previously disturbed for the existing Almond I power plant or with construction associated with the WinCo Distribution Center. The associated natural gas pipeline and transmission lines do have limited potential to impact special-status biological resources in the region. However, staff's conditions of certification bring the pipeline and transmission lines into compliance with all applicable regulations. As mentioned previously, the Applicant in coordination with PG&E as the owner and operator of the natural gas pipeline, may need to provide additional permits for impacts to jurisdictional waters and incidental take permits associated with potential impacts to state and federal-listed species. The terms and conditions of any required permits will be required to be incorporated into the final BRMIMP in order for the Applicant to be in full compliance with state and federal LORS.

## NOTEWORTHY PUBLIC BENEFITS

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There are no noteworthy public benefits associated with the A2PP project as it relates to biological resources. However, it should be noted that the A2PP and its associated infrastructure have been located in a brownfield or in active agricultural or disturbed areas that minimize or avoid potential impacts to special-status plant and wildlife species that could potentially occur in the vicinity.

## CONCLUSIONS

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The following section summarizes the potential impacts to biological resources associated with construction and operation of the A2PP site.

Overview of Impacts to Vegetation/Wildlife: The A2PP and its associated infrastructure will not have a significant impact on sensitive vegetation communities because none are present within the designated impact area. Impacts to local wildlife species are expected to be fully mitigated with the incorporation of staff's conditions of certification and Applicant's proposed mitigation measures.

Take of Listed Species: The federal and state-listed San Joaquin kit fox and giant garter snake could potentially occur within the designated impact area. The outer edge of the gas pipeline alignment corridor is approximately 25 feet from one disturbed cattle wallow that may pond water during significant rain events for a sufficient time to possibly support a life cycle for fairy shrimp species . The cattle wallow is within an active cow pasture that is irrigated from March through October which seasonality may preclude the presence of fairy shrimp. The preferred pipeline alignment also crosses one ponded area that provides marginal habitat for federally listed fairy shrimp species such as Conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp. The state-listed Swainson's hawk could nest in proximity to the preferred gas pipeline alignment. However, there will be no permanent loss of suitable habitat for these species from construction of the A2PP ~~with the exception of possible fairy shrimp habitat within the gas pipeline alignment.~~ Pre-construction surveys for these species shall be conducted to determine their presence or absence within designated work areas. Potential impacts to these species during construction will be fully mitigated to a less than significant level with the incorporation of staff's conditions of certification. The wildlife agencies may require the issuance of incidental take permits for project-related impacts to state or federal-listed species. The conditions of any necessary take permits will have to be included in the final BRMIMP (see **Biological Resources Table 3**).

Migratory Birds/Burrowing Mammals: Migratory birds and burrowing mammals have the potential to be directly impacted during construction of the natural gas pipeline and transmission line corridors. However, there will be no permanent loss of suitable habitat for these species from construction of these linear elements. Potential impacts to these species during construction will be fully mitigated to a less than significant level with the incorporation of staff's conditions of certification.

Special Status Plants: Special status plants are not known to occur within the designated impact area for the A2PP. A follow-up survey was conducted in is scheduled for the spring of 2010. ~~If No special status plants were are found during the follow-up survey;~~ therefore no additional mitigation measures are required, would be incorporated to avoid or mitigate for these impacts in the Staff Assessment Addendum. ~~If no special status plant species are found during 2010 surveys then~~ since impacts to special-status plant species are expected to be less than significant.

Impacts to CDFG Jurisdictional State Waters and Waters of the U. S.: ~~The extent of jurisdictional state waters and waters of the U.S. is currently unknown.~~ It is currently assumed that Harding Drain and Prairie Flower Drain are subject to ACOE and CDFG jurisdiction. If it is determined after review of ~~the Applicant's~~ PG&E's wetland delineation that jurisdictional features cannot be avoided during project construction, then mitigation contained within the required permit(s) shall be incorporated into the final BRMIMP. If no jurisdictional features are present within the project footprint, then impacts to jurisdictional waters will be less than significant. Any impacts to jurisdictional waters are expected to be temporary and less than significant since ~~the Applicant~~ PG&E shall be drilling under any jurisdictional features, thus avoiding direct impacts to these features and features will be restored to pre-project conditions.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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The Applicant has proposed several mitigation measures to reduce potential impacts to biological resources (TID 2009a). The Applicant proposed mitigation measures generally follow prescribed agency guidelines for construction projects that may impact giant garter snake (GGS), western pond turtle, western burrowing owl, Swainson's hawk, or San Joaquin kit fox. Where applicable, staff has incorporated those measures into the following proposed biological resources conditions of certification for the A2PP.

## **DESIGNATED BIOLOGIST SELECTION**

**BIO-1** The project owner shall assign a 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. The Designated Biologist must have the following minimum qualifications: a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; 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 at least one year of field experience with biological resources found in or near the project area.

Verification: The project owner shall submit the specified information at least 90 days prior to the start of any site mobilization. No site or site-related activities shall commence until an approved Designated Biologist is available to be on site. If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least 10 working days prior to the termination or release of the preceding 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.

## **DESIGNATED BIOLOGIST DUTIES**

**BIO-2** The project owner shall ensure that the Designated Biologist performs the following during any site mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by approved biological monitors, but remains the contact for the project owner, the CPM, CDFG, and USFWS. The Designated Biologist shall:

- advise the project owner's construction/operation managers on the implementation of biological resource conditions of certification;
- consult on the preparation of the Biological Resource Mitigation Implementation and Monitoring Plan (BRMIMP), to be submitted by the project owner;
- report sensitive species sightings to CNDDDB where appropriate
- be available to supervise, conduct, and coordinate mitigation, monitoring, and other biological resource compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources such as special-status species or their habitats;
- clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
- inspect active construction areas where animals may have become trapped prior to commencement of construction each day;
- inspect for installation of structures that prevent entrapment or allow escape during periods of construction inactivity at the end of each day;
- periodically inspect areas with high vehicle activity (i.e., parking lots) for animals in harm's way;
- notify the project owner and CPM of any noncompliance with any biological resource condition of certification;
- respond directly to inquiries of the CPM regarding biological resource issues;
- maintain written records of the tasks specified above and those included in the biological resources mitigation implementation and monitoring plan (BRMIMP), with summaries of these records submitted in the monthly compliance report and the annual report; and
- train the biological monitors as necessary, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP), and all biological resource-related permits.

Verification: The Designated Biologist shall submit a monthly compliance report to the CPM during project construction that includes copies of all written reports and summaries that document biological resource activities. If actions may affect biological resources during operation, a Designated Biologist shall be available for monitoring and

reporting. During project operation, the Designated Biologist shall submit record summaries in the annual compliance report unless their duties are ceased as approved by the CPM. The Designated Biologist shall notify the CPM, CDFG, and USFWS of any project-related take of state or federally listed species within 24 hours.

## **BIOLOGICAL MONITOR SELECTION**

**BIO-3** The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references, and contact information for the proposed biological monitors to the CPM for approval. The resume shall demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the assigned duties. Biological monitor training by the Designated Biologist shall include familiarity with the conditions of certification and the BRMIMP, WEAP, and all permits.

Verification: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any site mobilization. The Designated Biologist shall submit a written statement to the CPM confirming that individual biological monitors 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 10 days prior to their first day of monitoring activities.

## **DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY**

**BIO-4** The project owner's construction/operation managers shall act on the advice of the Designated Biologist and Biological Monitors to ensure conformance with the biological resources conditions of certification. If required by the Designated Biologist and Biological Monitors, the project owner's construction/operation managers shall halt site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

- require a halt to all activities in any area when there would be an unauthorized adverse impact to biological resources if the activities continued;
- inform the project owner and the construction/operation managers when to resume activities;
- notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or shall be instituted, as a result of the work stoppage; and
- 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 following morning of the incident, or Monday morning in the case of a weekend) of any noncompliance 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. Whenever corrective action is taken by the project

owner, a determination of success or failure shall be made by the CPM within 5 working days after receipt of notice that corrective action is completed, or the project owner shall be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

## **WORKER ENVIRONMENTAL AWARENESS PROGRAM**

**BIO-5** The project owner shall develop and implement a CPM-approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction, operation, and closure are informed about sensitive biological resources associated with the project including fairy shrimp, giant garter snake, western pond turtle, western burrowing owl, Swainson's hawk, San Joaquin kit fox, and American badger. The WEAP must:

- be developed by or in consultation with the Designated Biologist and consist of an onsite or training center presentation in which supporting written material and electronic media are made available to all participants;
- discuss the locations and types of sensitive biological resources on the project site and adjacent areas;
- present the reasons for protecting these resources;
- present the meaning of various temporary and permanent habitat protection measures;
- identify whom to contact if there are further comments and questions about the material discussed in the program;
- include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines; and
- be administered by a competent individual acceptable to the Designated Biologist.

Verification: At least 60 days prior to the start of any site mobilization, the project owner shall provide to the CPM two copies of the proposed WEAP and all supporting written materials and script for electronic media (video or DVD) prepared or reviewed by the Designated Biologist and a resume of the persons administering the program. The project owner shall provide in the monthly compliance report 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. At least 10 days prior to site mobilization, the project owner shall submit two copies of the CPM-approved training materials and electronic media to the CPM. The signed training acknowledgement forms from construction shall be kept on file by the project owner for a period of at least 6 months after the start of commercial operation. During project operation, signed statements for active project operational personnel shall be kept on file for 6 months following the termination of an individual's employment.

## BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

**BIO-6** The project owner shall submit two copies of the proposed biological resources mitigation implementation and monitoring plan (BRMIMP) to the CPM for review and approval, and to the USFWS, and CDFG 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, shall include all measures contained in the BRMIMP for the A2PP project, and shall identify:

- all Applicant-proposed mitigation, monitoring, and compliance measures included as part of the project description in the AFC, which include all measures required for A2PP construction and operation;
- all biological resource conditions of certification, including any measures or conditions provided in required permits;
- All biological resources mitigation, monitoring, and compliance measures required in other state and federal agency terms and conditions, such as those provided in the Streambed Alteration Agreement Notification, and Regional Water Quality Control Board and Army Corp of Engineers permits;
- all biological resource mitigation, monitoring, and compliance measures required in terms and conditions of federal agencies permitting the project;
- all mitigation, monitoring, and compliance measures required for protection of fairy shrimp, giant garter snakes, San Joaquin kit foxes, burrowing owls, Swainson's hawks and other nesting raptors as discussed in conditions of certification below;
- a detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
- all locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
- duration for each type of monitoring and a description of monitoring methodologies and frequency;
- performance standards to be used to help decide if and when proposed mitigation is or is not successful;
- all performance standards and remedial measures to be implemented if performance standards are not met;
- a process for proposing plan modifications to the CPM and appropriate agencies for review and approval;
- a copy of all biological resource-related permits obtained; and
- a description of impact avoidance, minimization, and mitigation measures for noise, fugitive dust, and lighting impacts.

**Verification:** The project owner shall provide the draft BRMIMP at least 60 days prior to start of any site mobilization. The CPM (~~and USFWS, and CDFG if they choose to comment~~), shall determine the BRMIMP acceptability within 45 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM ~~and the City of Ceres~~ within 5 days of their receipt and the BRMIMP shall be revised or supplemented to reflect the permit conditions within 10 days of their receipt by the project owner. Ten days prior to mobilization of the site and related facilities, the revised BRMIMP shall be resubmitted to the CPM.

The project owner shall notify the CPM no less than 5 working days before implementing any modifications to the approved BRMIMP to obtain CPM approval. Any changes to the approved BRMIMP must also be approved by the CPM and submitted to the USFWS and CDFG for review and comment to ensure that no conflicts exist.

Implementation of 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.

## **IMPACT AVOIDANCE MITIGATION MEASURES**

- BIO-7** The project design shall incorporate all feasible measures that avoid or minimize impacts to the local biological resources, including the following:
- design, install, and maintain transmission line poles, access roads, pulling sites, and storage and parking areas to avoid identified sensitive resources;
  - design, install, and maintain new and ~~reconstructed~~ re-rated transmission lines and all electrical components in accordance with the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) to reduce the likelihood of electrocutions of large birds;
  - eliminate from landscaping plans any List A California exotic pest plants of concern as defined by the California Exotic Pest Plant Council;
  - no firearms shall be allowed on the site;
  - no dogs or other household pets shall be allowed in work areas; and
  - prescribe a road sealant that is nontoxic to wildlife and plants that will limit dust on dirt roads.

**Verification:** All mitigation measures and their implementation methods shall be included in the BRMIMP. 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 termination report identifying how impact avoidance measures were completed.

## **FRAC-OUT CONTAINMENT PLAN**

**BIO-8** The project Applicant owner shall prepare and implement a frac-out containment plan to ensure that drilling mud or other drilling material do not impact biological resources or impair water quality of canals during gas pipeline construction. The plan should include measures to protect water quality of the adjacent canal(s) and any vegetation that provides suitable habitat for special-status wildlife species adjacent to the frac-out. The plan should also include appropriate procedures for cleanup and disposal of drilling materials and contain potential mitigation measures for impacts to sensitive plant and wildlife species or their habitat that may occur as the result of a frac-out.

**Verification:** A draft containment plan must be submitted to the CPM, ~~USFWS, and for review and approval, and to the~~ CDFG for review and comment no less than 60 days before the estimated start of construction of the gas pipeline. A final plan must be completed no less than 30 days before the start of the construction of the gas pipeline. The final plan shall be incorporated into the BRMIMP. Notification of any frac-out must be made to the CPM, ~~USFWS, and CDFG~~ within 24 hours of the occurrence. The project owner shall notify the CPM of the circumstances and location of the frac-out and corrective measures that are being taken. Whenever corrective action is taken by the project owner, a determination of success or failure shall be made by the CPM within 5 working days after receipt of notice that corrective action is completed, or the project owner shall be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

## **AVOID HARASSMENT OR HARM TO SAN JOAQUIN KIT FOXES**

**BIO-9** The project owner shall conduct a pre-construction survey for San Joaquin kit fox for the ~~construction impact area, power plant, laydown area, transmission lines, re-rated transmission line, and gas pipeline, corridor, or reconductoring areas and a~~ The surveys shall include a 200-foot buffer of for the gas pipeline alignment and the transmission line corridors. ~~If a natal or pupping den is found within a designated construction area or within 200 feet of a designated construction area, USFWS and CDFG shall be contacted regarding the location of the den and whether any impacts are anticipated to the den from construction activities. If a take permit was not previously issued for the A2PP project, the project Applicant shall coordinate with the CDFG and USFWS to determine if a take permit will be required for project construction. A copy of all conditions of the take permit shall be included in the BRMIMP and a revised BRMIMP shall be prepared for the project as required. After consultation with USFWS and CDFG, potential dens may require a 50-foot exclusion zone and active dens may require a 100-foot exclusion zone. Destruction of any known dens would require a take permit from USFWS and the Energy Commission. Natal dens shall not be collapsed until after the adults and pups have left the den.~~

- The project owner shall manage the construction site and related linear alignments for the transmission lines and gas pipeline in a manner to avoid or minimize impacts to the San Joaquin kit fox by following the USFWS 1999 guidelines entitled *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 1998). Measures provided by USFWS include but are not limited to the following.
- During construction, all pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at the construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before using or moving the equipment or materials. If a kit fox is discovered, then the materials or equipment shall not be moved until consultation with the USFWS and CDFG. If necessary, under the direct supervision of the Designated Biologist, the equipment may be moved once to remove it from the path of construction activity until the fox escapes.

All excavated, steep-walled holes or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals by the Designated Biologist.

- During construction, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in closed containers and removed at least once a week from the construction site.

During construction, the Designated Biologist shall notify the USFWS and CDFG within 24 hours of receiving a report of incidental take occurring at the project site. The project proponent and the permitting agencies shall meet within two weeks to discuss adaptive management measures that may be undertaken to reduce or eliminate future incidents of incidental take.

Verification: The pre-construction survey shall be conducted no less than 14 days and no more than 30 days prior to the initiation of construction of the power plant, on gas pipeline, and transmission corridors. A written report summarizing the results of the pre-construction survey shall be sent to the CPM and USFWS prior to the start of ground disturbance for the power plant, gas pipeline, and transmission lines.

If a natal or pupping den is found within a designated construction area or within 200 feet of a designated construction area, USFWS and CDFG shall be contacted regarding the location of the den and whether any impacts are anticipated to the den from construction activities.

If a take permit was not previously issued for the A2PP project, the project owner Applicant shall coordinate with the CDFG and USFWS to determine if a take permit will be required for project construction. A copy of all conditions of the take permit shall be included in the BRMIMP and a revised BRMIMP shall be prepared for the project as required. After consultation with USFWS and CDFG, potential dens may require a 50-foot exclusion zone and active dens may require a 100-foot exclusion zone. Destruction of any known dens would require a take permit from USFWS and the Energy

Commission. Natal dens shall not be collapsed until after the adults and pups have left the den.

The project owner shall manage the construction site and related linear alignments for the transmission lines and gas pipeline in a manner to avoid or minimize impacts to the San Joaquin kit fox by following the USFWS 1999 guidelines entitled Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1998). Measures provided by USFWS include but are not limited to the following.

- During construction, all pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at the construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before using or moving the equipment or materials.
- If a kit fox is discovered, then the materials or equipment shall not be moved until consultation with the USFWS and CDFG. If necessary, under the direct supervision of the Designated Biologist, the equipment may be moved once to remove it from the path of construction activity until the fox escapes.
- All excavated, steep-walled holes or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals by the Designated Biologist.
- During construction, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in closed containers and removed at least once a week from the construction site.
- During construction, the Designated Biologist shall notify the USFWS and CDFG within 24 hours of receiving a report of incidental take occurring at the project site. The project proponent and the permitting agencies shall meet within two weeks to discuss adaptive management measures that may be undertaken to reduce or eliminate future incidents of incidental take.

~~The pre-construction survey shall be conducted no less than 14 days and no more than 30 days prior to the initiation of construction on the gas pipeline or transmission corridors. A written report summarizing the results of the pre-construction survey shall be sent to the CPM and USFWS prior to the start of ground disturbance.~~

All incidental take minimization measures related to San Joaquin kit fox shall be included in the BRMIMP. 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, USFWS, and CDFG, for review and approval, a written construction termination report identifying how all biological resource-related conservation measures were completed.



## PRE-CONSTRUCTION NESTING BIRD SURVEYS AND NEST MONITORING

**BIO-10** ~~Where practicable, ground disturbance activities shall be conducted outside the bird nesting season (February 1 through July 31) except within 200 feet of potential giant garter snake habitat as described in **BIO-13**. Pre-construction nest surveys shall be conducted if construction activities would occur between February 1 and July 31. The Designated Biologist or Biological Monitor shall perform the surveys, ~~in accordance with the following guidelines:~~~~

~~Surveys shall be performed within all potential nesting habitat in the project disturbance area (including the gas pipeline and transmission corridors). A survey buffer of 500 feet shall be included in the survey area. Surveys specifically for nesting Swainson's hawks shall be conducted within ½ mile of designated disturbance areas that contain appropriate nesting habitat;~~

~~If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) shall be established and a nest monitoring plan shall be developed for all active nests. Active nests shall be monitored on a weekly basis until such time that the Designated Biologist determines the nestlings have fledged and disbursed or the nest is otherwise no longer active. Activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made. Consultation with CDFG shall be required for any construction that occurs within ½ mile of an active Swainson's hawk nest to ensure that no take of Swainson's hawks occurs during project construction.~~

~~————— Nest locations shall be mapped using a geographic positioning system (GPS) and submitted, along with a summary report describing the survey results, to the CPM. The Designated Biologist shall monitor the nest as prescribed above until he or she determines that nestlings have fledged and dispersed or the nest is otherwise no longer active (abandoned).~~

**Verification:** At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall be conducted within the 14-day period immediately preceding initiation of construction of each project component. The other survey should be conducted during the start of the Swainson's hawk breeding season (March 20<sup>th</sup> to April 20<sup>th</sup>) prior to construction of each project component to accurately determine the location of Swainson's hawk nests within ½ mile of construction areas. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.

At least 10 days prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM and CDFG a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo

identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest.

Surveys shall be performed within all potential nesting habitat in the project disturbance area (including the gas pipeline and transmission corridors). A survey buffer of 500 feet shall be included in the survey area. Surveys specifically for nesting Swainson's hawks shall be conducted within ½ mile of designated disturbance areas that contain appropriate nesting habitat;

If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) shall be established and a nest monitoring plan shall be developed for all active nests. Active nests shall be monitored on a weekly basis until such time that the Designated Biologist determines the nestlings have fledged and disbursed or the nest is otherwise no longer active. Activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made. Consultation with CDFG shall be required for any construction that occurs within ½ mile of an active Swainson's hawk nest to ensure that no take of Swainson's hawks occurs during project construction.

Nest locations shall be mapped using a geographic positioning system (GPS) and submitted, along with a summary report describing the survey results, to the CPM. The Designated Biologist shall monitor the nest as prescribed above until he or she determines that nestlings have fledged and dispersed or the nest is otherwise no longer active (abandoned).

## **BURROWING OWL IMPACT AVOIDANCE AND MINIMIZATION MEASURES**

**BIO-11** The project owner shall manage the pipeline alignment and transmission lines in a manner to avoid or minimize impacts to the burrowing owl following by consulting the California Burrowing Owl Consortium Mitigation Guidelines (CBOC 1999).

~~During the nonbreeding season (September 1 through January 31), burrowing owls found during pre-construction surveys (**BIO-10**) to be within 50 meters of designated construction areas shall be evicted by passive relocation as described in the California Department of Fish and Game *Staff Report on Burrowing Owls* (CDFG 1995).~~

~~During the breeding season (February 1 through August 31), occupied burrows in designated construction areas or within 75 meters of designated construction areas shall not be disturbed and shall be provided with a 75-meter protective buffer until the Designated Biologist verifies through noninvasive means that either the birds have not begun egg laying or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Once fledglings are capable of independent survival, the owls can be evicted as described in item 1 of this condition and the burrow can be destroyed.~~

**Verification:** The project owner shall submit a report to CDFG and the CPM at least 10 days prior to the start of ~~site mobilization~~ ground disturbance for the transmission lines and gas pipeline that describes survey methods, results, and conservation or mitigation measures implemented in respect to burrowing owls. This report should be submitted in conjunction with **BIO-10**. If owl relocation is necessary, the project owner or the Designated Biologist shall coordinate with CDFG on the number of new burrows required (if any), their locations, and how any created burrows and compensation land shall be protected for the life of the project in a burrowing owl mitigation and monitoring plan. Within 30 days after completion of owl relocation and monitoring and the start of ground disturbance, the project owner shall provide written verification to the CDFG and CPM that burrowing owl mitigation measures have been completed.

During the non-breeding season (September 1 through January 31), burrowing owls found during pre-construction surveys (**BIO-10**) to be within 50 meters of designated construction areas shall be evicted by passive relocation as described in the California Department of Fish and Game *Staff Report on Burrowing Owls* (CDFG 1995).

During the breeding season (February 1 through August 31), occupied burrows in designated construction areas or within 75 meters of designated construction areas shall not be disturbed and shall be provided with a 75-meter protective buffer until the Designated Biologist verifies through noninvasive means that either the birds have not begun egg laying or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Once fledglings are capable of independent survival, the owls can be evicted as described in item 1 of this condition and the burrow can be destroyed.

## **GIANT GARTER SNAKE (GGS) AND WESTERN POND TURTLE PRE-CONSTRUCTION CLEARANCE SURVEYS**

This condition assumes that the ACOE shall enter formal consultation regarding potential project-related impacts to GGS with USFWS during the process of the ACOE's issuance of a Section 404 permit. If a 404 permit is not required by the ACOE upon review of the wetland delineation for the project, then the language of this condition is subject to change.

**BIO-12** The project owner shall conduct pre-construction surveys for GGS and western pond turtle (WPT) for all gas pipeline construction areas within 200 feet of a ~~canal crossing~~ an area that provides suitable habitat for GGS or WPT as specified in the GGS habitat assessment prepared by the ~~Applicant~~ project owner (CH2MHILL 2009k).

**Verification:** The Designated Biologist or a representative approved by USFWS and the CPM must survey the gas pipeline construction area within potential GGS and WPT habitat (including both aquatic habitat and upland habitat within 200 feet of suitable aquatic habitat) no more than 24 hours prior to the initiation of construction. Another pre-construction survey must be conducted if construction activity ceases within potential GGS habitat for a period of more than 2 weeks. The project owner shall submit a report to the CPM, USFWS, and CDFG no more than 10 days after completion of GGS and WPT pre-construction surveys that describes survey methods, results, and

conservation or mitigation measures taken. A figure shall be prepared for any sightings of GGS or WPT.

## **GIANT GARTER SNAKE (GGS) IMPACT AVOIDANCE AND MINIMIZATION MEASURES**

This condition assumes that the ACOE shall enter formal consultation regarding potential project-related impacts to GGS with USFWS during the process of the ACOE's issuance of a Section 404 permit. If a 404 permit is not required by the ACOE upon review of the wetland delineation for the project, then the language of this condition is subject to change.

**BIO-13** ~~Construction within 200 feet of canals with suitable GGS habitat must follow USFWS construction guidelines. The project Applicant shall minimize all gas pipeline construction within 200 feet of canals with suitable GGS habitat to the greatest extent possible. All construction that must occur within 200 feet of canals with potential GGS habitat shall occur within the GGS active period (May 1-October 1). USFWS must approve in writing any construction work within GGS habitat that must be conducted outside of this time window before construction activities commence. All pipeline construction within GGS areas shall incorporate measures as described in the USFWS GGS construction guidelines including but not limited to the following;~~

~~Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.~~

~~After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks during construction or drilling operations.~~

~~No fencing or other materials shall be utilized within 200 feet of GGS habitat that could potentially entangle or otherwise harm GGS.~~

Verification: The project owner shall submit a report to USFWS and the CPM if any GGS are found within work areas no more than 24 hours after the sighting is made. The report shall include monitoring results; a description of resolution of construction/snake conflict, and any additional monitoring that was required. The monthly monitoring report shall include updates on construction work occurring within GGS habitat.

The project owner Applicant shall minimize all gas pipeline construction within 200 feet of canals with suitable GGS habitat to the greatest extent possible. All construction that must occur within 200 feet of canals with potential GGS habitat shall occur within the GGS active period (May 1-October 1). USFWS must approve in writing any construction work within GGS habitat that must be conducted outside of this time window before construction activities commence. All pipeline construction within GGS areas shall incorporate measures as described in the USFWS GGS construction guidelines including but not limited to the following:

- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks during construction or drilling operations.
- No fencing or other materials shall be utilized within 200 feet of GGS habitat that could potentially entangle or otherwise harm GGS.

## **COMPLIANCE WITH CDFG STREAMBED ALTERATION AGREEMENT (SAA) AND ACOE SECTION 404 PERMIT MEASURES**

This condition is subject to change once the Applicant determines the extent of federal and state jurisdictional features present within the project footprint and the extent of project-related impacts to these features. Conditions ~~BIO-12~~ and ~~BIO-13~~ are contingent on the Applicant acquiring a Section 404 permit and operating under the ACOE's programmatic permit for GGS with projects requiring a 404 permit.

~~**BIO-14**—The Applicant is currently preparing a wetland delineation report to be submitted to CDFG and the ACOE to determine if state waters or waters of the U.S. are present within the disturbance areas or within the natural gas pipeline ROW or the transmission line corridors. It is currently assumed that an SAA and Section 404 Nationwide Permit shall be required by the project for Harding Drain and Prairie Flower Drain. The following measures shall be implemented:~~

- ~~1. Acquire appropriate 404 permit through the ACOE.~~
- ~~2. Any conditions of the SAA not currently included in this Condition of Certification **BIO-14** that are required by CDFG shall be included in the final BRMIMP.~~
- ~~3. Right of Access and Review for Compliance Monitoring: The CPM reserves the right to enter the project site or allow CDFG or ACOE to enter the project site at any time to ensure compliance with these conditions. The project owner herein grants to the CPM and to CDFG and/or ACOE employees and/or their representatives the right to enter the project site at any time to ensure compliance with the terms and conditions and/or to determine the impacts of storm events, maintenance activities, or other actions that might affect the jurisdictional waters. The CPM, ACOE, or CDFG may, at their discretion, review relevant documents maintained by the operator, interview the operator's employees and agents, inspect the work site, and take other actions to assess compliance with or effectiveness of mitigation measures.~~
- ~~4. Notification: The project owner shall notify the CPM, ACOE, and CDFG, in writing at least five days prior to initiation of project activities in~~

jurisdictional areas as noted and at least five days prior to completion of construction activities in jurisdictional areas. The project owner shall notify the CPM and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of a proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM, ACOE, and CDFG no later than seven days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project as defined below. A copy of the notifying change of conditions report shall be included in the annual reports.

- a. Biological Conditions: a change in biological conditions includes, but is not limited to, the following: 1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or 2) the presence of biological resources within or adjacent to the project area whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.
  - b. Physical Conditions: a change in physical conditions includes, but is not limited to, the following: 1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or changes in stream form and configuration caused by storm events; 2) the movement of a river or stream channel to a different location; 3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or 4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.
  - c. Legal Conditions: a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.
5. Code of Regulations: The project owner shall provide a copy of the Streambed Impact Minimization and Compensation Measures from the Energy Commission Decision to all contractors, subcontractors, and the Applicant's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel or Energy Commission personnel upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner if the CPM in consultation with CDFG, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:

- ~~a. The information provided by the Applicant regarding streambed alteration is incomplete or inaccurate;~~
- ~~b. New information becomes available that was not known to it in preparing the terms and conditions;~~
- ~~c. The project or project activities as described in the Staff Assessment Addendum have changed; or~~
- ~~d. The conditions affecting biological resources changed or the GPM, in consultation with CDFG and ACOE, determines that project activities will result in a substantial adverse effect on the environment.~~
- 6. Best Management Practices: The project owner shall also comply with the following conditions:
  - ~~a. The project owner shall minimize road building, construction activities and vegetation clearing within state waters and waters of the U.S. to the extent feasible.~~
  - ~~b. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter jurisdictional waters or be placed in locations that may be subjected to high storm flows.~~
  - ~~c. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the project owner to ensure compliance.~~
  - ~~d. Spoil sites shall not be located within drainages or locations that may be subjected to high storm flows, where spoil shall be washed back into a drainage.~~
  - ~~e. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering jurisdictional waters. These materials, placed within or where they may enter a jurisdictional drainage by project owner or any party working under contract or with the permission of the project owner shall be removed immediately.~~
  - ~~f. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, jurisdictional waters.~~
  - ~~g. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 200 feet of the high water mark of any drainage.~~

~~h. No equipment maintenance shall occur within 200 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.~~

~~**Verification:** The project owner shall obtain all required permits from ACOE and/or the Energy Commission in conjunction with CDFG at least 30 days prior to the start of construction. The project owner shall incorporate all required conditions of the SAA and/or 401/404 permit(s), as applicable, into the final BRMIMP at least 30 days prior to the start of site mobilization. A copy of all issued permits shall be sent to the CPM at least 30 days prior to the start of construction activities.~~

## **FAIRY SHRIMP SURVEYS OR AVOIDANCE AND COMPENSATORY MITIGATION**

This condition assumes that the ACOE will enter formal consultation regarding potential project-related impacts to federally listed fairy shrimp with USFWS during the process of ACOE's issuance of a Section 404 permit. If a 404 permit is not required by the ACOE upon review of the wetland delineation for the project, then the language of this condition is subject to change.

**BIO-15** ~~The Applicant Construction of that portion of the natural gas pipeline near the cattle wallow shall either avoid the cattle wallow located adjacent to the outer edge of the gas pipeline alignment corridor or the project owner shall conduct focused protocol fairy shrimp surveys (1 dry season and 1 wet season survey) within the cattle wallow. assume presence of fairy shrimp in all suitable habitats within 250 feet<sub>1</sub> of the edge of impact of the preferred pipeline alignment. If the Applicant conducts focused surveys which are negative and are accepted by USFWS, then no further mitigation is necessary. If the Applicant finds evidence of fairy shrimp within suitable habitat or assumes presence of fairy shrimp and the project cannot avoid occupied habitat by at least 250 feet, then compensatory mitigation shall be required as specified by USFWS in their biological opinion for the project. Compensatory mitigation will include acquisition and protection in perpetuity of occupied fairy shrimp habitat at an acreage specified by USFWS or purchase of vernal pool credits at an appropriate mitigation bank as required by USFWS in the biological opinion. The final requirements for fairy shrimp mitigation as specified in the biological opinion shall be included in the final BRMIMP.~~

**Verification:** If the cattle wallow will be avoided, 30 days prior to construction of the gas pipeline by PG&E, the project owner shall provide the CPM a description of the avoidance measures that will be taken and their acceptability to the USFWS.

If the project owner conducts focused surveys for fairy shrimp, the results of focused surveys shall be submitted to the CPM and USFWS no more than 45 days after completion of the surveys. If the results of the focused surveys are negative, then no further analyses or additional mitigation are necessary. If the project owner finds fairy shrimp during focused surveys ~~or assumes presence~~, a final mitigation proposal based on the biological opinion for the project shall be sent to the CPM no more than 30 days prior to the implementation of pipeline construction. The final requirements for fairy



shrimp mitigation as specified in the biological opinion shall be included in the final BRMIMP.

## **SPECIAL STATUS PLANT MITIGATION**

The mitigation portion of this condition would only be necessary if special status plant species are found during focused surveys conducted in the spring of 2010 along the preferred gas pipeline alignment.

~~**BIO-16**—The Applicant shall conduct focused surveys for potentially occurring special status plant species within the preferred gas pipeline ROW in the spring of 2010. If special status plant species are not found during focused surveys, then no further mitigation is required. If special status plant species are found within the impact area of the preferred pipeline alignment and cannot be avoided during pipeline construction to the satisfaction of the CPM and CDFG, then the Applicant shall prepare a special status plant mitigation plan for approval by the CPM and CDFG. The plan shall include appropriate mitigation measures to fully mitigate all impacts to special status plant species. Mitigation measures may include plant salvage and transplantation, seed collection and replanting, or purchase of appropriate mitigation credits or mitigation land. Appropriate mitigation measures shall depend on the species that is impacted and the degree of impact.~~

~~**Verification:**—The results of the special status plant survey shall be reported to the CPM and CDFG within 60 days of completion of the survey. If the findings of the survey determine that preparation of a special status plant mitigation plan is necessary, then a draft mitigation plan shall be submitted to the CPM and CDFG no less than 90 days prior to the initiation of pipeline construction. A final mitigation plan shall be prepared no less than 30 days prior to the start of pipeline construction. The conditions of the special status plant mitigation plan shall be included in the final BRMIMP.~~

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# CULTURAL RESOURCES

Testimony of Kathleen Forrest and Michael D. McGuirt

## SUMMARY OF CONCLUSIONS

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Staff concludes that the Almond 2 Power Plant (A2PP) project, proposed by the Turlock Irrigation District (the Applicant), would have a less than significant impact on known and newly identified built-environment and archaeological resources, so no mitigation for project impacts would be required. The adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8** would reduce the potential impacts of the proposed project on potential archaeological resources discovered during construction-related excavation activities to less than significant.

Staff recommends that the Commission adopt the following cultural resources Conditions of Certification, **CUL-1** through **CUL-8**. These measures are intended to complete the post-certification identification of subsurface archaeological deposits through a geoarchaeological study, to facilitate the identification and assessment of previously unidentified archaeological resources encountered during construction, and to mitigate any significant impacts from the project on any newly found resources assessed as significant. To accomplish this, the conditions provide for the hiring of a qualified geoarchaeologist who would complete a pre-construction geoarchaeological study and report the results to the California Energy Commission Compliance Project Manager (CPM); for the hiring of a Cultural Resources Specialist and archaeological monitors; for cultural resources awareness training for construction workers; for the monitoring of construction-related, ground-disturbing activities by a Cultural Resources Specialist and archaeological monitors in accordance with the results of the geoarchaeological study; for the recovery of data from significant discovered archaeological deposits; for the writing of a technical archaeological report on all archaeological activities and results; and for the curation of recovered artifacts and other data. When properly implemented and enforced, staff believes that these conditions of certification would reduce to less than significant any impacts to previously unidentified, CRHR-eligible cultural resources encountered during construction or operation. Additionally, with the adoption and implementation of these conditions, the A2PP would be in conformity with all applicable laws, ordinances, regulations, and standards (LORS).

## INTRODUCTION

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This cultural resources assessment identifies the potential impacts of the A2PP project on cultural resources. Cultural resources are defined under state law as buildings, sites, structures, objects, and historic districts. Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic.

Prehistoric archaeological resources are associated with the human occupation and use of California prior to prolonged European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American

human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts and as historic vernacular landscapes. Under federal and state historic preservation law, cultural resources must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the California Register of Historical Resources (CRHR). A resource less than 50 years of age must be of exceptional historical importance to be considered for listing.

For the A2PP project, staff provides an overview of the environmental setting and history of the project area, an inventory of the cultural resources identified in the project vicinity, and an analysis of the project's potential impacts to significant cultural resources, using criteria from the California Environmental Quality Act (CEQA).

If cultural resources are identified, staff determines which are historically significant (defined as eligible for the CRHR) and whether the A2PP would have a significant impact on those that are CRHR eligible. Staff's primary concern is to ensure that all potentially CRHR-eligible cultural resources are identified, that all potential A2PP impacts to those resources are identified and assessed, and that conditions are proposed that ensure that all significant impacts that cannot be avoided are mitigated to a less-than-significant level.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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Projects licensed by the Energy Commission are reviewed to ensure compliance with all applicable laws. For this project, in which there is no federal involvement,<sup>1</sup> the applicable laws are primarily state laws. Although the Energy Commission has pre-emptive authority over local laws, it typically ensures compliance with local laws, ordinances, regulations, standards, plans, and policies.

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<sup>1</sup> Cultural resources in California are also protected under provisions of the federal Antiquities Act of 1906 (Title 16, United States Code, Section 431, et seq.) and subsequent related legislation, policies, and enacting responsibilities, e.g., federal agency regulations and guidelines for implementation of the Antiquities Act.

**CULTURAL RESOURCES Table 1**  
**Laws, Ordinances, Regulations, and Standards**

Applicable Law	Description
<b>State</b>	
Public Resources Code 5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the <u>immediate</u> vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
California Health and Safety Code, Section 7050.5	This code makes it a misdemeanor <u>to knowingly mutilate or disinter, wantonly disturb, or willfully disturb or remove human remains found outside a cemetery without authority of law.</u> If human remains are discovered this code also requires a project owner to halt construction, <u>excavation, or ground disturbance of the site or nearby area reasonably suspected to overlie adjacent remains if human remains are discovered and to contact the county coroner. The law requires the coroner to make a determination that remains are not subject to further investigation within two days of notification from the project owner.</u>
<b>Local</b>	
County of Stanislaus General Plan (County of Stanislaus 1994)	Conservation/Open Space Element, Goal Eight: Preserve areas of national, state, regional and local historical importance. Policies: The County will support the preservation of Stanislaus County's cultural legacy of historical and archaeological resources for future generations. "Qualified Historical Buildings" as defined by the State Building Code shall be preserved.
City of Ceres General Plan (City of Ceres 1997)	Recreational and Cultural Resources, Goal 5.B: To preserve and maintain sites, structures, and landscapes that serve as significant, visible reminders of the city's social, architectural, and agricultural history. Policies: <ul style="list-style-type: none"> <li>• The City shall assist property owners in seeking registration of historic structures and sites as State Historic Landmarks or listing on the National Register of Historic Places.</li> <li>• The City shall encourage the preservation, maintenance, and adaptive reuse of existing historic buildings in the Redevelopment Areas and other areas of the Planning Area in order to prevent demolition and disrepair.</li> <li>• The City shall encourage the preservation of buildings of local historic importance in the Downtown and surrounding areas.</li> <li>• The City shall encourage relocation of reusable historic buildings as a means of historic preservation.</li> <li>• The City shall continue to implement the Historic Building Code for historic properties.</li> </ul> Recreational and Cultural Resources, Goal 5.C: To protect Ceres' Native American heritage. Policies: <ul style="list-style-type: none"> <li>• The City shall refer development proposals that may adversely affect archaeological sites to the California Archaeological Inventory at California State University, Stanislaus.</li> <li>• The City shall not knowingly approve any public or private project that may adversely affect an archaeological site without first consulting the California Archaeological Inventory, conducting a site evaluation as may be indicated, and attempting to mitigate any adverse impacts according to the recommendations of a qualified archaeologist. City implementations of this policy shall be guided by Appendix K of the <i>CEQA Guidelines</i>.</li> </ul>



## SETTING

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Information provided regarding the setting of the proposed project places it in its geographical and geological context and specifies the technical description of the project. Additionally, the prehistoric, ethnographic, and historical background provides the context for the evaluation of the CRHR eligibility of any identified cultural resources within staff's area of analysis for this project.

## REGIONAL SETTING

The proposed A2PP would be located in Ceres, Stanislaus County, California, on a 4.6-acre parcel adjacent to the existing Turlock Irrigation District (TID) Almond Power Plant, approximately 2 miles southwest of the center of Ceres. Ceres is located five miles south of Modesto, California, and primary access to the site would be via Crowes Landing Road off Highway 99. The proposed A2PP site was used as a borrow pit during the construction of the adjacent WinCo distribution center, and was backfilled with commercially available fill and graded in 2008 (TID 2009a, p. 2-1).

## PROJECT, SITE, AND VICINITY DESCRIPTION

The proposed project would be a simple-cycle, natural gas fired power plant on 4.6 acres of land immediately north of the existing TID Almond Power Plant. The project would consist of three 58-megawatt (MW) turbines with an expected nominal output of 174 MW. The proposed project would also include a new 11.6-mile natural gas line; reinforcement of a 1.8-mile segment of an existing natural gas line; two new 115-kV transmission lines; and the re-rating reconductoring of an existing 69-kV, 2.9-mile transmission line. The two new transmission lines would extend south of the proposed project site to the proposed Grayson Substation. An additional ~~4.856~~ 4-acre parcel would be used for construction and laydown areas, and a new storm water retention pond would be shared between the two facilities. The proposed plant would tie into the existing water supply and return used by the existing plant from the City of Ceres Wastewater Treatment Plant (TID 2009a, p. 5.3-2).

The proposed site is north of the existing Almond Power Plant, east of the WinCo distribution warehouse, south of a farm supply facility, and west of a modular building distributor. The site is relatively flat, and the proposed project site was previously excavated to a depth of 6.5 feet below the current grade and backfilled with material from the excavation of a wastewater pond in Turlock (TID 2009a, pp. 5.4-1–5.4-2). A storm water basin related to the WinCo distribution center is north of and adjacent to the site. Overall land use in the area is industrial and agricultural (CH2MHILL 2009k, App. F, p. 1-1).

The proposed 11.6 mile natural gas pipeline and 1.8 mile reinforcement is the preferred route. PG&E will own and operate the natural gas pipeline. The pipeline will be constructed to reinforce the existing PG&E natural gas system, serving the greater Modesto area and the A2PP project. At the time the Application For Certification (AFC) was submitted, PG&E had not identified the preferred alignment for the proposed natural gas line, and the AFC initially included two possible routes. PG&E subsequently proposed the "preferred alignment," which would be located east of the initial proposed

routes, and the Applicant submitted this change as part of Data Response 1D. The preferred alignment would run south from the proposed project site along paved roads, unpaved farm roads and property lines. It would tie in with PG&E Line #215 in Bradbury Road. A segment of Line #215 along Prune Avenue on the west side of the San Joaquin River would be reinforced as part of the project (CH2MHILL 2009k, app. F, p. 1-1). The proposed pipeline route would cross several historic water conveyance features (canals) within the TID. Construction of the proposed pipeline would be open trench, and would use a trenchless construction method to cross under some of the TID laterals (canal branches) and drains and the Union Pacific Railroad tracks. The pipeline would be buried approximately four feet below grade. The trench would be approximately 4 feet wide and 6–8 feet deep (CH2MHILL 2009k, p. 2-2).

For increased reliability, the two proposed, new, pole-mounted transmission lines, Corridor 1 and Corridor 2, would follow two different routes to the Grayson Substation. Corridor 1 would be approximately 0.9 miles long, and Corridor 2 would be 1.2 miles long (TID 2009a, p. 2-25). Both would cross the existing historic TID Lower Lateral 2. They would be constructed of tubular steel angle poles and wood or steel tangent poles approximately 70–80 feet in height (TID 2009a, p. 3-11). Construction of the transmission line would require excavations nine feet deep for tangent poles and 25 feet deep for angle poles (CH2MHILL 2009f, p. 39).

The existing 69-kV transmission line, running north of the proposed site, would be re-rated ~~reconducted~~ to prevent potential thermal overloads (TID 2009a, p. 3-2). This transmission line runs adjacent to the Union Pacific Railroad tracks on the east side of the proposed site.

## **Environmental Setting**

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time, is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California the region in which the proposed project is located, the Central Valley, has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the project site. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

## **Geology and Geomorphology**

The two most recent geological epochs, the Pleistocene (1.8 million–10,000 years ago), and the Holocene (10,000 years ago to the present) are the time periods in which humans reached and spread over the northern and southern American hemispheres, so landforms remaining from or created during the very late Pleistocene or throughout the Holocene are possible locations for surface or buried archaeological deposits. The surface of the A2PP plant site and environs is predominately Holocene in age.

The A2PP site and linear facilities are generally located in the Great Valley geomorphic province (TID 2009a, pp. 5.4-1–5.4-2), a structural trough approximately 435 miles long and between 44 and 56 miles wide (TID 2009a, p. 5.8-2). The Great Valley includes two

elongated northwest-to-southeast trending basins: the Sacramento Valley basin to the northwest and the San Joaquin Valley basin to the southeast (TID 2009a, p. 5.8-2). The project area is located in the San Joaquin Valley, between the courses of the Tuolumne and Merced Rivers. It is a low-gradient alluvial plain that is described historically as vast and featureless (CH2MHILL 2009g, pp. 2-3), and has been shaped by the Sierra Nevada to the east. The alluvial fans from the Sierras are vastly larger than those from the Coast Ranges to the west, due to the size and elevation of the Sierra Nevada (TID 2009a, p. 5.8-2). The Modesto Formation is the geologically youngest and topmost Late Quaternary stratigraphic unit in the project area (and in the greater San Joaquin Valley) and dates to the Wisconsin glacial age. Deglaciation in the Sierra Nevada occurred 16–20,000 years ago and deposition of the Modesto Formation was relatively complete by 10,000 years ago (CH2MHILL 2009g, pp. 2-3).

More specifically, the project site occupies an alluvial fan of the Tuolumne River (TID 2009a, p. 5.8-5), and the near surface sediments have been deposited by flooding of the San Joaquin and Tuolumne rivers (TID 2009a, pp. 5.4-1–5.4-2). However, moving away from the rivers the topmost stratigraphic unit in the project area is the Modesto Formation, which dates from 75,000 to 10,000 years before the present. The Modesto Formation extends to a depth of 10–20 feet below the ground surface (TID 2009a, p. 5.8-5). Additionally, while it is possible the uppermost eolian facies<sup>2</sup> of the Modesto Formation may also include early Holocene strata and middle Holocene facies, the eolian facies of the Modesto Formation have been heavily disrupted by agricultural activities (CH2MHILL 2009g, p. 3). The preferred natural gas pipeline route and reinforcement section “extend onto the fan-toe facies of the Tuolumne River fan, where the historic San Joaquin River and the toe of the vast Tuolumne River alluvial fan created a series of floodplain, flood basin, and interdistributary channel habitats” (TID 2009a, p. 5.8-6).

## **Prehistoric Background**

Over the years of archaeological investigation of California’s prehistory, several chronological sequences have been devised to trace the development of Central Valley Native American cultures and economies over time. These sequences are based on the persistence or replacement of such material characteristics as burial customs and artifact types. Four such schemes have been employed by Central Valley archaeologists in the twentieth and twenty-first centuries. The earliest classificatory scheme reached its most evolved expression in 1939, as the Delta sequence, positing for the Central Valley an Early Period, a Transitional Period, and a Late Period, each succeeding the last, but without absolute dates ascribed (Lillard et al. 1939; Moratto 1984, pp. 179–180). The Lillard Delta scheme was the basis for the next scheme, the Central California Taxonomic System (CCTS), in which Beardsley extended the Lillard scheme to include the Bay Area and renamed the three periods as Early Horizon, Middle Horizon, and Late Horizon (Beardsley 1954). From the 1950s through the early 1970s, California archaeologists made refinements to the trait lists by which these periods were defined (Moratto 1984, pp. 181–183) and, through the use of radiocarbon dating, began to ascribe absolute date ranges to them, which made it possible to set the beginning of the Central Valley chronological schemes at around 2000 BC. With the

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<sup>2</sup> Eolian indicates deposition by wind. Facies, in geology is applied to bodies of sedimentary rock to enable distinctions on the basis of descriptive or interpretive characteristics such as composition, grain size, bedding characteristics, and fossil components.

dimension of time added, conceptual problems with the CCTS began to emerge, as it became clear that it did not accommodate differential rates of change in different areas, tended to obscure gradual change, and focused analysis on traits rather than on culture (Moratto 1984, pp. 183–185, 199–201).

Subsequent archaeological chronologies were more modest in scope and localized, but in 1973, in a third regional scheme, Fredrickson advanced the idea of cultural units, called patterns, that lacked temporal significance but implied a common set of lifeways in a particular geographic area. For the Central Valley, he defined three patterns, Windmiller, Berkeley, and Augustine (Fredrickson 1973; Moratto 1984, p. 201), and, along with other archaeologists, over the next decade interpreted characteristic subsistence activities, trading preferences, and social organization for them (Moratto 1984, pp. 201–214), as well as their geographic occurrence.

Because they were based on the archaeological evidence actually found and studied, these earlier schemes largely ignored the period of human use of the Central Valley that preceded 2000 BC. California archaeologists assumed that people were living in the valley before that, but had found very little evidence of it. In contrast, the fourth chronological scheme, that of Rosenthal et al. in a recent article on the archaeology of the Central Valley, includes the pre-2000 BC period. In addition, it uses calibrated radiocarbon dates to create its period divisions and claims a wider geographic applicability than the earlier schemes. It recognizes five periods: Paleo-Indian, Lower Archaic, Middle Archaic, Upper Archaic, and Emergent (Rosenthal et al. 2007, p. 150).

### **Paleo-Indian (11,550–to 8550 BC) and Lower Archaic (8550–5550 BC)**

The earliest generally accepted evidence for the human occupation of the North American continent, dating from about 10,000 BC, is the occurrence of large, very skillfully made stone spear points, sometimes in association with the remains of now-extinct giant mammals (megafauna). This occupation is known archaeologically as the Big Game Hunting Tradition, or the Fluted Point Tradition. The Big Game Hunting Tradition, evidenced all over the American continent but centered in the Great Plains and Southwest, apparently had a nearly exclusive focus on the exploitation of large game animals. Archaeologists believe that the Big Game Hunting Tradition did not occur in California, although its characteristic fluted projectile points have been found all over the state. Rather, when the glaciers of the Pleistocene era retreated and the warmer and drier climate of the Holocene caused the sea level to rise along the coast, the formerly plentiful inland lakes to shrink or dry up, and the extinction of megafauna (Moratto 1984: 78-81), California's late Pleistocene and early Holocene peoples were forced to adopt a general hunter-forager subsistence mode and to live near reliable water sources where food was consistently available. After 5000 BC, the warmer, drier climate gave way to a cooler, moister regime, and Native Americans refined their exploitative abilities by developing their technology and adapting their lifestyles to the seasonal availability of a wide variety of local food sources.

In the Central Valley, Rosenthal's Paleo-Indian and Lower Archaic periods are represented primarily by isolated finds on the few Pleistocene and early Holocene landforms that have not been buried by alluvium from episodes of sediment deposition (Rosenthal et al. 2007, p. 151).

## **Middle Archaic (5550–550 BC)**

Rosenthal's Middle Archaic period began with a climatic shift to a warmer and drier climate that coincided with the formation of the Delta. According to Rosenthal et al., the earliest part of this period is poorly represented archaeologically for the same reasons as the Paleo-Indian and Early Archaic periods, but numbers of sites are known for the post-2550 BC portion, and their excavation has produced extensive evidence on subsistence and technology. The latter half of the Middle Archaic period corresponds to Fredrickson's Windmill pattern in the upper San Joaquin Valley, dating between 1850 and 750 BC (Rosenthal et al. 2007, pp. 153–154).

Windmill sites are well represented in the Delta region (Wohlgemuth and Mears 1994, pp. 6-7; Rosenthal et al., 2007, p. 153), and 6 of the 12 known Windmill sites are in the Stockton area (Napton 2006, pp. 6–7; Wohlgemuth and Mears 1994). Windmill sites indicate that subsistence was based on a variety of food resources that included many kinds of fish, birds, and mammals. Seeds, roots, and acorns appear to have been important dietary elements as well, despite the paucity of milling equipment associated with Windmill sites (Rosenthal, et al., 2007, p. 155). These dietary remains also indicate a more sedentary, year-round settlement pattern. Windmill groups in the Delta had extensive trade networks which focused on acquiring both utility goods, such as obsidian for toolstone, and ornamental and ceremonial objects, such as abalone shell, olivella shell beads, and quartz crystals (Moratto 1984; Wohlgemuth and Mears 1994; Rosenthal, et al., 2007). Their mortuary complex is characterized by fully extended burials, placed face down, with the head in a westerly orientation. Grave goods were common. The funerary use of red ochre has also been frequently documented (Fredrickson 1973; Moratto 1984; Rosenthal, et al., 2007).

## **Upper Archaic (550 BC–AD 1100)**

Rosenthal's Upper Archaic saw a change to a cooler, wetter, and more stable climate associated with further sediment deposition in the Central Valley, producing the material for the formation of the current surface soils there. The Upper Archaic is better represented than previous periods. Archaeological sites of the Upper Archaic are those that were termed Middle Horizon and Berkeley pattern in earlier chronological schemes, but more recent dating evidence indicates that the Windmill pattern was not replaced by the Berkeley pattern but rather the two coexisted in different parts of the San Joaquin Valley throughout the Upper Archaic period (Rosenthal et al. 2007, pp. 155–156).

In contrast to Windmill pattern sites, the abundant remains of milling equipment, particularly mortars and pestles, found at Berkeley pattern sites indicates a reliance on plant resources, especially acorns, as dietary staples (Moratto 1984, pp. 209–210; Wohlgemuth and Mears 1994, p. 7; Rosenthal, et al., 2007, p. 156). Other technological differences include a highly developed worked-bone industry, distinctive diagonal flaking patterns on large concave-base projectile points, and split-punched and saddle-shaped Olivella shell beads (Moratto 1984, p. 210). The contrasts continue into mortuary patterns, where the dead are generally interred in a flexed position with variable orientation and fewer grave goods. Berkeley pattern sites are the remains of large mounded villages with extensive accumulations of habitation debris and hearths. This

information, combined with the evident technological complexity, indicates that Berkeley pattern peoples were living in the same areas, not only year-round, but for long periods of time (Rosenthal 2007, p. 156).

### **Emergent (1100 AD–Historic Period)**

The climate of Rosenthal's Emergent period was stable and similar to that of the present. This period equates to the CCTS's Late Horizon and Fredrickson's Augustine pattern. Of all the defined periods for the Delta, it is the best represented archaeologically. In this period, earlier technologies disappeared and those that are known from the time of European contact begin to appear, including the use of the bow and arrow (Rosenthal et al. 2007, pp. 157–159).

This pattern is characterized by settlements indicative of large, dense populations with elaborate trade networks and an intensive hunting, fishing, and gathering subsistence strategy with a continued focus on acorns (Moratto 1984, p. 213; Wohlgemuth and Mears 1994, p. 7). Technologically, the Augustine Pattern is distinguished by the bow and arrow, serrated arrow points, bone awls used in coiled basket making, shaped mortars and pestles, the introduction of clam shell disk beads, drilled Olivella sequin beads, incised bone tubes and abalone ornaments, large amounts of baked clay "globs" (substitutes for rocks used to cook acorn mush in baskets), and emergent pottery (Moratto 1984, p. 211, 213; Rosenthal, et al., 2007, pp. 157–158). Mortuary practices involved either cremation or pre-interment burning of the grave-pit and artifacts, coupled with flexed burials. Differential distribution of grave goods, evidence of increased trade, and settlement expansions indicate that the Augustine Pattern was a period of population growth and escalating sociopolitical complexity.

### **Ethnographic Background**

The project area is located within the vast traditional territory claimed by the California Native American group known as the Yokuts. Yokuts is a term applied to a large and diverse group who formerly inhabited the San Joaquin Valley and Sierra Nevada foothills of central California. Anthropologists have divided the Yokuts into three groups based on geographical location. The Northern Valley Yokuts are identified with a 40-to 60-mile-wide area straddling the San Joaquin River, south of the Mokelumne River, east of the Diablo Range, and north of the sharp bend that the San Joaquin River takes to the northeast (Wallace 1978, p. 462). The Foothill Yokuts are associated with the western slopes of the Sierra Nevada from the Fresno River southward to the Kern River (Wallace 1978, p. 471). The Southern Valley Yokuts claimed the area around Tulare, Buena Vista, and Kern lakes, between their connecting sloughs, and around the lower portions of the Kings, Kaweah, Tule, and Kern rivers (Wallace 1978, p. 448). The A2PP project is located in the traditional territory claimed by the Yalesumne tribe of the Northern Valley Yokuts, who occupied the area between the Stanislaus and Tuolumne Rivers closest to the San Joaquin River.

Before the northern San Joaquin Valley was transformed for agriculture in the nineteenth century, sloughs and marshes dominated the floodplain of the San Joaquin River. This environment provided an abundant supply of animal and plant foods and materials (Wallace 1978, pp. 462–463). Tules, which could grow as tall as 10 to 12 feet, dominated the region, with sage, greasewood, and bunchgrasses found in the drier

areas. The Northern Valley Yokuts used bunched tule reeds to construct light watercraft that made water travel very efficient, and trade relations were maintained with other peoples through a system of waterways and overland trails (Wallace 1978, pp. 464–466).

The Northern Valley Yokuts relied heavily on their riverine environment as a source for settlement and subsistence. Settlement locations were apparently chosen in response to subsistence resources and protection from winter and spring flooding. Groups were organized in territorial tribelets of up to 300 people, living in permanent villages on mounds along the river, although gathering parties left the villages seasonally to collect food and materials. Secondary settlements consisted of small camps or villages of several households. A Northern Valley Yokuts settlement was characterized by domed-shaped houses and shelters made of brush and tules (Wallace 1978, p. 466).

Fish, mussels, pond turtles, waterfowl, tule elk, pronghorn antelope, jackrabbits, squirrels, and quail were all found in abundance in and near the water. Salmon, in particular, is noted as a prime source of food in historical accounts of the Northern Valley Yokuts. Secondary to fishing, fowling provided the most important source of meat, as geese, ducks, and other aquatic birds were abundant in the wetlands. Harvesting of wild plants was very important to tribal subsistence. Oak trees that grew on the valley floor supplied the acorns that became a dietary staple for the Northern Valley Yokuts (Wallace 1978, pp. 463–464).

The destruction of native Delta cultures was the result of several factors, the first of which was the establishment of Spanish missions in northern California. Even before explorers and settlers made extensive contact, the missions of San Jose, Santa Clara, and others were drawing Indians away from their native villages. Secularization of the missions in 1833 forced many missionized Indians of various coastal and valley cultural affiliations to seek refuge from encroaching settlers with remote Native American groups still unaffected by Mexican influence, which further separated the refugees from their cultural roots. The introduction of European diseases had a decimating effect on native populations throughout California. A deadly malaria epidemic killed thousands of Yokuts people in 1833. The final collapse of independent Delta cultures occurred when waves of American settlers after the Gold Rush appropriated native territory for agriculture. Village mounds of the native peoples that had been abandoned were re-occupied by farmhouses, buried under artificial levees, or leveled for agriculture (Wallace 1978, p. 462; Bennyhoff 1977, p. 248).

## **Historic Background**

### **Spanish Period (1769 to 1821)**

The Spanish period in California spans the years 1769 to 1822, beginning with the founding of the Mission San Diego de Alcalá in 1769. The San Joaquin Valley remained unexplored by the Spanish until 1772, when Pedro Fages entered the Northern San Joaquin Valley by reaching the mouth of the San Joaquin River and tracing the river upstream (Smith 2004, p. 149). Father Francisco Garcés entered the valley shortly thereafter, observing native villages, wide rivers, tule swamps and huge herds of tule elk (TID 2009b, p. 4.) No permanent Spanish settlements, however, were ever established in the vicinity of the proposed A2PP project.

## **Mexican Period (1821 to 1848)**

Mexico gained independence from Spain in 1821, and Alta California<sup>3</sup> became one of the provinces of the Republic of Mexico. Following the secularization of the missions in 1833, the Mexican governors began granting large tracts of land (commonly 48,000 acres) to politically prominent individuals. The 26,000-acre Rancho Orestimba was located along the west side of the San Joaquin River and is the closest rancho to the project area. The rancho was originally granted to Sebastian Nunez in 1846, who occupied it until 1859 when he sold most of it to Count Cippriani (TID 2009b, p. 5).

## **American Period (1848 to the present)**

Following the conclusion of the Mexican-American War in 1848 the United States formally obtained California in the Treaty of Guadalupe Hidalgo. Late that same year gold was discovered at Sutter's Mill in Coloma, triggering the Gold Rush of 1849, a consequent population explosion, and California statehood in 1850. This series of events inaugurated an era of widespread settlement in California. It also marked the beginning of commerce in the San Joaquin Valley, as Stockton became the main supply city for miners headed to the southern Sierra mines, stretching from the Mokelumne River to the Kern River. The Gold Rush and the resulting influx of people created a cattle boom in California, increasing the demand for beef and other associated products. The boom lasted until 1855, when the beef market collapsed due to the importation of sheep and cattle from other states and the development of stock breeding farms. Many of the large ranchos that had been created during the Mexican Period were lost through foreclosure or sale following the collapse, as rancheros had mortgaged the land at high rates during the boom. A growing number of smaller farms appeared, which gave way to horse ranches, dairies and nurseries (TID 2009b, pp. 5-6).

California's Central Valley has been defined by transportation, irrigation and agriculture. A section of the first transcontinental railroad runs through the San Joaquin Valley. The Central Pacific Railroad began construction of the first railroad in the valley in 1870, establishing a new railroad town called Lathrop, northwest of Modesto. The rail line ran southeast toward Modesto, a planned railroad town. Ferries were also a common method of transportation. J.B. Crow, one of the first wheat growers in the area, founded the settlement of Crows Landing and established a landing on the San Joaquin River to ship his crop to market. He operated the ferry with two partners between 1870 and 1875. Crows Landing Road, just west of the project site, was established in 1870 and is the original road that connected the Davis and Maze's ferry on the Tuolumne River and the Fairbank's Ferry on the San Joaquin River. Several way stations were established along the road; these buildings are no longer extant (TID 2009B, p. 6).

Ceres, named after the Roman goddess of agriculture, was surveyed by R. K. Whitmore in 1874. Originally settled in 1867, a Central Pacific Railroad stop was established in 1872, and Ceres became a grain shipping point. Wheat cultivation, initially the primary crop in the area, had diminished by 1880 due to over-cultivation and the hot, dry summers, and the residents began to diversify crops with those that required less water.

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<sup>3</sup> Alta (Upper) California was the Mexican name for what is now known as the State of California and was distinct from Baja (Lower) California, which remained part of Mexico after Mexico ceded Alta California to the United States in the Treaty of Guadalupe Hidalgo in 1848.



The TID, along with the Modesto Irrigation District (MID), was one of the first irrigation districts to be established following the passage of the Wright Bill in 1887. Following the completion of the La Grange Dam in 1893, TID began constructing the main canal and laterals for the district. Planning and construction moved forward slowly because of internal dissension, but work finally began in June of 1894. Work was halted in August of 1894 because the district did not have the funds to pay its contractor. By 1898, however, enough of the main canal was complete to send water 23 miles from the La Grange Dam east to Hickman. TID began irrigation in 1900, and almost all of the main canal and the laterals were completed by 1904 (CH2MHILL 2009c, DPR 523 for TID Lateral No. 2, p. 4).

Settlers had to create ditches connecting the lateral canals to their land, unless they were the fortunate few to buy land next to the canals. Hundreds of “community ditches” were built and maintained by the people using them, commonly without any formal organization (TID 2009a, pp.5.3-8–5.3-9).

By 1907, problems began, associated with the rising water table that resulted from the irrigation of the area. The first drain, the Moore Drain, was constructed that year to address the problem. Additional residents requested assistance from the TID Board to drain their land and additional drains were created beginning in 1918 (CH2MHILL 2009c, DPR 523 for TID Westport Drain, p. 1). Both drains in the project area were constructed during this time.

The founding of the TID and MID and the establishment of water conveyance systems in the early 1900s, coupled with the promise of cheap land, attracted settlers to the area. This began a revolution in the area’s agriculture, reducing the size of land holdings as settlers established dairies, poultry farms, orchards, and alfalfa fields and planted row crops, all of which required less water and land than grain fields. This led to an increase in population and trade and formed the basis for new industries. A rise in canneries in the region provided a convenient market for local products. Ferries, including those along Crows Landing Road, and the railroad connections to Modesto and Stockton also made the area more accessible (TID 2009a, pp.5.3-8–5.3-9).

The TID began improving the canals and laterals in the 1920s and 1930s, lining them with concrete to improve water flow (CH2MHILL 2009c, DPR 523 for TID Lateral No. 2 ½, p. 1). Although they began as dirt-lined ditches, many of the community ditches have been replaced with underground pipe, beginning in 1945. The trend continued, and by 1951 the miles of pipe exceeded those of open ditch. However, only 3 miles of the 250 miles of canals had been replaced with pipe as of 2002 (TID 2009b, p. 8).

A section of the Tidewater Southern Railroad (TSRR) runs adjacent to the A2PP site. Organized in 1910, the TSRR was a small interurban electric passenger and freight railway that ran between Stockton and Turlock and had a branch to Manteca. The TSRR went into service in 1912 and was bought by Western Pacific in 1917. The original vision of an electric train running from Stockton to Fresno and connecting to Bakersfield and the Pacific coast never materialized. However, the line had valuable connections in Stockton with the Western Pacific, Santa Fe, Central California Traction, Southern Pacific, and Stockton Terminal and Eastern Railroads, which made carrying freight quite profitable. After the Western Pacific acquisition it became a significant

feeder line, serving an important fruit, vegetable and wine producing area. Passenger service was discontinued by the mid-1930s, and the electric service was replaced with steam and diesel by 1946. All of the tracks were replaced after 1945 to accommodate the heavier diesel locomotives (Hatoff et al. 1995, pp. 2-149–2-150). The line is currently owned by Union Pacific.

## **CULTURAL RESOURCES INVENTORY**

A project-specific cultural resources inventory is a necessary step in staff's effort to determine whether the proposed project may cause significant impacts to historically significant cultural resources and would therefore, under CEQA, have an adverse effect on the environment.

The development of a cultural resources inventory entails working through a sequence of investigatory phases. Generally the research process proceeds from the known to the unknown. These phases typically involve doing background research to identify known cultural resources, conducting fieldwork to collect requisite primary data on not-yet-identified cultural resources in the vicinity of the proposed project, assessing the results of any geotechnical studies or environmental assessments completed for the proposed project site, and compiling recommendations or determinations of historical significance (see "Determining the Historical Significance of Cultural Resources," below) for any cultural resources that are identified.

This subsection describes the research methods used by the Applicant and Energy Commission staff for each phase and provides the results of the research, including literature and records searches (California Historical Resources Information System (CHRIS) and local records), archival research, Native American consultation, and field investigations. Staff provides a description of each identified cultural resource, its historical significance, and the basis for its significance evaluation. Assessments of the project's impacts on historically significant cultural resources, potential impacts on previously unidentified, buried archaeological resources, and proposed mitigation measures for all significant impacts are presented in a separate subsection below.

### **Project Area of Analysis**

The inventorying of cultural resources within what staff defines as the appropriate area for the analysis of a project's potential impacts is the first step in the assessment of whether the proposed project may cause a significant impact to an important cultural resource and therefore have an adverse effect on the environment. The area that staff considers when identifying and assessing impacts to important cultural resources, called the "project area of analysis," is a composite geographic area that accommodates the analysis of each type of cultural resources that is present. The project area of analysis can vary depending on the type of cultural resources under analysis and is usually defined as a specific area within and surrounding the project site and associated linear facility corridors. For this project, staff has defined a project area of analysis for the following cultural resources types:

- For archaeological resources, the area of analysis is minimally defined as the project site footprint, plus a buffer of 200 feet, and the project linear facilities routes, plus 50 feet to either side of the routes.

- For ethnographic resources, the area of analysis is expanded to take into account traditional use areas and traditional cultural properties which may be far-ranging, including views that contribute to the historical significance of the properties. The Native American Heritage Commission (NAHC) assists project cultural resources consultants and staff in identifying these resources, and consultation with Native Americans and other ethnic or community groups may contribute to defining the area of analysis. For the A2PP, staff identified no ethnographic resources and so defined no area of analysis for them.
- For built-environment resources, the area of analysis is minimally defined as one parcel deep from the project site footprint in urban areas, but in rural areas is expanded to include a 0.5-mile buffer from the project site, and from any above-ground linear facilities, to encompass resources whose setting could be adversely affected by industrial development. For this project, the area of analysis is established at that minimum.
- For a historic district or a cultural landscape, staff defines the area of analysis based on the particulars of each siting case. The area of analysis for the TID Historic District, recognized by staff as a potentially CRHR-eligible resource surrounding the components of the A2PP, is defined as the historic boundaries of the TID.

As used by staff, the term “project areas” means the footprints of the several project components, including the plant site, the laydown area(s), and the several linear facility corridors, plus any new access roads and any borrow and disposal sites.

### **Determining the Historical Significance of Cultural Resources**

CEQA requires the Energy Commission, as a lead agency, to evaluate the historical significance of cultural resources by determining whether they meet several sets of specified criteria. Under CEQA, the definition of a historically significant cultural resource is that it is eligible for listing in the CRHR, and such a cultural resource is referred to as a “historical resource,” which is a “resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR”, or “a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code,” or “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency’s determination is supported by substantial evidence in light of the whole record” (Cal. Code Regs., tit. 14, § 15064.5(a)). The term, “historical resource,” therefore, indicates a cultural resource that is historically significant and eligible for the CRHR.

Consequently, under the CEQA Guidelines, to be historically significant, a cultural resource must meet the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old,<sup>4</sup> a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code, § 5024.1):

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<sup>4</sup> The Office of Historic Preservation’s [Instructions for Recording Historical Resources](#) (1995) endorses recording and evaluating resources over 45 years of age to accommodate a potential five-year lag in the planning process.

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

Historical resources must also possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance (Cal. Code Regs., tit. 14, § 4852(c)).

Additionally, cultural resources listed in or formally determined eligible for the National Register of Historical Places (NRHP) and California Registered Historical Landmarks numbered No. 770 and up are automatically listed in the CRHR and are therefore also historical resources (Pub. Resources Code, § 5024.1(d)). Even if a cultural resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows a lead agency to make a determination as to whether it is a historical resource (Pub. Resources Code, § 21084.1).

The assessment of potentially significant impacts to historical resources and the mitigation that may be required of a proposed project to ameliorate any such impacts depend on CRHR-eligibility evaluations.

### **Background Inventory Research**

Various repositories in California hold compilations of information on the locations and descriptions of cultural resources older than 45 years that have been identified and recorded in past cultural resources surveys. The Energy Commission's Data Adequacy Regulations require Applicants to acquire information specific to the vicinity of their project from certain repositories and to provide it to staff as part of the AFC. Additionally, to acquire further information on potential cultural resources in the vicinity of a proposed project, the Applicant is required to make inquiries of knowledgeable individuals in local agencies and organizations and to consult Native Americans who have expressed an interest in being informed about development projects in areas to which they have traditional ties.

### **CHRIS Records Search**

The California Historical Resources Information System, or CHRIS, is a federation of 11 independent cultural resources data repositories overseen by the California State Office of Historic Preservation. These centers are located around the state, and each holds information about the cultural resources of several surrounding counties. Qualified cultural resources specialists obtain data on known resources from these centers and in turn submit new data from their ongoing research to the centers.

## **CHRIS Results**

CH2MHILL requested a literature search from the CHRIS Central California Information Center for the area encompassing a 1.0-mile buffer around the proposed A2PP plant site, laydown areas and parking areas, and a 0.5-mile buffer around the transmission line corridors and originally proposed natural gas pipeline routes. The literature review included a review of the National Register of Historic Places (NRHP); the California Register of Historical Resources (CRHR); California Points of Historical Interest; California Historical Landmarks; historic maps; Stanislaus County Assessor maps; and local registers of historic properties, as well as all recorded archaeological sites, cultural resource surveys and excavation reports. CHRIS staff also searched for previously recorded segments of any of the TID laterals that crossed the originally proposed natural gas pipeline routes (TID 2009b, pp. 9-10). An additional search using the same parameters was requested following the selection of the proposed preferred alignment of the natural gas pipeline and the segment requiring reinforcement (CH2MHILL 2009k, p. 2-1).

Within the 1.0 mile-radius records search area of the A2PP plant site and laydown areas and within 0.5 mile of the linear facilities corridors, 42 cultural resources studies have been prepared. The majority of these reports are cultural resources survey reports (TID 2009b, p. 10).

No previously recorded cultural resources were identified within the proposed plant site or in the linear facilities corridors in the initial records search; however, several TID laterals and drains, structures and a section of the Tidewater Southern Railroad were noted on the historic maps (TID 2009b, p. 11). Two previously recorded built-environment resources were identified in the literature search for the preferred alignment of the natural gas pipeline, and one prehistoric resource was identified within 0.5 mile of the preferred alignment (CH2MHILL 2009k, App. F, pp. 2-3).

The prehistoric site (P-50-000218) was a Native American burial site that consisted of midden<sup>5</sup> and approximately six burials. The site was located on what appears to be a former natural levee of the San Joaquin River, approximately 550 feet from the proposed reinforcement of the existing gas line. The midden included small amounts of fractured stone, shell, and animal and human bone on the surface of a cultivated field. The raised portion of the midden was destroyed by grading in 1952 and portions of the undisturbed subsurface midden, including burials, was excavated circa 1962 by students at what is now San Francisco State University (SFSU) (Foote 1962). In an e-mail message to staff on March 5, 2010, Dr. Jeffrey B. Fentress, University NAGPRA Coordinator/Staff Archaeologist at SFSU, indicated that SFSU's Treganza Anthropology Museum housed the remains of two individuals, removed from this site, until 2002, when they were repatriated to the Santa Rosa Rancheria in Lemoore, California. The Santa Rosa Rancheria is affiliated with the Tachi Yokuts tribe. As described in the Ethnographic Background section above, the Yokuts have traditional ties to the Central Valley and the project area.

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<sup>5</sup> A deposit containing the accumulation of refuse and discards resulting from human domestic activities over a long period of time.

## **Local Agency and Organization Consultation**

California counties and cities may recognize particular cultural resources as locally historically important by ordinance, in general plans, or by maintaining specific lists. The Energy Commission's Data Adequacy Regulations require Applicants to acquire information on locally recognized cultural resources specific to the vicinity of their project by consulting local planning agencies and local historical and archaeological societies

### ***Results of Inquiries to Local Agencies and Organizations***

CH2MHILL contacted the planning departments for both Stanislaus County and the City of Ceres. Neither agency maintains a list of cultural resources (CH2MHILL 2009f, p. 41). The Ceres Historical Society, McHenry Museum and Historical Society, and the Turlock Historical Society were also contacted by CH2MHILL; responses to their inquiries were not received.

## **Native American Consultation**

The Native American Heritage Commission (NAHC) maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American ethnographic resources. The NAHC's Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. Their Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas. Both Applicants and staff request information via letter to the NAHC on the presence of sacred lands in the vicinity of a proposed project and also request a list of Native Americans to whom inquiries will be made to identify both additional cultural resources and any concerns the Native Americans may have about a proposed project.

### ***Results of Inquiries Made to Native Americans***

CH2MHILL contacted the Native American Heritage Commission requesting information regarding traditional cultural properties within the A2PP project area and contact information for Native American individuals and groups interested in development in San Joaquin County. The Sacred Lands file did not indicate the presence of Native American traditional cultural properties or cultural resources within the project area. A list of Native American contacts was provided, and each person on the list was contacted by CH2MHILL via mail and fax. Follow-up phone calls were made to each contact approximately one month later. An individual affiliated with the Southern Sierra Miwuk Nation responded that he had no concerns with the project. CH2MHILL did not receive comments from the remaining contacts (TID 2009b, p. 14).

## **Field Inventory Investigations**

The Energy Commission's Data Adequacy Regulations require Applicants to conduct surveys to identify previously unrecorded cultural resources in or near their proposed project areas. These surveys include a pedestrian archaeological survey and a built-environment windshield survey. The Applicant includes the acquired new survey information as part of the information provided to staff in the AFC and may undertake

additional field research, including geoarchaeological studies and site testing, to respond to staff's Data Requests. Staff may also undertake additional field research to supplement information provided by the Applicant.

### **Results of Pedestrian Archaeological Survey**

The archaeological project area of analysis, including the project site, linear facilities corridors, and buffer zones, was surveyed using 10-meter pedestrian transects by CH2MHILL archaeologists. Areas surveyed included the project site, the existing 69-kV transmission line corridor, the proposed transmission line corridors and the proposed natural gas pipeline alignments. The preferred alignment of the natural gas line route was also surveyed. Exposed soils were examined when possible; however, cultural materials were not identified (TID 2009b, pp. 14–15).

One cultural resource was recorded as part of the survey, a four-mile segment of the Tidewater Southern Railroad that runs adjacent to the existing 69-kV transmission line that is proposed to be reconducted. This segment of the TSRR runs between Wood Road at the south and Hatch Road at the north. It was completed in 1916, but the rail grade, crossings, lines [rails], and ties have been upgraded to accommodate heavier loads. The line is still in use and still follows its original alignment. (TID 2009b, p. 15).

### **Results of Geoarchaeological Investigations**

In Data Request 19, staff asked CH2MHILL's geoarchaeologist to provide an assessment of whether the sediments below 6.5 feet (the depth of known fill) at the project site, and those below 4.0 feet (the depth of archaeological disturbance) along the linear facility routes, are geologically young enough to contain archaeological deposits (CH2MHILL 2009g, p. 2).

The geoarchaeologist undertook no excavations within the A2PP archaeological project area of analysis. Rather, to answer staff's question, he relied on existing information from the Walnut Energy Center, located approximately 8 miles south of the proposed A2PP site. Excavations there had provided an opportunity for closer examination of the Late Quaternary stratigraphy of the area and confirmed that the uppermost stratigraphic unit is the Modesto Formation, ranging from 6–10 feet thick. The archaeologists found that the upper 4 feet of this unit at the Walnut Energy Center site was generally disturbed due to the agricultural use of the area. They observed that the Riverbank Formation was below the Modesto Formation, dating to approximately 130,000 years ago (CH2MHILL 2009g, p. 4).

Due to the presence of Modesto Formation sediments in the topmost stratigraphic layer in the area and the lack of recorded post-glacial sedimentation, the assessment concluded that the probability of encountering "Holocene-age archaeological material at depth on the Tuolumne River or Merced River alluvial plains is negligible in the absence of site-specific evidence to the contrary" (CH2MHILL 2009g, p. 5). ~~The geoarchaeologist, however, did not cite evidence or provide discussion regarding the San Joaquin River fluvial system landforms, the group of landforms in which P-50-000248 was found.~~ As part of its comments on the Staff Assessment, the Applicant provided additional information based on a review by the CH2MHILL geoarchaeologist of the existing surficial geologic mapping of the pipeline right-of-way on the east and west

sides of the San Joaquin River. The geoarchaeologist analysis determined that the surficial geology on the east side of the river is exclusively the Modesto Formation. However, on the west side of the river additional considerations are warranted to the extent that the subsurface geology is dominated by Holocene-age sediment which may contain cultural materials.

## Results of Windshield Survey for Built-Environment Resources

CH2MHILL executed a windshield survey of the project area to identify and record any potential built-environment resources. The survey identified 63 buildings thought to be over 45 years old, which was confirmed by the assessor's data. Prefabricated homes, trailers, and significantly altered Minimal Traditional and Ranch-style structures predominated, with 40 examples identified. These types of structures are generally not considered eligible for listing. These forty buildings were determined by CH2MHILL to be ineligible under NRHP Criteria A and B and lacked sufficient integrity to be eligible under Criterion C; these criteria are nearly identical to the CRHR Criteria 1-3. Additionally, staff had agreed that these types of structures did not require recordation on California Department of Parks and Recreation (DPR) 523 forms (TID 2009b, p. 16).

Also identified were segments of seven TID laterals (2, 2½, 3, 4, 4½, 5, 5½) and two TID drains (Harding, Prairie Flower). CH2MHILL recorded the laterals and drains as discrete 100-foot segments. The TID was up and running by the 1904–1905 growing season. Problems with the rising water table began in 1907, and the Moore Drain was constructed; additional drains, including the two in the project area, were constructed after 1918. All of the laterals, except Lateral 5, have been improved with concrete lining beginning in the 1920s; Lateral 5 remains unlined (TID 2009b, p. 17 and CH2MHILL 2009k, p. 2-2). Additionally, in response to Data Request 23, CH2MHILL evaluated the TID for its eligibility as a potential CRHR-eligible historic district (CH2MHILL 2009f, p. 43).

## Summary of Identified Cultural Resources

Staff has identified 1 prehistoric archaeological site and 14 built-environment resources within the one-mile records search radius. The prehistoric site is a burial site (P-50-000218) located near the existing natural gas pipeline that is proposed for reinforcement. Eleven of the 14 built-environment resources identified are associated with the TID; one is a linear resource, the Tidewater Southern Railroad; and the remaining two are residential structures.

**CULTURAL RESOURCES Table 2**

### Known Cultural Resources Located in the Vicinity of the Proposed Project

<b>Resource Type and Designation</b>	<b>Resource Description</b>	<b>Previously Known/New</b>
<u>Prehistoric Resources</u>	Burial Site (P-50-000218)	Previously Known
<u>Built-Environment Resources</u>	Tidewater Southern Railroad (P-50-000083)	Previously Known/Newly Recorded (Segments)
	TID Lower Lateral 2 (P-50-000073)	Previously Known
	TID Lateral 2	Newly recorded
	TID Lateral 2½	Newly recorded



Resource Type and Designation	Resource Description	Previously Known/New
	TID Lateral 3	Newly recorded
	TID Lateral 4	Newly recorded
	TID Lateral 4½	Newly recorded
	TID Lateral 5	Previously Known/Newly Recorded (Segments)
	TID Lateral 5½	Newly recorded
	TID Harding Drain	Newly recorded
	TID Prairie Flower Drain	Newly recorded
	TID Historic District	Newly recorded
	125 Cowan Street	Newly recorded
	5237 Crows Landing Road	Newly recorded

The Applicant states that of the above identified resources, none would be impacted by the proposed project (TID 2009a, p. 5.3-32).

### **California Register of Historical Resources Evaluations**

Under CEQA, only CRHR-eligible cultural resources that the proposed project could potentially impact need be considered in staff’s recommendations for mitigation measures for project impacts. Consequently staff seeks CRHR eligibility recommendations for those cultural resources subject to possible project impacts. The existing documentation for previously known cultural resources may include CRHR eligibility recommendations, and the Applicant’s cultural resources specialists often make CRHR eligibility recommendations for newly identified cultural resources they discover and record in their project-related surveys. Staff considers these prior CRHR eligibility evaluations and may accept them or conclude that additional information is needed before making its own recommendations.

When the available information on known or newly identified resources that could be impacted by the proposed project is not sufficient for staff to make a recommendation on CRHR eligibility, staff may ask an Applicant to conduct additional research to gather the information needed to make such a recommendation, or staff may gather the additional information. For an archaeological resource, the additional research usually entails some degree of field excavation, called a “Phase II” investigation. For an ethnographic resource, the additional research may be an ethnographic study. For built-environment resources, the additional research would probably be archival. The object of this additional research is to obtain sufficient information to enable staff to validate or make a recommendation of CRHR eligibility for each cultural resource that the proposed project could impact.

#### **Burial Site (P-50-000218)**

This prehistoric resource is a Native American burial site, which consists of midden and contained at least six human burials. The site is located on what appears to be a former levee of the San Joaquin River, which corresponds to what ethnographers have described as the preferred location for the village sites of the historic Yokuts—on mounds along the river. Archaeologists have recognized, too, that prehistoric Central Valley village mounds, and the levees where they are often found, were mostly leveled for agricultural use in the historic period. The midden and burials of site P-50-000218

could be the remaining lower part of a village mound that was leveled. The prehistoric village mound sites along the rivers of the Central Valley have been the best sources of data on the lifeways of the prehistoric inhabitants of this region, so this site would probably have been eligible for the CRHR, under Criterion 4 (“likely to yield information important in history or prehistory”), if the register had existed at the time the site was identified and archaeologically investigated, and the remnants of it may retain such eligibility.

### **Turlock Irrigation District (TID)**

As was mentioned above, staff, in Data Request 23, asked CH2MHILL to evaluate the TID as a CRHR-eligible historic district. CH2MHILL provided historical information and an evaluation of TID.

Located in the San Joaquin Valley, the TID is bounded by the San Joaquin, Tuolumne and Merced Rivers. It encompasses 307 square miles and overlaps both Stanislaus and Merced Counties. The existing setting is composed of irrigated agricultural fields, associated residential and ancillary buildings, commercial and industrial buildings and several communities. CH2MHILL identified the boundaries of the district as the Merced River to the south, the San Joaquin River to the west, and the Tuolumne River on the north. Per the guidance and evaluation procedures discussed in *Water Conveyance Systems in California* (JRP and CalTrans 2000), the boundaries of the TID begin with its source at the La Grange Dam to the east, making it the eastern boundary of the district, and proceed in a linear fashion. It also encompasses associated elements such as canals, drains, ditches, check dams, and maintenance roads, ending at the location of the end users (CH2MHILL 2009f, Attachment DR23-1, p, 1).

A brief history of the TID is provided in the Historic Background section, above. Beginning at the La Grange Dam, the main Turlock Diversion Canal runs along the southern bank of the Tuolumne River for approximately 7 miles to Turlock Lake. The Main Supply Canal diverges near the western end of Turlock Lake, bringing water to the northeastern edge of the TID, where it meets the Ceres Main Canal. The Ceres Main Canal carries water south through the center of the TID. The Turlock Main Canal diverges at the same gate as the Ceres Main Canal, flowing south for approximately 10 miles. Laterals divert water at intervals of two and three miles, running west to the San Joaquin River (TID 2009a, pp.5.3-8–5.3-9). The Highline Canal was added in 1911 and carries water south to the high areas along the Merced River (CH2MHILL 2009f, Attachment DR23-1, p, 1).

The TID was one of the first irrigation districts established following the passage of the Wright Act in 1887, along with the Modesto Irrigation District. Additionally, it is one of only three irrigation districts that was established early and is still in operation. CH2MHILL identified the period of significance for the district from 1893 to 1920, beginning with the construction of the La Grange Dam and encompassing the fundamental development of the TID. Contributing elements of the district were identified by CH2MHILL as:

- La Grange Dam
- Turlock Diversion Canal
- Main Supply Canal

- Ceres Main Canal
- Turlock Main Canal
- Highline Canal
- Laterals, including 1, 2, 2½, 3, 4, 4½, 5, 5½, 6, 7, 8
- Drains, including Moore, Gilstrap, Westport and Harding
- Ditches
- Associated road structures, including bridges and culverts
- Check dams/flow controls
- Diversion features, including regulator gates, valves, checks, drops and chutes
- Tunnels

According to the CH2MHILL's evaluation, this is not a comprehensive list of all of the contributing features, but represents the types of features that would contribute to the district (CH2MHILL 2009f, Attachment DR23-1, pp. 3–4). CH2MHILL also determined that the TID retains its integrity of location, design, and association. Modifications, generally as a consequence of routine maintenance, have been made to TID components since 1920, most significantly the lining of the earthen laterals with concrete. These changes have somewhat affected the district's integrity of feeling, materials, and workmanship; however this action began in 1917, within the district's period of significance, and may be considered an improvement to the district overall. CH2MHILL therefore determined that the district retains sufficient integrity to convey its significance and is eligible for the CRHR under Criterion 1 for its association with the development of irrigation agriculture in California and the Central Valley, and staff concurs with this conclusion. The district would not be eligible under Criterion 2 as it does not appear to be associated with a person or persons considered important to local or California history, nor would it be eligible under Criterion 3 as a truly representative example of a particular type, period or method of construction. As it is not an archaeological resource, it would not be eligible under Criterion 4. Provided the project is constructed as proposed the project would not cause a substantial adverse change in the significance of the resource.

### **TID Laterals and Drains**

The TID laterals in the project area were constructed between 1899 and circa 1918. For the purposes of this project, individual laterals were recorded in discrete 100-foot segments, with the exception of Lateral 2 which was recorded as a 2-mile segment. The laterals were constructed as open-earth canals and, with the exception of the section of Lateral 5 in the project area, have been lined with concrete after 1920. The drains in the project area were constructed circa 1918. All of the laterals, except for Lateral 5, have been lined with concrete which has been maintained and repaired over time. Lateral 5 remains an open earth canal. The check dams and flow controls have also been upgraded (TID 2009b, p. 17).

The project would cross the following historic laterals and drains:

#### Laterals

Lower Lateral 2

Lateral 2½

Lateral 3

Lower Lateral 4  
Lateral 5  
Lateral 5½

#### Drains

Harding Drain

Prairie Flower Drain

(CH2MHILL 2009k, p. 2-2)

CH2MHILL found that the individual segments of canal and drains, each being a very small part of a larger system, do not convey a clear association with significant trends in agriculture (Criterion 1), are not associated with persons important to the history of the region, state or nation (Criterion 2), and are not significant examples of a type, period or method of construction (Criterion 3). Additionally, the recorded segments are not an important source of information about canal construction or technology (Criterion 4). The canal segments retain their integrity of location and association; however the integrity of setting, materials and workmanship has been compromised, particularly due to the addition of concrete lining. The check dams also retain much of their original construction, however all have been upgraded and modern metal bridges have been added. Due to the addition of modern materials, these individual elements do not retain their integrity of feeling of the TID before 1920 (TID 2009b, pp. 17–18). Staff agrees with these conclusions.

While CH2MHILL determined that the individual lateral segments and drains would not be individually eligible for the CRHR, they would be contributing resources to a TID historic district, as discussed in the section above, and would therefore be eligible for the CRHR under Criterion 1. Should the Applicant build the project as proposed, staff agrees that it would not cause a substantial adverse change in the significance of the resource.

#### **Tidewater Southern Railroad**

A four-mile section of the Tidewater Southern Railroad (TSRR) runs adjacent to the A2PP site and falls within the built-environment project area of analysis. Organized in 1910, the TSRR was a small interurban electric passenger and freight railway that ran between Stockton and Turlock and had a branch to Manteca. The TSRR went into service in 1912 and was bought by Western Pacific in 1917. The original vision of an electric rail running from Stockton to Fresno and connecting to Bakersfield and the Pacific coast never materialized. However the line had connections in Stockton with the Western Pacific, Santa Fe, Central California Traction, Southern Pacific and Stockton Terminal and Eastern Railroads, which made carrying freight quite profitable. After the Western Pacific acquisition, the TSRR was slowly converted to a freight feeder line, serving an important fruit, vegetable and wine producing area. Passenger service was discontinued by the mid-1930s, and the electric service was replaced with steam and diesel by 1946. All of the tracks were replaced after 1945 to accommodate the heavier diesel locomotives (Hatoff et al.1995, pp. 2-149–2-150).

While the TSRR made shipping the agricultural products of the area more efficient and made the region more accessible, it did not substantially contribute to the development of the area. The population began to increase in the early 1900s, and the TSRR did not reach Ceres until 1916, when the economy of the area was already established. The

TSRR also never realized its goal of being a fully electric interurban railway. The TSRR is therefore not eligible for the CRHR under Criterion 1, association with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California. It is not associated with any of the major railroad figures in California (Criterion 2), nor does it represent an engineering or design achievement (Criterion 3). It does not have the potential to yield information important to the history of the area, state or nation (Criterion 4). Additionally, the modern improvements to the rails, ties, and rail beds have compromised the integrity of the resource. Staff recommends that the TSRR is not eligible for the CRHR, and due to the lack of integrity the recorded segment would not contribute to the whole if the whole were determined eligible.

### **All CRHR-Eligible Resources Subject To Potential Project Impacts**

In summary, staff finds that the TID Historic District is the only CRHR-eligible cultural resource within the several project areas of analysis that could potentially be impacted by the A2PP. The three remaining resources are not significant. Only the TID Historic District need be taken into account when considering impacts from the project.

While the burial site P-50-000218 would not be impacted by any A2PP project activity, the presence of that site on the same landform as the proposed pipeline reinforcement and on the same landform as the termination of the proposed natural gas pipeline (approximately 550 feet south) demonstrates that the landform on which the site and the pipelines are located is one with a high likelihood for buried archaeological deposits, as both Central Valley archaeology and ethnology suggest. No archaeological report for the original pipeline installation is available to provide conclusive evidence regarding archaeological deposits encountered during the pipeline installation, so staff must assume that CRHR-eligible buried archaeological deposits similar to those of P-50-000218 could be in the sediments around the existing pipeline. Since the terminal segment of the proposed new pipeline is also on the same landform, staff must assume that the sediments around the proposed natural gas pipeline could also contain CRHR-eligible buried archaeological deposits.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

### **Method and Threshold for Determining Significance of Impacts to Historical Resources**

Under CEQA, “a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment” (Pub. Resources Code, § 21084.1). Thus, staff analyzes whether a proposed project would cause a substantial adverse change in the significance, that is, the CRHR eligibility, of all historical resources identified in the Cultural Resources Inventory as CRHR eligible. The degree of significance of an impact depends on:

- The cultural resource impacted;
- The nature of the resource’s historical significance;
- How the resource’s historical significance is manifested physically and perceptually;
- Appraisals of those aspects of the resource’s integrity that figure importantly in the

manifestation of the resource's historical significance; and

- How much the impact will change those integrity appraisals.

## **DIRECT AND INDIRECT IMPACTS**

In the abstract, direct impacts to cultural resources are those associated with project development, construction, and co-existence. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic built-environment resources when those structures must be removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, and when the new structures produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations.

Generally speaking, indirect impacts to archaeological resources are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction causes obsolescence and demolition or creates improved accessibility, making vandalism or greater weather exposure possible.

Ground disturbance accompanying construction at a proposed plant site, along proposed linear facilities, and at proposed laydown areas has the potential to directly impact archaeological resources, unidentified at this time. The potential direct, physical impacts of the proposed construction on unknown archaeological resources are commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project. Placing the proposed plant into this particular setting could have a direct impact on the integrity of association, setting, and feeling of nearby standing historic structures.

### **Construction Impacts and Mitigation**

To identify construction-related impacts to cultural resources that would need to be mitigated, staff first identifies all CRHR-eligible cultural resources (above). In the next step in its analysis, staff must evaluate the potential project impacts to the identified CRHR-eligible cultural resources to determine if these impacts are substantial and adverse. Staff then must recommend mitigation for substantial and adverse impacts on CRHR-eligible resources that cannot be avoided. Staff also must assess whether the proposed project has the potential to impact as-yet-unknown buried archaeological resources and recommend mitigation for impacts to previously unknown but CRHR-eligible resources discovered during construction, if impacts to such resources cannot be avoided.

### **Identification and Assessment of Direct Impacts and Recommended Mitigation**

The proposed A2PP construction activities entailing ground disturbance include: site

grading; hauling and storage of equipment, materials, and supplies; excavation of pads and foundations for project equipment; and excavation of a storm water retention pond. The excavation depths for the various foundations on the proposed plant site are unknown at this time. The topmost 6.5 feet at the plant site is fill, but foundation excavations for the three new, 80-foot-tall cooling towers and associated equipment could extend below that depth. Excavation of a storm water retention pond (TID 2009a, p. 2-2) could also entail depths greater than 6.5 feet. The new transmission lines would require excavations 9 feet deep for tangent poles and 25 feet deep for angle poles (CH2MHILL 2009f, p. 39). The reconductoring of the existing 69-kV line would involve pulling new wires between the existing poles. This process can entail ground disturbance around each pole, the creation or enlargement of roads between the poles, and the creation of large areas of ground disturbance at pulling sites. The proposed new natural gas line would require excavating a trench 4 feet wide and 6–8 feet deep (CH2MHILL 2009k, p. 2-2). The Applicant provided no data on the extent of ground disturbance that the reinforcement of 1.8 miles of the existing natural gas pipeline would entail, so staff must assume that the removal of the old pipe and its reinforcement with a new pipe would disturb some previously undisturbed sediments on the sides and bottom of the original installation trench.

With respect to built-environment resources, the A2PP could impact the CRHR-eligible built-environment resource, the TID Historic District. CH2MHILL, in its assessment of this resource, stated that it retains its integrity of location, design, and association, while modifications have somewhat affected the district's integrity of feeling, materials, and workmanship. So the TID Historic District reportedly has good integrity of location, design, workmanship, materials, feeling, and association. CH2MHILL did not assess the TID Historic District's integrity of setting.

Staff believes that the construction of the A2PP would have no impacts on the TID Historic District's integrity of location or its integrity of association. But, because the A2PP's natural gas line trench intersects several of the TID's laterals and drains, which staff considers to be contributing elements of the district, the construction of the A2PP could have a direct physical impact on the TID Historic District's integrity of design, integrity of workmanship, and integrity of materials. Also, because the A2PP would introduce new, tall elements into the landscape of the historic district, it could have a direct perceptual impact on the TID Historic District's integrity of setting and integrity of feeling.

However, since the Applicant proposes to use trenchless methods to install the pipeline underneath the laterals and drains, no physical impact to the TID Historic District's integrity of design, integrity of workmanship, and integrity of materials would occur, and no mitigation would be needed. Also, since the existing plant and its transmission line are extant elements in the TID Historic District's setting and already contribute to the general feeling of the area, the introduction of the A2PP plant and transmission line would not adversely change the TID Historic District's setting or the general feeling of the area. So the A2PP impact to the TID Historic District's integrity of setting and integrity of feeling would not be significant, and no mitigation would be required.

With respect to archaeological resources, because of the possibility that subsurface prehistoric and historic-period archaeological deposits could be encountered during

construction, CEQA advises a lead agency to make provisions for archaeological resources unexpectedly encountered during construction (Pub. Resources Code, § 21083.2; Cal. Code Regs., tit. 14, §§ 15064.5(f) and 15126.4(b)).

Consequently, the Applicant proposed a number of measures intended to mitigate potential impacts to buried archaeological resources that could be discovered during the construction of the proposed A2PP (TID 2009a, pp. 5.3-34–5.3-36):

*Designated Cultural Resource Specialist.* The Applicant will retain a designated Cultural Resource Specialist (CRS) who will be available during the entire construction period to evaluate any unanticipated discoveries. The CRS will meet the Secretary of the Interior's professional guidelines and will be responsible for preparing and presenting the worker education program, implementing construction monitoring, overseeing management of materials recovered during construction, and preparing the cultural resource management element of the project operation manual.

*Worker Education Training.* The Applicant will design and implement a worker education program for all personnel who have the potential to encounter and alter archaeological sites, historical resources, or properties that may be eligible for the CRHR.

*Prepare and implement a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan.* Prior to the initiation of any earth disturbance, the Applicant will prepare a construction monitoring plan and unanticipated cultural resources discovery plan with provisions for worker training, identification of workers with authorization to stop work, procedures for identifying and evaluating cultural resources, procedures for consulting Native Americans in the process of identification and evaluation, procedures for the treatment of human remains if encountered; and identification of a curation facility for materials that may be encountered during construction. The gas pipeline will be designed, constructed, owned, and operated by PG&E. TID is not responsible for PG&E's actions during operation of the gas pipeline.

*Protection and Preservation of Remains.* The Applicant will ensure that impacts to cultural resources related to the unanticipated discovery of human remains are treated in accordance with state law as detailed in PRC Sections 5097.91 and 5097.98, as amended.

*Protection of Historical Resources during Project Operation, Maintenance, and Upgrade.* The Applicant will include in its operation and maintenance manual provisions that will be followed when any ground-disturbing work will occur at the power plant or ~~linear facilities~~ transmission lines.

Although staff concurs with many of the Applicant's suggested mitigation measures, staff has added further recommendations or expanded upon the Applicant's suggestions to ensure that all impacts to cultural resources are mitigated to below the level of



significance. Thus staff recommends that procedures for identifying, evaluating, and possibly mitigating impacts to newly discovered archaeological resources be put in place through conditions of certification to reduce those impacts to a less than significant level.

As explained above, staff has been left to assume that potentially CRHR-eligible buried archaeological deposits similar to those of P-50-000218 could be in the previously undisturbed fluvial sediments around the terminal segment of the A2PP's proposed new natural gas pipeline and the segment of existing natural gas pipeline that the project would reinforce. Staff has sufficient indicators, such as the known presence of prehistoric archaeological sites on analogous landforms in the region, the known prehistoric and ethnographic use of riverine natural resources, knowledge of relevant geologic processes and recent depositional history, to conclude that there is a moderate-to-high potential for buried archaeological resources in the vicinity of the San Joaquin River. While staff believes that this information is sufficient to evidence a consideration of the potential presence of buried archaeological deposits in the area of the gas pipeline reinforcement, it is insufficient to inform refinements to the monitoring protocol for the proposed project that would substantially reduce the potential impact of construction excavation to any such deposits to a less than significant level.

Consequently, staff proposes a condition of certification (**CUL-1**) requiring a post-certification geoarchaeological study to complete the Applicant's effort to identify CRHR-eligible buried prehistoric archaeological deposits that could be impacted by the project, a preference called out in CEQA. The study would provide the Applicant with information upon which to base project design changes to avoid impacts to buried prehistoric archaeological deposits, and to verify the potential presence of such deposits and thereby provide more refined mitigation measures, particularly a more refined archaeological monitoring protocol for the installation of the new and reinforced natural gas pipelines.

Staff's proposed conditions of certification for the A2PP, then, are **CUL-1** through **CUL-810**. As discussed above, **CUL-1 through CUL-3**, the condition requiring a post-certification, pre-construction geoarchaeological study is necessary to identify the potential presence of buried prehistoric archaeological deposits and devise mitigation measures for project impacts to them, based on the geoarchaeological study results. **CUL-1 through CUL-3** requires that a geoarchaeologist conduct a study of the areas where the project's proposed natural gas pipeline would end and where an existing gas pipeline would be reinforced and write a report for submittal to the project owner, to the project Cultural Resources Specialist, and to the CPM. **CUL-1 through CUL-3** includes provisions for the geoarchaeologist to receive project-generated background data and for the treatment of any buried archaeological deposits, historic or prehistoric, encountered during geoarchaeological data collection.

Additionally, **CUL-46** incorporates the results of the geoarchaeological study into the required research plan in the Cultural Resources Monitoring and Mitigation Plan and requires a mitigation plan for any CRHR-eligible buried archaeological deposit that would capture a representative sample of the information for which any such resource may be significant. **CUL-79** uses the results of the geoarchaeological study to specify

the locations and depths for archaeological monitoring intended to identify buried prehistoric archaeological deposits.

For the identification of buried prehistoric archaeological deposits, **CUL-24** through **CUL-810** require having an archaeologist monitor all ground-disturbing project activities that reach the depth of any stratigraphic layers identified in the geoarchaeological field study report as potentially containing such deposits. Additionally, the Conditions provide procedures for expertly identifying, evaluating, and possibly mitigating impacts to newly discovered archaeological resources and require the project owner to train workers to recognize cultural resources, to halt ground disturbing activities in the area of an archaeological discovery, and to fund data recovery, if needed. These conditions ensure that impacts to previously unknown but CRHR-eligible archaeological resources discovered during ground disturbance would be mitigated to a less-than-significant level.

The CEQA Guidelines (§15126.4(a)(1)(B)) advise that formulation of mitigation should not be deferred. All necessary mitigation would be provided for in the proposed conditions because the geoarchaeological report produced through the implementation of **CUL-1** through **CUL-3** would augment the cultural resources inventory, would provide the basis for recommending project design changes to avoid any CRHR-eligible archaeological deposits, and would facilitate the refinement of those monitoring requirements (mitigation measures) that address the possibility of encountering buried prehistoric archaeological resources during project-related excavation. **CUL-24** through **CUL-810** would provide for the identification, evaluation, and mitigation, if required, of any buried archaeological deposits unexpectedly encountered during project-related excavations.

In summary, because the project would have no significant impacts on known CRHR-eligible cultural resources, no mitigation would be required for such resources. Proposed Conditions of Certification **CUL-1** through **CUL-810** would provide for identification of and appropriate treatment for as-yet-unidentified CRHR-eligible archaeological resources encountered during construction.

### **Identification and Assessment of Indirect Impacts and Recommended Mitigation**

Neither the Applicant nor staff identified any indirect project impacts to any identified cultural resources, and so no mitigation measures for indirect impacts to cultural resources would be required.

### **Cumulative Impacts and Mitigation**

A cumulative impact refers to a proposed project's incremental effects considered over time together with impacts from other nearby, past, present, and reasonably foreseeable future projects (Pub. Resources Code sec. 21083; Cal. Code Regs., tit. 14, secs. 15064(h), 15065(a)(3), 15130, and 15355). Cumulative impacts to cultural resources in the A2PP project vicinity could occur if any other existing or proposed projects, in conjunction with the proposed A2PP, had or would have impacts on cultural resources that, considered together, would be significant. The previous ground disturbance from prior projects and the ground disturbance related to the future construction of the A2PP and other proposed projects in the vicinity could have a

cumulatively considerable effect on subsurface archaeological deposits, both prehistoric and historic.

In the cumulative impact analysis for the A2PP project in the AFC (Section 5.6.4), the Applicant identified 34 projects under consideration or underway by the City of Ceres, 36 by the City of Modesto, and 29 by Stanislaus County. Three of the projects are public works projects on existing infrastructure and would not be expected to have an impact on cultural resources. Three industrial and three residential projects are planned within a 2.5–3.0 mile radius, and three long range planning projects are within 2 miles of the project area. The Applicant stated that the cumulative impact of these projects would not result in significant unmitigated adverse impacts. The Applicant therefore concluded that the A2PP and the other identified projects in the vicinity were not expected to result in significant cumulative impacts to cultural resources (TID 2009a, p.5.3-34 and p.5.6-61).

Staff has proposed conditions of certification for the A2PP project providing for identification, evaluation, and avoidance or mitigation of impacts to previously unknown CRHR-eligible archaeological resources discovered during the construction of the project. Proponents of future projects in the area could mitigate impacts to known, CRHR-eligible resources through avoidance or data recovery and could mitigate impacts to as-yet-undiscovered subsurface archaeological sites to less-than-significant levels by requiring archaeological monitoring protocols for ground disturbance through avoidance or data recovery. These are standard measures used to ensure compliance with Section 15064.5 of the State CEQA Guidelines and related provisions of the Public Resources Code. It is assumed that similar measures would be applied to other projects in the area as appropriate. Impacts to human remains can be mitigated by following the protocols established by state law in Public Resources Code section 5097.98.

Since any impacts from the proposed A2PP project would be mitigated to a less-than-significant level by the project's compliance with proposed Conditions of Certification **CUL-1** through **CUL-810**, and since similar protocols can be applied to other projects in the area, staff does not expect any incremental effects on cultural resources of the proposed A2PP project to be cumulatively considerable when viewed in conjunction with other projects.

## **COMPLIANCE WITH LORS**

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If the Conditions of Certification are properly implemented, the proposed A2PP project would result in a less-than-significant impact on known and newly found cultural resources. The project would therefore be in compliance with the applicable state laws, ordinances, regulations, and standards listed in Table 1.

The County of Stanislaus General Plan has language promoting the general county-wide preservation of cultural resources outlining one goal specific to cultural resources. The City of Ceres also has two cultural-resource specific policies in its general plan. Staff's proposed Conditions of Certification require specific actions not just to promote but to effect historic preservation and mitigate impacts to all cultural resources in order to ensure CEQA compliance. Consequently, if A2PP implements these conditions, its actions would be consistent with the general historic preservation goals of the County of

## CONCLUSIONS AND RECOMMENDATIONS

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The project as proposed would not have an impact on known cultural resources and, with the adoption and implementation of Conditions of Certification **CUL-1** through **CUL-810**, the project would have a less-than-significant impact on archaeological resources discovered during construction-related excavation activities. Staff thus recommends that the Commission adopt these conditions. These measures are intended to complete the post-certification identification of subsurface archaeological deposits through a geoarchaeological study, to facilitate the identification and assessment of previously unidentified archaeological resources encountered during construction, and to mitigate any significant impacts from the project on any newly found resources assessed as significant. To accomplish this, the conditions provide for the hiring of a qualified geoarchaeologist who would complete a pre-construction geoarchaeological study and report the findings to CPM; for the hiring of a Cultural Resources Specialist and archaeological monitors; for cultural resources awareness training for construction workers; for the monitoring of construction-related, ground-disturbing activities by a Cultural Resources Specialist and archaeological monitors in accordance with the results of the geoarchaeological study; for the recovery of data from CRHR-eligible discovered archaeological deposits; for the writing of a technical archaeological report on all archaeological activities and results; and for the curation of recovered artifacts and other data. When properly implemented and enforced, staff believes that these conditions of certification would reduce to less than significant any impacts to previously unidentified, CRHR-eligible cultural resources encountered during construction or operation. Additionally, with the adoption and implementation of these conditions, the A2PP would be in conformity with all applicable laws, ordinances, regulations, and standards (LORS).

## PROPOSED CONDITIONS OF CERTIFICATION

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**CUL-1** ~~Prior to the start of ground disturbance for both the new and reinforced segments of the natural gas pipeline (includes “preconstruction site mobilization,” “construction ground disturbance,” and “construction grading, boring, and trenching,” as defined in the General Conditions for this project), the project owner shall obtain the services of a Project Geoarchaeologist (PG).~~ Prior to the start of ground disturbance for the natural gas pipeline segment on the west side of the San Joaquin River (the Reinforcement Segment), the project owner shall obtain the services of a Project Geoarchaeologist (PG).

### **Verification:**

At least 120 days prior to the start of ground disturbance for the Reinforcement Segment, the project owner shall submit the PG’s resume to the CPM for review and approval. The resume shall include information demonstrating to the satisfaction of the CPM that the PG’s training and background conform to the U.S. Secretary of Interior’s Professional Qualifications Standards for prehistoric archaeology, as published in Title

36, Code of Federal Regulations, part 61, and showing the completion of graduate-level coursework in geoarchaeology or Quaternary science.

The resume of the PG shall include the names and telephone numbers of contacts familiar with the work of the PG, as a professional geoarchaeologist, on referenced projects and demonstrate to the satisfaction of the CPM that the PG has the appropriate training and experience to undertake the required geoarchaeological study.

## **INITIAL GEOARCHAEOLOGICAL CONTEXT REPORT**

**CUL-2** The PG will conduct pre-excavation geoarchaeological research on the Reinforcement Segment construction right-of-way (ROW) and its immediate setting using available technical literature, remote imagery, site records, and observations from a field reconnaissance of the area.

### **Verification:**

At least 90 days prior to the start of ground disturbance, results of the pre-excavation geoarchaeological research shall be presented in a general description, and portrayed on a large scale ( $\geq 1:12,000$ ) map. Identified landforms with the potential to lie within the construction right-of-way of the Reinforcement Segment, the geomorphic history of the study area, and the hypothesized distribution of potentially sensitive subsurface conditions will be addressed. The age of the landforms on which the Reinforcement Segment would be located will be identified to the extent feasible. The postulated distribution of Modesto Formation (Pleistocene and possible early Holocene) landforms versus post-Modesto Formation (postglacial or Holocene) landforms will be addressed. Review of the cultural resources data compiled during the AFC review process will precede the field reconnaissance. The report of this work will conclude with recommendations for the location of geoarchaeological pre-construction excavations of a portion of the Reinforcement Segment pipeline trench as part of CUL-3.

## **GEOARCHAEOLOGICAL PRECONSTRUCTION EXCAVATIONS**

**CUL-3** Geoarchaeological preconstruction excavations along the Reinforcement Segment ROW will occur under the direction of the PG. The Project Owner shall pre-excavate selected portions of the Reinforcement Segment ROW identified in the CUL-2 study.

### **Verifications:**

At least 60 days prior to the start of ground disturbance, geoarchaeological preconstruction excavations will occur along the pipeline centerline to avoid additional impacts to buried cultural resources beyond that which would occur during construction along the Reinforcement Segment ROW. Unless otherwise specified in the approved CUL-2 report, the excavations shall consist of backhoe trenches.

1. The total depth of excavations shall be to the water table, or to the anticipated depth of the proposed pipeline installation, whichever is encountered first. The number of backhoe trenches appropriate to this study shall be based on the work called for by

CUL-2, above, but will in no case exceed 4 trenches. Excavation methods shall include:

- a. The recordation of one measured profile from each backhoe trench to include descriptions of each lithostratigraphic and pedostratigraphic unit, a drawing, and profile photographs with a metric scale,
  - b. Screening through ¼-inch hardware cloth 3, 5-gallon buckets of sediment from major lithostratigraphic units in each profile, and
  - c. Radiocarbon or TL (thermoluminescence) samples may be collected to date and/or correlate stratigraphic units and time horizons at the discretion of the PG and in consultation with the CPM,
  - d. Implementation of a protocol to immediately inform the project owner of any buried prehistoric archaeological deposits encountered and to facilitate informing the CPM,
  - e. Recording any archaeological deposits encountered on Department of Parks and Recreation (DPR) 523 "Primary Record" and "Archeological Site Record" forms (Forms 523A and C), additionally completing other DPR 523 series forms, as appropriate;
2. At the conclusion of field work and initial data review (no later than 3 weeks after the geoarchaeological preconstruction excavations conclude), a meeting with the CPM, the PG, and the Project Owner will be held to review the results of preexcavations. Decisions on whether or not to radiocarbon date some or all of the samples will be made at this meeting.
3. No later than four weeks after this meeting, a report will be provided to the CPM that describes the results of the geoarchaeological preconstruction excavation and the subsurface geomorphology along the Reinforcement Segment ROW. This report shall include:
- a. Summary stratigraphic column(s) and a written description describing the stratigraphy of the subject portion of the Reinforcement Segment ROW;
  - b. Placing the results of this study in the context of what is known of the area's Quaternary geomorphology and environmental history;
  - c. Descriptions of any encountered archaeological deposits, and the character of the sedimentary matrix for each deposit, and the approximate age of each archaeological deposit;
  - d. Recommends, based on the above, where and to what depth archaeological monitoring should be done during construction;
  - e. Assesses the potential necessity and the approximate cost of mitigating project impacts to any CRHR-eligible buried archaeological deposits

found during the preconstruction excavations, should such deposits be encountered during the above-described investigation; and

- f. Includes in appendices to the report completed DPR 523 forms for any archaeological deposits encountered and recorded.

No other ground disturbing activities shall occur within the Reinforcement Segment ROW prior to CPM receipt of this final report.

### **PROJECT GEOARCHAEOLOGIST**

~~The resume for the PG shall include information demonstrating to the satisfaction of the CPM that the PG's training and background conform to the U.S. Secretary of Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and showing the completion of graduate-level coursework in geoarchaeology or Quaternary science.~~

~~The resume of the PG shall include the names and telephone numbers of contacts familiar with the work of the PG, as a professional geoarchaeologist, on referenced projects and demonstrate to the satisfaction of the CPM that the PG has the appropriate training and experience to undertake the required geoarchaeological study.~~

~~The project owner shall ensure that the PG designs, conducts, and completes a report on a geoarchaeological field study of the San Joaquin River fluvial system landforms (floodplain, alluvial terraces, and various overbank deposits) in the vicinity of the termination of the proposed A2PP natural gas pipeline and the reinforcement of the existing PG&E Line #215, extending no more than 1.0 mile upriver and 1.0 mile downriver from that juncture. This area is referred to below as "the geoarchaeological study area." The project owner shall be prepared to compensate a property owner or owners to gain permission for the PG to excavate and backfill backhoe trenches at the locations of the PG's choice.~~

### **GEOARCHAEOLOGICAL STUDY**

~~The study shall, at a minimum, consist of the following:~~

- ~~1. Conduct preliminary research on the geoarchaeological study area in the germane Quaternary science and geoarchaeological literatures, supported by a field reconnaissance of the that area, and generate a general description, a large scale ( $\geq 1:12,000$ ) map of the landforms in the area, and develop an account of the geomorphic history of the study area to provide an understanding of the formation of the landforms on which the proposed natural gas pipeline and reinforced natural gas pipeline would be located, the ages of these landforms as they may relate to human occupation, and the geomorphic forces that have shaped the landforms and affected the three-dimensional distribution of the potential array of archaeological deposits in the geoarchaeological study area;~~

- ~~2. Review the previous cultural resources data compiled during the AFC review process;~~
- ~~3. Devise, using the landform map and data from "1" and "2," above, and submit for CPM approval, a research design for the geoarchaeological field study, that details the personnel, equipment, and analytic techniques that the PG will use to determine the precise physical character and ages of, and the depositional rates for, the sedimentary facies and the paleosols in the geoarchaeological study area. The research design shall include, at a minimum, the following methods and procedures or the PG shall propose alternative methods and procedures to obtain the same required data:
  - ~~a. the excavation of backhoe trenches in representative locations along the proposed alignment of the natural gas pipeline and along the alignment of the to-be-reinforced, existing natural gas pipeline or in analogous landform contexts less than one mile up- or down-stream from the subject pipeline alignments that will afford the opportunity to reliably characterize all alluvial landforms in the geoarchaeological study area fluvial system deposits to the anticipated depth of the proposed pipeline trenches. The number of backhoe trenches appropriate to this study shall be negotiated between the CPM and the PG on the basis of the work in Subpart 1 above, but shall in no case exceed 12 trenches. Excavation methods shall include, at minimum:
    - ~~1) the complete recordation of one prepared profile from each backhoe trench to include reasonably detailed written descriptions of each lithostratigraphic and pedostratigraphic unit in each profile, a measured profile drawing, and a profile photograph with a metric scale and north arrow;~~
    - ~~2) the screening of a small (3 5-gallon buckets) sample of sediment from the major lithostratigraphic units in each profile or from two arbitrary levels in each profile through ¼-inch hardware cloth, and~~
    - ~~3) the collection and assaying of enough soil humate samples to reliably radiocarbon date the master stratigraphic column for the alluvial deposits along the proposed pipeline route;~~~~
  - ~~b. a protocol to inform the project owner of any buried prehistoric archaeological deposits encountered during geoarchaeological data collection to facilitate informing the CPM;~~
  - ~~c. the testing of any buried archaeological deposits encountered during geoarchaeological data collection solely to assess their physical extent and material culture content, and record them on Department of Parks and Recreation (DPR) 523 "Primary Record" and "Archeological Site Record" forms (Forms 523A and C), additionally completing other DPR 523 series forms, as appropriate;~~
  - ~~d. providing a report to the project owner that~~~~



- ~~1) describes, based on the available extant literature and any new primary field data, the historical geomorphology of the study area;~~
- ~~2) presents, in graphic and written form, a master column that characterizes the stratigraphy of the subject portion of the geoarchaeological study area to the maximum depth that ground disturbance will occur in that or each such area;~~
- ~~3) provides a processual geologic interpretation and the approximate age of subdivisions of the master column that reflect shifts in local depositional regimes or depositional history, and that reflect time ranges that correspond to the prehistory and history of the geoarchaeological study area region, as presently understood;~~
- ~~4) presents descriptions of any encountered archaeological deposits, including an assessment of the lateral and vertical extents of each such deposit, descriptions of the material culture content and the character of the sedimentary matrix for each deposit, and an assessment of the approximate age of each deposit;~~
- ~~5) provides a preliminary interpretation of the character of the prehistoric or historic land use that each encountered archaeological deposit represents;~~
- ~~6) interprets, with reference to the information gathered and developed above, the likelihood that buried archaeological deposits are present in each of the subdivisions developed in "3)" above, and, on the basis of the current understanding of the prehistory and history of the geoarchaeological study area region, what site types are most likely to be found;~~
- ~~7) recommends, on the basis of the conclusions in "6)" where and to what depth archaeological monitoring should be done during construction in all project construction areas; and~~
- ~~8) assesses the potential necessity and the approximate cost of mitigating project impacts to any CRHR-eligible buried archaeological deposits found during the geoarchaeological study, and recommends options for project re-design to avoid any potential CRHR-eligible deposits found.~~
- ~~9) includes in appendices to the report completed DPR 523 forms for any archaeological deposits encountered and recorded.~~

~~The PG may elect to obtain specialized technical services beyond the requisite radiometric dating to assist in data-gathering and data-interpreting activities.~~

~~The project owner shall ensure that the PG conducts the geoarchaeological field study according to the CPM-approved research design and completes and submits the geoarchaeological field study report. The project owner shall submit the report to the CPM. No ground disturbance shall occur prior to CPM approval of the PG, or prior to CPM approval of the geoarchaeological research design, or prior to CPM approval of the geoarchaeological field study report, unless specifically approved by the CPM.~~

~~The project owner shall review the geoarchaeological field study report and evidence consideration of any project design changes recommended by the PG.~~

Verification:—

- ~~1. At least 135 days prior to the start of ground disturbance, the project owner shall provide the resume of the PG to the CPM, for review and approval.~~
- ~~2. At least 120 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, all confidential cultural resources documents, maps, and drawings, and the Staff Assessment to the PG.~~
- ~~3. At least 100 days prior to the start of ground disturbance, the project owner shall submit the geoarchaeological research design to the CPM for review and approval.~~
- ~~4. At least 90 days prior to the start of ground disturbance, the project owner shall ensure that the PG initiates the approved geoarchaeological study and shall notify the CPM by letter or in an e-mail that the PG has initiated the CPM-approved geoarchaeological study.~~
- ~~5. At least 45 days prior to the start of ground disturbance, the project owner shall submit the PG's report to the CRS and the CPM for review and approval.~~

**CUL-24** Prior to the start of ground disturbance (includes “preconstruction site mobilization,” “ground disturbance,” and “construction grading, boring and trenching,” as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation, and reporting activities required in accordance with the Conditions of Certification (COCs). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the CRHR of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. ~~No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM.~~ Approval of a CRS may be denied or revoked for reasons including but not limited to non-compliance on this or other Energy Commission projects. After all ground disturbance is completed and the CRS has fulfilled all responsibilities specified in these cultural resources conditions,

the project owner may discharge the CRS, if the CPM approves. With the discharge of the CRS, these cultural resources conditions no longer apply to the activities of this power plant.

#### CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 C.F.R., part 61). In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field;
2. At least three years of archaeological or historical, as appropriate (per nature of predominant cultural resources on the project site), resource mitigation and field experience in California; and
3. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgeably make recommendations regarding the significance of cultural resources.

The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

#### CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. a B.S. or B.A. degree in anthropology, archaeology, historical archaeology or a related field and one year experience monitoring in California; or
2. an A.S. or A.A. degree in anthropology, archaeology, historical archaeology or a related field, and four years experience monitoring in California; or
3. enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology or a related field, and two years of monitoring experience in California.

#### CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialist(s), e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval.

#### Verification:

1. At least 45 days prior to the start of ground disturbance, the project owner shall submit the resume for the CRS, and alternate(s) if desired, to the CPM for review and approval. No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM.
2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that ground disturbance may continue up to a maximum of 30 days without a CRS. If cultural resources are discovered then ground disturbance will remain halted in the immediate vicinity until there is a CRS or alternate CRS to make a recommendation regarding significance.
3. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.
4. At least 5 days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to their qualifications.
5. At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.
6. At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions.

**CUL-35** Prior to the start of ground disturbance, the project owner shall provide the CRS with copies of the AFC, data responses, confidential cultural resources reports, all supplements, and the Energy Commission's Staff Assessment (SA) for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS and CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

**Verification:**

1. At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, confidential cultural resources documents, and the Energy Commission FSA to the CRS and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.
2. At least 15 days prior to the start of ground disturbance, if there are changes to any construction-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.
3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.
4. Weekly during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.
5. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

**CUL-46** Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall follow the content and organization of the draft model CRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's ~~on-site~~ environmental compliance ~~construction~~ manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A."

2. A proposed general research design, scoped, to the extent feasible, to the time periods and the archaeological resource types established by the geoarchaeological field study, that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the area in which the project is located, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any CRHR-eligible (as determined by the CPM) resources. A prescriptive treatment plan may be included in the CRMMP for limited data types.
3. Specification of the implementation sequence and the estimated time frames needed to accomplish all construction-related tasks during the ground disturbance and post-ground–disturbance analysis phases of the project.
4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.
5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.
6. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance and construction, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from construction-related effects.
7. A statement that all encountered cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum.
8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced, if any, during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.
9. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively.

10. A description of the contents and format of the final Cultural Resources Report (CRR), which shall be prepared according to ARMR guidelines.

Verification:

1. Upon approval of the CRS proposed by the project owner, the CPM will provide to the project owner an electronic copy of the draft model CRMMP for the CRS.
2. At least 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.
3. At least 30 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, data recovery).

**CUL-57** The project owner shall submit the final CRR to the CPM for approval. The final CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, DPR forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval within 24 hours of the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.
2. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.
3. Within 90 days after completion of ground disturbance (including landscaping), if cultural materials requiring curation were generated or collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.
4. Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been

provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of construction-related reports.

**CUL-68** Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification:

1. At least ~~30~~ 60 days prior to ~~the beginning of ground disturbance~~ site mobilization, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval.



2. At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.
3. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

**CUL-79** The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor ~~full-time~~ all ground disturbance along ~~the linear facilities routes, Reinforcement Segment ROW,~~ according to the recommendations of the geoarchaeological field study research and preconstruction excavations required in ~~CUL-1 CUL-2 and CUL-3,~~ and as approved by the CPM, to ~~ensure there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner.~~

~~Full-time Archaeological monitoring for this project shall be the archaeological monitoring of the earth-removing activities in the areas specified in the previous paragraph, as a result of geoarchaeological research and preconstruction excavation required in CUL-2 and CUL-3 for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no further than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material. Full-time archaeological monitoring shall require at least one monitor per excavation area where machines are actively disturbing native soils. If an excavation area is too large for one monitor to effectively observe the native-soil disturbance, one or more additional monitors shall be retained to observe the area.~~

The project owner shall obtain a Native American monitor to monitor ground disturbance in any areas where Native American artifacts are discovered in native soils. A Native American consultant shall monitor ground disturbance associated with the installation of the new natural gas pipeline and associated with the reinforcement of the existing natural gas pipeline in the geoarchaeology study area, if the geoarchaeology field study report recommends archaeological monitoring in that area. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. After finding those efforts to be satisfactory, the CPM may

either identify other potential monitors or allow ground disturbance to proceed without a Native American monitor.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

~~The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.~~

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.
2. Monthly while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.
3. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or

some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

- ~~4. Daily and as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail or in some other form of communication acceptable to the CPM.~~
5. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.

**CUL-810** The project owner shall grant authority to halt ground disturbance in the immediate vicinity of a discovery to the CRS, alternate CRS, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting as provided in these conditions shall continue during the project's ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner and the CPM within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.
2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.
4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery, if any, including the curation

of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the immediate vicinity of a cultural resources discovery, as determined by the CRS in consultation with the CPM, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.
2. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours 3 days following the notification of the CPM, or ~~48 hours~~ 5 days following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

## **CULTURAL RESOURCES ACRONYM GLOSSARY**

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A2PP	Almond 2 Power Plant
AD	After the Birth of Christ
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
BC	Before the Birth of Christ
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	Conditions of Certification
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist

DPR 523	Department of Parks and Recreation cultural resource inventory form
FSA	Final Staff Assessment
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation

**Project Area**

**of Analysis** The project site (see below) plus what additional areas staff defines for each project that are necessary for the analysis of the cultural resources that the project may impact.

**Project Site** The bounded area(s) identified by the Applicant as the area(s) within which they propose to build the project.

PSA	Preliminary Staff Assessment
SHPO	State Historic Preservation Officer
Staff	Energy Commission cultural resources technical staff
TID	Turlock Irrigation District
WEAP	Worker Environmental Awareness Program

**REFERENCES**

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# HAZARDOUS MATERIALS MANAGEMENT

Testimony of Alvin Greenberg, Ph.D. and Rick Tyler

## SUMMARY OF CONCLUSIONS

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Staff's evaluation of the proposed Almond 2 Power Plant (A2PP), along with staff's proposed mitigation measures, indicates that hazardous materials use at the site would not present a significant impact to the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable laws, ordinances, regulations, and standards. A Risk Management Plan (RMP) has been prepared by the Turlock Irrigation District (the Applicant) for the existing Almond Power Plant (APP) and it has been approved by the Stanislaus County Environmental Resources Hazardous Materials Division (SCER-HMD). Since the A2PP would use the same ammonia storage facility as the existing APP, the current approved RMP is adequate to fulfill the requirements of the Health and Safety Code, section 25531 et seq. Staff therefore proposes that the existing RMP, Hazardous Materials Business Plan, Process Safety Management Plan, and Spill Prevention, Control, and Countermeasures (SPCC) plan only be revised and updated.

## INTRODUCTION

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The purpose of this hazardous materials management analysis is to determine if the proposed Almond 2 Power Plant (A2PP) project has the potential to cause significant impacts on the public as a result of the use, handling, storage, or transportation of hazardous materials at the proposed site. If significant adverse impacts on the public are identified, Energy Commission staff must also evaluate the potential for facility design alternatives and additional mitigation measures to reduce those impacts to the extent feasible.

This analysis does not address the potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and provide them with special protective equipment and training to reduce the potential for health impacts associated with the handling of hazardous materials. The **Worker Safety and Fire Protection** section of this document describes applicable requirements for the protection of workers from these risks.

Anhydrous ammonia (99% NH<sub>3</sub>) is the only extremely hazardous material proposed to be either used or stored at the A2PP project in quantities exceeding the reportable amounts defined in the California Health and Safety Code, section 25532 (j) (TID2009a, Table 5.5-1). Anhydrous ammonia will be used to control oxides of nitrogen (NO<sub>x</sub>) emissions through selective catalytic reduction. The use of anhydrous ammonia increases the risk that would otherwise be associated with the use of the less hazardous aqueous form of ammonia. Anhydrous ammonia is stored as a liquefied gas at high pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high down-wind concentrations.



Other hazardous materials, such as mineral and lubricating oils, cleaning detergents, and welding gasses will be present at the proposed A2PP project. No extremely hazardous materials or those with high acute toxicity will be used on site during construction, and none of these materials pose significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, their physical state, and/or their environmental mobility.

Although no natural gas is stored, the project will also involve the handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion. The proposed A2PP would require the installation of a new gas pipeline connecting the project to Pacific Gas and Electric's (PG&E's) natural gas pipeline #215, located approximately 10 miles south of the project site (TID2009a, Section 5.5.2.5). The A2PP project would also require the transportation of anhydrous ammonia to the facility. This document addresses all potential impacts associated with the use and handling of hazardous materials.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

The following federal, state, and local laws and policies apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

**HAZARDOUS MATERIALS MANAGEMENT Table 1  
Laws, Ordinances, Regulations, and Standards**

<b>Applicable Law</b>	<b>Description</b>
<b>Federal</b>	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC §112(r))	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written Spill Prevention, Control, and Countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.

Title 49, Code of Federal Regulations, Part 191	Addresses transportation of natural and other gas by pipeline: annual reports, incident reports, and safety-related condition reports. Requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and then submit a written report within 30 days.
Title 49, Code of Federal Regulations, Part 192	Addresses transportation of natural and other gas by pipeline and minimum federal safety standards, specifies minimum safety requirements for pipelines including material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction (which must be followed for Class 2 and Class 3 pipelines) and the requirements for preparing a pipeline integrity management program.
Section 311, CWA (33 USC Section 1251 et seq.) Oil Pollution Prevention (40 CFR 112)	Requires preparation of an Spill Prevention Control and Countermeasures (SPCC) plan if oil is stored in a single AST with capacity greater than 660 gallons or if total petroleum storage at a facility is greater than 1,320 gallons. Administered by the Regional Water Quality Control Board (RWQCB).
Federal Register (6 CFR Part 27) interim final rule	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
<b>State</b>	
Title 8, California Code of Regulations, section 5189	Requires facility owners to develop and implement effective safety management plans that ensure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the Risk Management Plan (RMP) process.
Title 8, California Code of Regulations, section 458 and sections 500 to 515	Sets forth requirements for the design, construction, and operation of vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes, including the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, the American National Standards Institute (ANSI) K61.1 and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia.
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (CalARP) requires the preparation of a Risk Management Plan (RMP) and off-site consequence analysis (OCA) and submittal to the local Certified Unified Program Agency for approval.
California Health and Safety Code, section 41700	Requires that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
Hazardous Material Business Plan, Cal HSC Sections 25500 to 25541; 19 CCR Sections 2720 to 2734	Requires the submittal of a chemical inventory and planning and reporting for management of hazardous materials.
Process Safety Management: Title 8 CCR Section 5189	Requires facility owners to develop and implement effective process safety management plans when toxic, reactive, flammable, or explosive chemicals are maintained on site in quantities that exceed regulatory thresholds.
California HSC Sections 25270 through 25270.13	Requires the preparation of a Spill Prevention, Control, and Countermeasures (SPCC) Plan if 10,000 gallons or more of petroleum is stored on-site. The above regulations would also require the immediate reporting of a spill or release of 42 gallons or more to the California Office of Emergency Services and the Certified Unified Program Authority (CUPA).
California Safe	Prevents certain chemicals that cause cancer and reproductive toxicity from

Drinking Water and Toxic Enforcement Act (Proposition 65)	being discharged into sources of drinking water.
California Public Utilities Commission General Order 112-E and 58-A	Contains standards for gas piping construction and service.
<b>Local</b>	
CUPA Program (Health and Safety Code Section 25180)	To consolidate, coordinate and make consistent the administrative requirements, permitting, inspection activities, enforcement activities and fees for hazardous waste and hazardous materials programs in each jurisdiction.
Environmental Health Emergency Response Program (California Health and Safety Code Sections 25200 et seq. and 101040)	Interagency emergency response team guidelines for incidents involving hazardous material spills or releases, including assessments to evaluate actual or potential environmental contamination an/or exposure, recommendations for short and long-term cleanup, and oversight of the cleanup activities performed by the responsible parties or environmental assessment firms.

The Certified Unified Program Agency (CUPA) with the responsibility to review Risk Management Plans (RMPs) and Hazardous Materials Business Plans (HMBPs) is the Stanislaus County Environmental Resources Hazardous Materials Division (SCER-HMD). With regard to seismic safety issues, the site is classified as Seismic Design Category D. Construction and design of buildings and vessels storing hazardous materials will meet the seismic requirements of the California Code of Regulations Title 24 and the 2007 California Building Code (TID2009a, Section 2.2.1.1.1).

## SETTING

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Several factors associated with the area in which a project is to be located affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

- local meteorology;
- terrain characteristics; and
- location of population centers and sensitive receptors relative to the project.

## METEOROLOGICAL CONDITIONS

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as their associated health risks. When wind speeds are low and the atmosphere stable, dispersion is severely reduced but can lead to increased localized public exposure.

Recorded wind speeds and directions are described in the **Air Quality** section (5.1) and **Appendix 5.1B** of the Application for Certification (AFC) (TID2009a).

## TERRAIN CHARACTERISTICS

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release may impact high

elevations before impacting lower elevations. The site topography is generally flat, at an elevation of about 80 feet above mean sea level. The immediate vicinity is also flat, and no elevated terrain exists for many miles from the site (TID2009a, Section 5.1.1.1).

## **LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS**

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a major bearing on health risk. Sensitive receptors in the project vicinity (within a 3-mile radius) are listed in **Appendix 5.9A** and shown in **Figure 5.9-4** of the AFC (TID2009a). The nearest sensitive receptor is a child care center located approximately 0.5 miles northeast of the site. The nearest residences are located about 0.3 miles northeast of the site (TID2009a, Section 5.9.2).

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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### **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE**

Staff reviewed and assessed the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. All chemicals and natural gas were evaluated. Staff's analysis addresses the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. In order to accomplish this goal, staff utilized the most current public health exposure levels (both acute and chronic) that are established to protect the public from the effects of an accidental chemical release.

In order to assess the potential for released hazardous materials to travel off site and affect the public, staff analyzed several aspects of the proposed use of these materials at the facility. Staff recognizes that some hazardous materials must be used at power plants. Therefore, staff conducted its analysis by examining the choice and amount of chemicals to be used, the manner in which the Applicant will use the chemicals, the manner by which they will be transported to the facility and transferred to facility storage tanks, and the way the Applicant plans to store the materials on site.

Staff reviewed the Applicant's proposed engineering and administrative controls concerning hazardous materials usage. Engineering controls are the physical or mechanical systems, such as storage tanks or automatic shut-off valves, that can prevent the spill of hazardous material from occurring, or which can either limit the spill to a small amount or confine it to a small area. Administrative controls are the rules and procedures that workers at the facility must follow that will help to prevent accidents or to keep them small if they do occur. Both engineering and administrative controls can act as methods of prevention or as methods of response and minimization. In both cases, the goal is to prevent a spill from moving off site and causing harm to the public.

Staff reviewed and evaluated the Applicant's proposed use of hazardous materials as described by the Applicant (TID2009a, Section 5.5). Staff's assessment followed the five steps listed below.

- Step 1: Staff reviewed the chemicals and the amounts proposed for on-site use as listed in **Table 5.5-1** of the AFC (TID2009a) and determined the need and appropriateness of their use.
- Step 2: Those chemicals proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off site and impact the public were removed from further assessment.
- Step 3: Measures proposed by the Applicant to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different-sized transfer-hose couplings and administrative controls such as worker training and safety management programs.
- Step 4: Measures proposed by the Applicant to respond to accidents were reviewed and evaluated. These mitigation measures also include engineering controls such as catchment basins and methods to keep vapors from spreading and administrative controls such as training emergency response crews.
- Step 5: Staff analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials, as reduced by the mitigation measures proposed by the Applicant. When mitigation methods proposed by the Applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to an insignificant level, staff will propose additional prevention and response controls until the potential for causing harm to the public is reduced to an insignificant level. It is only at this point that staff can recommend that the facility be allowed to use hazardous materials.

## **DIRECT/INDIRECT IMPACTS AND MITIGATION**

### **Small Quantity Hazardous Materials**

Hazardous chemicals such as mineral and lubricating oils, cleaning detergents, welding gasses, and other various chemicals would be used and stored in relatively small amounts. (See **Hazardous Materials Appendix B** for a list of all chemicals proposed for use and storage at A2PP). In conducting the analysis, staff determined in Steps 1 and 2 that these materials, although present at the proposed facility, pose a minimal potential for off-site impacts since they will be stored in small quantities, have low mobility/volatility, or have low levels of toxicity. These hazardous materials are eliminated from further consideration.

During the construction phase of the project, small quantities of hazardous materials such as gasoline, diesel fuel, motor oil, hydraulic fluid, welding gases, lubricants, solvents, cleaners, sealants, paint, and paint thinners would be used. Any impact of spills or other releases of these materials will be limited to the site because of the small quantities involved, their infrequent use (and therefore reduced chances of release), and/or the temporary containment berms used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel are all very low volatility and

represent limited off-site hazards even in larger quantities. Handling of hazardous materials during construction would follow best management practices (BMPs) to minimize environmental effects (TID2009a, Section 5.5.2.3.1).

After removing from consideration those chemicals that pose no risk of off-site impact in Steps 1 and 2, staff continued with Steps 3, 4, and 5 to review the remaining large quantity hazardous materials: natural gas and anhydrous ammonia. However, the project will be limited to using, storing, and transporting only those hazardous materials listed in Appendix B of this document as per staff's proposed condition **HAZ-1**.

## **Large Quantity Hazardous Materials**

### **Natural Gas**

Natural gas poses a fire and/or possible explosion risk because of its flammability. Natural gas is composed mostly of methane, but also contains ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, and tasteless and is lighter than air. Natural gas can cause asphyxiation when methane is 90% in concentration. Methane is flammable when mixed in air at concentrations of 5 to 14%, which is also the detonation range. Natural gas, therefore, poses a risk of fire and/or possible explosion if a release occurs under certain specific conditions. However, it should be noted that, due to its tendency to disperse rapidly (Lees 1998), natural gas is less likely to cause explosions than many other fuel gases such as propane or liquefied petroleum gas, but can explode under certain conditions (as demonstrated by the recent natural gas detonation in Belgium in July 2004).

While natural gas would be used in significant quantities, it would not be stored on site. It would be delivered via a new pipeline that will connect the proposed project to PG&E's natural gas pipeline #215. The proposed pipeline would be approximately 11.6 miles long and connect with PG&E's existing supply line. (TID2009a, Section 5.5.2.5). The risk of a fire and/or explosion on site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) code 85A requires both the use of double-block and bleed valves for gas shut off and automated combustion controls. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, start-up procedures would require air purging of the gas turbines prior to start up, thereby precluding the presence of an explosive mixture. The safety management plan proposed by the Applicant would address the handling and use of natural gas and would significantly reduce the potential for equipment failure because of either improper maintenance or human error.

Since the proposed facility will require the installation of a new gas pipeline off-site, impacts from this pipeline need to be evaluated. The design of the natural gas pipeline is governed by laws and regulations discussed here. These LORS require use of high quality arc welding techniques by certified welders and inspection of welds. Many failures of older natural gas lines have been associated with poor quality welds, or corrosion. Current codes address corrosion failures by requiring use of corrosion resistant coatings and cathodic corrosion protection. Another major cause of pipeline failure is damage resulting from excavation activities near pipelines. Current codes

address this mode of failure by requiring clear marking of the pipeline route. An additional mode of failure is damage caused by earthquake. Existing codes also address seismic hazard in design criteria (see discussion below). Evaluation of pipeline performance in recent earthquakes indicates that pipelines designed to modern codes perform well in seismic events while older lines frequently fail. Staff believes that existing regulatory requirements are sufficient to reduce the risk of accidental release from the pipeline to insignificant levels.

Failures of gas pipelines, according to data from the U.S. Department of Transportation (the National Transportation Safety Board) from the period 1984 – 1991 and data from the National Response Center for the period 1990 - 2004, occur as a result of pipeline corrosion, pipeline construction or materials defects, rupture by heavy equipment excavating in the area such as bulldozers and backhoes, weather effects, and earthquakes. Given the gas line failures which occurred in the Marina District of San Francisco during the 1989 Loma Prieta earthquake, the January 1994 Northridge earthquake in Southern California, the January 1995 gas pipeline failures in Kobe, Japan, the January 19, 1995 gas explosion in San Francisco, the pipeline explosion in Belgium in July 2004, and the natural gas storage fire in Texas in August 2004, the safety of the gas pipeline is of paramount importance. However, it must be noted that those pipelines which failed in 1989 to 1995 were older and not manufactured nor installed to modern code requirements. The February 2001 Nisqually Earthquake near Olympia Washington caused no damage to natural gas mains and there was only one reported gas line leak due to a separation of a service line going into a mobile home park. The Belgium gas pipeline explosion was due to construction equipment rupturing the line, not due to earthquake or structural failure.

If loss of containment occurs as a result of pipe, valve, or other mechanical failure or external forces, significant quantities of compressed natural gas could be released rapidly. Such a release can result in a significant fire and/or explosion hazard, which could cause loss of life and/or significant property damage in the vicinity of the pipeline route. However, the probability of such an event is extremely low if the pipeline is constructed according to present standards.

According to DOT statistics, the frequency of reportable incidents is about 0.25 for all pipeline incidents per 1,000 miles per year or  $2.5 \times 10^{-4}$  incidents per mile per year. DOT has also evaluated and categorized the major causes of pipeline failure. To summarize, the four major causes of accidental releases from natural gas pipelines are: Outside Forces - 43%, Corrosion -18%, Construction/Material Defects -13%, and Other - 26%.

Outside forces are the primary causes of incidents. Damage from outside forces includes damage caused by use of heavy mechanical equipment near pipelines (e.g., bulldozers and backhoes used in excavation activities), weather effects, vandalism, and earthquake-caused rupture as seen in the Marina District of San Francisco during the 1989 Loma Prieta Quake and in Kobe, Japan in January 1995.

The fourth category, "Other" includes equipment component failure, compressor station failures, operator errors and sabotage. The average annual service incident frequency

for natural gas transmission systems varies with age, the diameter of the pipeline, and the amount of corrosion.

Older pipelines have a significantly higher frequency of incidents. These result from the lack of corrosion protection and use of less corrosion resistant materials compared to modern pipelines, limited use of modern inspection techniques, and higher frequency of incidents involving outside forces. The increased incident rate due to outside forces is the result of the use of a larger number of smaller diameter pipelines in older systems, which are generally more easily damaged and the uncertainty regarding the locations of older pipelines.

The safety requirements for pipeline construction vary according to the population density and land use, which characterize the surrounding land. The pipeline classes are defined as follows (Title 49, Code of Federal Regulations, Part 192):

Class 1: Pipelines in locations within 220 yards of ten or fewer buildings intended for human occupancy in any 1-mile segment.

Class 2: Pipelines in locations within 220 yards of more than ten but fewer than 46 buildings intended for human occupancy in any 1-mile segment. This class also includes drainage ditches of public roads and railroad crossings.

Class 3: Pipelines in locations within 220 yards of more than 46 buildings intended for human occupancy in any 1-mile segment, or where the pipeline is within 100 yards of any building or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12 month period (the days and weeks need not be consecutive). (The proposed project gas pipeline would fall into this class.)

Class 4: Pipelines in locations within 220 yards of buildings with 4 or more stories above ground in any 1-mile segment.

In the United States, extensive federal and state pipeline codes and safety enforcement minimize the risk of severe accidents related to natural gas pipelines. In November 2000, the DOT Office of Pipeline Safety proposed a program requiring the preparation of risk management plans for gas pipelines throughout the United States. These risk management plans will include the use of diagnostic techniques to detect internal and external corrosion or cracks in pipelines and to perform preventive maintenance. The pipeline owner will be required to develop and implement these plans as per the regulation adopted May 2004 (49 CFR Part 192). The regulations prescribe minimum requirements for a pipeline Integrity Management Program to be prepared and followed by every operator of a pipeline segment located in a high consequence area. A high consequence area is defined as any location where the pipeline traverses a Class 3 or 4 area (see above) or other areas under specified circumstances. The integrity management program must contain the required elements as described in section 192.911 including an identification of all high consequence areas, a baseline assessment plan including methods of assessing pipeline integrity and a schedule for completing the assessment, an identification of threats to each pipeline segment including a risk assessment, an evaluation of mitigation measures, implementation



procedures, and monitoring procedures. The regulations also include requirements for reassessment intervals, which range from 7 to 20 years depending on the type of reassessment and the operating percentage of the pipeline.

The following safety features will be incorporated into the design and operation of the natural gas pipeline (as required by current federal and state codes): (1) while the pipeline will be designed, constructed, and tested to carry natural gas at a certain pressure, the working pressure will be less than the design pressure; (2) butt welds will be X-rayed and the pipeline will be tested with water prior to the introduction of natural gas into the line; (3) the pipeline will be surveyed for leakage annually (4) the pipeline will be marked to prevent rupture by heavy equipment excavating in the area; and (5) valves at the meter will be installed to isolate the line if a leak occurs. These requirements will be administered by the federal government and the CPUC.

The natural gas pipeline for the A2PP project will be designed for Class 1 service and will meet all standards of the California Public Utilities Commission (CPUC) General Order 112-D and 58-A standards as well as all federal regulations (TID2009a, Sections 5.5.2.5). CPUC General Order 112-E, Section 125.1 requires that at least 30 days prior to the construction of a new pipeline, the owner must file a report with the commission that will include a route map for the pipeline. The natural gas pipeline will be constructed and operated in accordance with the Federal Department of Transportation (DOT) regulations, Title 49, Code of Federal Regulations (CFR), Parts 190, 191, and 192 (see Table 1 LORS).

Staff concludes that compliance with existing LORS would be sufficient to ensure minimal risks of pipeline failure.

### **Anhydrous Ammonia**

Anhydrous ammonia would be used to control the emission of oxides of nitrogen (NO<sub>x</sub>) from the combustion of natural gas at the A2PP project. The accidental release of anhydrous ammonia without proper mitigation can result in significant down-wind concentrations of ammonia gas. A2PP would use the existing APP ammonia storage tank which has a maximum capacity of 12,000 gallons. The tank is filled with 100% ammonia in a liquid state under pressure to a maximum of 85% of capacity such that the maximum amount of anhydrous ammonia on site would be 10,200 gallons (TID2009a, Section 5.5.2.3). The tank is surrounded by an above-ground secondary containment basin capable of holding the full contents of the tank plus rainfall.

Based on staff's analysis described above, anhydrous ammonia is the only hazardous material that may pose a significant risk of off-site impact. The use of anhydrous ammonia can result in the release of ammonia vapor in the event of a spill. This is a result of its high vapor pressure and the large amounts of anhydrous ammonia that will be used and stored on site.

To assess the potential impacts associated with an accidental release of anhydrous ammonia, staff uses four benchmark exposure levels of ammonia gas occurring off site. These include:

1. the lowest concentration posing a risk of lethality, 2,000 parts per million (ppm);

2. the concentration immediately dangerous to life and health level of 300 ppm;
3. the emergency response planning guideline level 2 of 150 ppm, which is also the RMP level 1 criterion used by U.S. Environmental Protection Agency (EPA) and California; and
4. the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm.

If the potential exposure associated with a potential release exceeds 75 ppm at any public receptor, staff will also assess the probability of occurrence of the release, the severity of the consequences, and the nature of the potentially exposed population in determining whether the likelihood and extent of potential exposure are sufficient to support a finding of potentially significant impact. A detailed discussion of the exposure criteria considered by staff, as well as their applicability to different populations and exposure-specific conditions, is provided in **HAZARDOUS MATERIALS Appendix A**.

Staff reviewed the Off-site Consequence Analysis (OCA) contained in the existing RMP and found the analysis to be conducted according to US EPA and CalARP guidelines. Staff was able, therefore, to rely on this effort to conclude that the predicted airborne ammonia concentrations off-site due to an accidental or intentional release of anhydrous ammonia from the storage tank or the piping would be less than significant.

## **Mitigation**

The potential for accidents resulting in the release of hazardous materials is greatly reduced through implementation of a safety management program that would include the use of both engineering and administrative controls. Elements of both facility controls and the safety management plan are summarized below.

### **Engineering Controls**

Engineering controls help to prevent accidents and releases (spills) from moving off site and affecting communities by incorporating engineering safety design criteria in the design of the project. The engineered safety features proposed by the Applicant for use at the A2PP project include:

- construction of secondary containment areas surrounding each of the hazardous materials storage areas designed to contain accidental releases that might happen during storage or delivery in addition to the water associated with 20 minutes of fire suppression;
- physical separation of stored chemicals in isolated containment areas in order to prevent accidental mixing of incompatible materials, which could result in the evolution and release of toxic gases or fumes;
- installation of an automated sprinkler system and an exhaust system for the indoor hazardous materials storage area;

- use of the existing APP anhydrous ammonia storage facility equipped with a secondary containment structure capable of holding the entire volume of the tank plus precipitation;
- use of ammonia sensors set to alarm at 20ppm at the existing anhydrous ammonia tank and at each ammonia skid at the A2PP CTGs; and
- process protective systems including continuous tank level monitors with automatic alarms, automated leak detectors, temperature and pressure monitors and alarms, and excess flow and emergency block valves.

### **Administrative Controls**

Administrative controls also help prevent accidents and releases (spills) from moving off site and affecting neighboring communities by establishing worker training programs, process safety management programs, and complying with all applicable health and safety laws, ordinances, and standards.

A worker health and safety program will be prepared by the Applicant and include (but not be limited to) the following elements (see the **Worker Safety and Fire Protection** section for specific regulatory requirements):

- worker training regarding chemical hazards, health and safety issues, and hazard communication;
- procedures to ensure the proper use of personal protective equipment;
- safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;
- fire safety and prevention; and
- emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention.

At the facility, the project owner will be required to designate an individual with the responsibility and authority to ensure a safe and healthful work place. The project health and safety official will oversee the health and safety program and have the authority to halt any action or modify any work practice to protect the workers, facility, and the surrounding community in the event of a violation of the health and safety program.

The Applicant has already prepared a risk management plan for anhydrous ammonia, as required by 42 USC §112(r) and CalARP regulations for the existing APP. The RMP includes a hazard assessment and a program for preventing and responding to accidental releases. In addition, a Hazardous Materials Business Plan was prepared as well as a Process Safety Management Plan (PSMP) for anhydrous ammonia. These plans were reviewed by staff during a site visit in October 2009 to review and evaluate hazardous materials safety and site security and found to be adequate.

The existing APP hazardous materials business plan (HMBP), which incorporates state requirements for the handling of hazardous materials, as well as the existing RMP would be updated by the Applicant to include the A2PP project (TID2009a, Section 5.5.4.2.1). Other administrative controls would be required in proposed Conditions of

Certification **HAZ-1** (limitations on the use and storage of hazardous materials and their strength and volume) and **HAZ-2** (updating the existing HMBP, RMP, SPCC Plan, and PSMP) and **HAZ-3** (development of a safety management plan).

### **On-Site Spill Response**

In order to address the issue of spill response, the facility will prepare and implement an emergency response plan that includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, and prevention equipment and capabilities, as well as other elements. Emergency procedures will be established which include evacuation, spill cleanup, hazard prevention, and emergency response. The presence of oil in a quantity greater than 1,320 gallons might invoke a requirement to prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The quantity of oil proposed to be on-site for the A2PP would be in excess of the minimum quantity that requires such a plan. However, there are no known waters of the State or of the United States and thus staff's position is that no SPCC Plan is required by 40 CFR 112. However, pursuant to California HSC Sections 25270 through 25270.13, the A2PP will be required to prepare a SPCC because it will store >76,000 gallons or more of oils on-site. The above regulations would also require the immediate reporting of a spill or release of 42 gallons or more to the California Office of Emergency Services and the Certified Unified Program Authority (CUPA).

The Ceres Emergency Services – Fire Division (CFD) Station #3 would be the first responder to hazardous materials incidents with backup support provided by other CFD stations and the City of Modesto Fire Department. CFD Station #3 and the City of Modesto fire department have trained personnel and equipment for an initial hazardous materials response. CFD Station #3 is located about 0.3 miles from the A2PP site with a response time of 2-4 minutes. In the event of a large spill, the Stanislaus County Environmental Resources - Hazardous Materials Division, Hazardous Materials Response Team, would provide a full response (TID2009a, Section 5.5.2.5). The County's Hazmat Team is located at the Department of Environmental Resources on Cornucopia Way, about 0.5 miles from the A2PP site. Their response time would be 10-15 minutes (CFD 2009). Staff finds that the available local hazmat teams are capable of responding to a hazardous materials emergency call from A2PP with an adequate response time.

### **Transportation of Hazardous Materials**

Hazardous materials including anhydrous ammonia will be transported to the facility by tanker truck. While many types of hazardous materials will be transported to the site, staff believes that transport of anhydrous ammonia poses the predominant risk associated with hazardous materials transport.

Staff reviewed the Applicant's transportation routes for hazardous materials delivery. Trucks would travel the Caltrans-approved routes currently in use for the Almond Power Plant. These are: from SR-99 to Crows Landing Road to the project's access road or from I-5 to Crows Landing Road to the project's access road (TID2009a, Section 5.5.2.2). Schools located within 500 feet of the hazardous materials transportation route on Crows Landing Road between the freeways and the project are listed in Table DR33-

1 of Data Responses Set 1A. Both transportation routes pass within 500 feet of two schools and the route from I-5 also passes within 500 feet of a place of worship (CH2MHILL2009f, Data Response #33).

Ammonia can be released during a transportation accident and the extent of impact in the event of such a release would depend upon the location of the accident and the rate of dispersion of ammonia vapor from the surface of the anhydrous ammonia pool. The likelihood of an accidental release during transport is dependent upon three factors:

- the skill of the tanker truck driver;
- the type of vehicle used for transport; and
- accident rates.

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main highway (SR-99 or I-5). Staff believes it is appropriate to rely upon the extensive regulatory program that applies to the shipment of hazardous materials on California highways to ensure safe handling in general transportation (see Federal Hazardous Materials Transportation Law 49 USC §5101 et seq, DOT regulations 49 CFR subpart H, §172–700, and California Department of Motor Vehicles (DMV) regulations on hazardous cargo). These regulations also address the issue of driver competence. See AFC section 5.12 for additional information on regulations governing the transport of hazardous materials.

To address the issue of tanker truck safety, anhydrous ammonia will be delivered to the proposed facility in DOT-certified vehicles with design capacities of 6,500 gallons. These vehicles will be designed to DOT Code MC-331. These are high-integrity high-pressure tanker trucks designed to haul caustic materials under pressure such as anhydrous ammonia. Staff has, therefore, proposed Condition of Certification **HAZ-4** to ensure that, regardless of which vendor supplies the anhydrous ammonia, delivery will be made in a tanker that meets or exceeds the specifications described by these regulations.

To address the issue of accident rates, staff reviewed the technical and scientific literature on hazardous materials transportation (including tanker trucks) accident rates in the United States and California. Staff relied on six references and three federal government databases to assess the risk of a hazardous materials transportation accident.

Staff used the data from the Davies and Lees (1992) article, which references both the 1990 Harwood et al. and 1993 Harwood studies, to determine that the frequency of release for the transportation of hazardous materials in the U.S. is between 0.06 and 0.19 releases per 1,000,000 miles traveled on well-designed roads and highways. The maximum use of anhydrous ammonia during operation of the proposed A2PP project will require about 10 tanker truck deliveries of anhydrous ammonia per year in addition to the two deliveries currently required for the APP (TID2009a, Section 5.5.4.2.2). Each delivery will travel either 3.5 miles from SR-99 along Crows Landing Road, or about 18.8 miles from I-5 along Fink Road and Crows Landing Road to the facility.

This would result in either 42 or 226 miles of delivery tanker truck travel in the project area per year (with a full load) for all 12 deliveries. Staff believes that the risk over this distance is insignificant. Data from the U.S. DOT show that the actual risk of a fatality over the past five years from all modes of hazardous material transportation (rail, air, boat, and truck) is approximately 0.1 in 1,000,000.

In addition, staff used a transportation risk assessment model (developed by staff) in order to calculate the probability of an accident resulting in a release of a hazardous material due to delivery from the freeway to the facility. Results show a risk of 1.8 in 1,000,000 for one trip from SR-99 and 2.0 in 1,000,000 for one trip from I-5. The maximum annual risk, including all 12 deliveries required for the operation of both APP and A2PP, was calculated to be 21.7 in 1,000,000 for deliveries from SR-99 and 24.1 in 1,000,000 for deliveries from I-5. This risk was calculated using accident rates on various types of roads (in this case, urban multilane undivided and rural two-lane) with distances traveled on each type of road computed separately. Although it is an extremely conservative model in that it includes risk of accidental release from all modes of hazardous materials transportation and does not distinguish between a high-integrity steel tanker truck and other less secure modes, the results still show that the risk of a transportation accident is less than significant. The transportation of similar volumes of hazardous materials on the nation's highways is neither unique or infrequent.

Staff therefore believes that the risk of exposure to significant concentrations of anhydrous ammonia during transportation to the facility is insignificant because of the remote possibility that an accidental release of a sufficient quantity could be dangerous to the public. The transportation of similar volumes of hazardous materials on the nation's highways is neither unique nor infrequent. Staff's analysis of the transportation of anhydrous ammonia to the proposed facility (along with data from the U.S. DOT) demonstrates that the risk of accident and exposure is less than significant.

In order to further ensure that the risk of an accident involving the transport of anhydrous ammonia to the power plant is insignificant, staff proposes an additional administrative control in proposed Condition of Certification **HAZ-5** that would require the use of only one specific route to the site, that being the shortest route from an interstate (SR-99 to Crows Landing Road to the facility). Staff has driven this route and it consists of two lanes or more in each direction with traffic lights at each intersection. Although it passes by a school and it is staff's policy to avoid routes that pass directly by schools, it is the safest and best route among all the alternatives reviewed by staff. Other routes would be longer, pass through questionably safe intersections and/or involve use roads of one-lane in each direction. However, to address the concerns raised about the transportation of aqueous ammonia through the area, staff proposes that the Applicant consult with the local school district and that no deliveries be made during hours when the route is used by school buses (see proposed condition **HAZ-5**).

Based on the environmental mobility, toxicity, the quantities at the site, and frequency of delivery, it is staff's opinion that anhydrous ammonia poses the predominate risk associated with both use and hazardous materials transportation. Staff concludes that the risk associated with the transportation of other hazardous materials to the proposed project does not significantly increase the risk of ammonia transportation.

## **Seismic Issues**

It is possible that an earthquake could cause the failure of a hazardous materials storage tank. An earthquake could also cause failure of the secondary containment system (berms and dikes), as well as the failure of electrically controlled valves and pumps. The failure of all of these preventive control measures might then result in a vapor cloud of hazardous materials that could move off site and affect residents and workers in the surrounding community. The effects of the Loma Prieta earthquake of 1989, the Northridge earthquake of 1994, and the earthquake in Kobe, Japan, in January 1995, have all heightened concerns about earthquake safety.

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused both to several large storage tanks and to smaller tanks associated with the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while the newer tanks sustained displacements and failures of attached lines. Therefore, staff conducted an analysis of the codes and standards which should be followed when designing and building storage tanks and containment areas to withstand a large earthquake. Staff also reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks failed as a result of that earthquake. Referring to the sections on **Geologic Hazards and Resources** and **Facility Safety Design** in the AFC, staff notes that the proposed facility will be designed and constructed to the standards of the California Code of Regulations, Title 24, and the 2007 California Building Code for Seismic Zone D (TID2009a, Section 2.2.1.1.1).

Staff has also begun a review of the impacts of the recent earthquakes in Haiti (January 12, 2010; magnitude 7.0) and Chile (February 27, 2010; magnitude 8.8). The building standards in Haiti are extremely lax while those in Chile are as stringent and modern as California seismic building codes. Yet, the preliminary reports show a lack of impact on hazardous materials storage and pipelines infrastructure in both countries. For Haiti, this most likely reflects a lack of industrial storage tanks and gas pipelines; for Chile, this most likely reflects the use of strong safety codes.

Therefore, on the basis of what occurred in Northridge with older tanks and the lack of failures during the Nisqually earthquake (with newer tanks) and in the 2010 Chilean earthquake, staff determined that tank failures during seismic events are not probable and do not represent a significant risk to the public.

## **Site Security**

The Applicant proposes to use hazardous materials identified by the U.S. EPA as requiring the development and implementation of special site security measures to prevent unauthorized access. The U.S. EPA published a Chemical Accident Prevention Alert regarding site security (EPA 2000a), the U.S. Department of Justice published a special report entitled *Chemical Facility Vulnerability Assessment Methodology* (US DOJ 2002), the North American Electric Reliability Council published *Security Guidelines for the Electricity Sector* in 2002 (NERC 2002), and the U.S. Department of Energy (DOE) published the draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002). The energy generation sector is one of 14

areas of critical infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S. Department of Homeland Security published in the Federal Register (6 CFR Part 27) an interim final rule requiring that facilities that use or store certain hazardous materials conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of Appendix A, the list of chemicals, on November 2, 2007. The list includes anhydrous ammonia and thus the existing APP along with the proposed A2PP would fall under the jurisdiction of the CFATS.

The Applicant has stated that a security plan will be prepared for the proposed facility prior to operations. Perimeter security measures utilized for this facility may include security guards, security alarm for critical structures, perimeter breach detectors and onsite motion detectors, and a video or still camera monitoring system (TID2009a, Section 5.5.4.2.5).

In order to ensure that neither this project nor a shipment of hazardous material is the target of unauthorized access, staff's proposed Conditions of Certification **HAZ-6** and **HAZ-7** address both construction security and operation security plans. These plans would require implementation of site security measures consistent with the above-referenced documents.

The goal of these conditions of certification is to provide for the minimum level of security for power plants necessary for the protection of California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The level of security needed for the A2PP project is dependent upon the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of the consequences of that event. The results of the off-site consequence analysis prepared as part of the RMP will be used, in part, to determine the severity of consequences of a catastrophic event.

In order to determine the level of security, the Energy Commission staff uses an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the North American Electric Reliability Council's (NERC) 2002 guidelines, the U.S. DOE VAM-CF model, and the U.S. Department of Homeland Security regulations published November 2007 in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that this project would fall into the category of low vulnerability. Staff also visited the existing Almond power plant site and reviewed and discussed security measures with the Applicant. The proposed Almond-2 project would be wholly contained within an expanded security perimeter of the existing power plant. Staff's review of existing security measure found them to be exemplary, thorough, and consist with that required by the Energy Commission at other power plants. The security perimeter fence would be upgraded to include CCTV that will have the capability to view the entire perimeter, as well as monitor the front gate and the anhydrous ammonia storage tank. Staff therefore proposes that certain security measures be upgraded but does not propose that the project owner conduct its own vulnerability assessment or make major revisions to its security procedures.



Existing security measures include perimeter fencing and breach detectors, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contacts in the event of a security breach. Site access for vendors shall be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner will be required, through the use of contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements for hazardous materials vendors to prepare and implement security plans (as per 49 CFR 172.802) and to ensure that all hazardous materials drivers are in compliance through personnel background security checks (as per 49 CFR Part 1572, Subparts A and B). The compliance project manager (CPM) may authorize modifications to these measures or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. DOE, or the NERC, after consultation with both appropriate law enforcement agencies and the Applicant.

## **CUMULATIVE IMPACTS AND MITIGATION**

Staff analyzed the potential for the existence of cumulative impacts. A significant cumulative hazardous materials impact is defined as the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact where the release of one hazardous material alone would not cause a significant impact. Existing locations that use or store gaseous or liquid hazardous materials, or locations where such facilities might likely be built, were both considered. The Applicant provided a description of existing and planned projects in the vicinity of the proposed A2PP, and noted that there are numerous projects in that region that use or store ammonia, which is commonly used for agricultural purposes and refrigeration (TID2009a, Section 5.5.3). The nearest facility storing ammonia is the WinCo Central Valley Distribution Center, located immediately north of the proposed A2PP site. This facility uses anhydrous ammonia for refrigeration and stores about 7,200 gallons in a closed loop system. The second closest facility that stores ammonia is the Stanislaus Farm Supply, located north of the A2PP site. This facility stores up to 26,000 gallons of anhydrous ammonia, 30,000 gallons of aqueous ammonia, and 6,000 pounds of methyl bromide gas.

In the event that the A2PP project is certified by the Energy Commission, the RMP for the APP will be revised to reflect the additional use, but not an increased amount stored, of anhydrous ammonia. Additionally, the Applicant will develop and implement a hazardous materials handling program for A2PP independent of any other projects considered for potential cumulative impacts. Staff believes that the facility, as proposed by the Applicant and with the additional mitigation measures proposed by staff, poses a minimal risk of accidental release that could result in off-site impacts. Upon review of the existing RMP, staff determined that the Off-site Consequence Analysis (OCA) modeling of a worst-case release of anhydrous ammonia from the existing APP storage tank was conducted using appropriate input variable and thus accepts its conclusions.

It is unlikely that an accidental release that has very low probability of occurrence (about one in one million per year) would independently occur at the A2PP site and another facility at the same time. Therefore, staff concludes that the proposed A2PP facility would not contribute to a significant hazardous materials-related cumulative impact.

## **RESPONSE TO AGENCY AND PUBLIC COMMENTS**

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One letter from the City of Ceres expressed the opinion that the AFC contained an inadequate description of the location of all schools in the project area and along the hazardous materials transportation route. The City asked that the Ceres Unified School District be contacted to ensure that all schools have been properly located and considered.

*Response: Staff has visited the area twice and feels that insofar as the risks of hazardous materials use, storage and transport are concerned, the engineering and administrative controls that the Applicant proposes and that staff suggests will be more than adequate to reduce the risk of an impact at any school in the area to less than significant. However, to further reduce the risk of an impact from a transportation accident, staff proposes that the Applicant consult with the local school district and that anhydrous ammonia deliveries be prohibited during hours when the delivery route is used by school buses (see proposed condition **HAZ-5**).*

## **COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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Staff concludes that construction and operation of the A2PP project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of hazardous materials management.

## **CONCLUSIONS**

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Staff's evaluation of the proposed project (with proposed mitigation measures) indicates that hazardous material use will pose no significant impact to the public. Staff's analysis also shows that there will be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable LORS. In response to Health and Safety Code, section 25531 et seq., the Applicant has already prepared an RMP and a PSMP for the existing APP which were determined by staff to be adequate. Staff's proposed conditions of certification address the issue of the transportation, storage, and use of anhydrous ammonia, in addition to site security matters.

Staff recommends that the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed, and operated to comply with all applicable LORS and to protect the public from significant

risk of exposure to an accidental ammonia release. If all mitigation proposed by the Applicant and staff are required and implemented, the use, storage, and transportation of hazardous materials will not present a significant risk to the public.

Staff proposes six conditions of certification mentioned throughout the text (above), and listed below. Condition of Certification **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in **Appendix B** of the staff assessment, unless there is prior approval by the Energy Commission compliance project manager.

Since the proposed A2PP will be built on the site of the existing APP and both power plants will share some hazardous materials storage infrastructure, staff proposes that the existing HMBP, RMP, PSMP, and the SPCC Plan all be revised to reflect the new power plant. This requirement can be found in proposed condition **HAZ-2**. Staff believes that an accidental release of anhydrous ammonia during transfer from the delivery tanker to the storage tank is the most probable accident scenario and therefore proposes Condition of Certification (**HAZ-3**) requiring the development of a safety management plan for the delivery of all liquid hazardous materials, including anhydrous ammonia. The development of a safety management plan addressing the delivery of all liquid hazardous materials during construction, commissioning, and operations will further reduce the risk of any accidental release not addressed by the proposed spill-prevention mitigation measures and the RMP. This plan would additionally prevent the mixing of incompatible materials that could result in toxic vapors. The transportation of hazardous materials is addressed in Conditions of Certification **HAZ-4** and **HAZ-5**. Time-of-day transport of anhydrous ammonia is also addressed in **HAZ-5**. Site security during both the construction and operations phases is addressed in Conditions of Certification **HAZ-6** and **HAZ-7**.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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**HAZ-1** The project owner shall not use any hazardous materials not listed in Appendix B, below, or in greater quantities or strengths than those identified by chemical name in Appendix B, below, unless approved in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility.

**HAZ-2** The project owner shall revise and update the current Hazardous Materials Business Plan (HMBP), Risk Management Plan (RMP), Spill Prevention, Control, and Countermeasure Plan (SPCC Plan), and Process Safety Management Plan (PSMP) and submit the revised plans to the Stanislaus County Environmental Resources Hazardous Materials Division (SCER-HMD) for review and comment and to the CPM for review and approval.

Verification: At least 60 days prior to the start of commissioning of the A2PP, the project owner shall provide a copy of a final updated HMBP, RMP, SPCC Plan, and the PSMP to the CPM for approval.

**HAZ-3** The project owner shall develop and implement a Safety Management Plan for delivery of anhydrous ammonia and other liquid hazardous materials by

tanker truck. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least 30 days prior to the start of ~~commissioning~~ construction of the A2PP, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

**HAZ-4** The project owner shall direct all vendors delivering anhydrous ammonia to the site to use only tanker truck transport vehicles which meet or exceed the specifications of DOT Code MC-331. The project owner shall provide this direction in a letter to the vendor(s) at least thirty (30) days prior to the receipt of anhydrous ammonia on site.

Verification: At least 30 days prior to the start of commissioning of the A2PP, the project owner shall submit to the CPM for review and approval copies of the notification letter to supply vendors indicating the transport vehicle specifications.

**HAZ-5** The project owner shall direct all vendors delivering any hazardous material to the site to use only the route approved by the CPM. Trucks will travel on SR-99 to Crows Landing Road to the power plant site. The project owner shall obtain approval of the CPM if an alternate route is desired. The project owner shall also consult with officials of the Ceres Unified School District regarding school bus schedules and shall prohibit vendors through contractual language from transporting anhydrous ammonia to the site at times that would coincide with regular school bus traffic along Crows Landing Road.

Verification: At least 30 days prior to the start of commissioning of the A2PP, the project owner shall submit to the CPM for review and approval copies of:

- 1) notices to hazardous materials vendors describing the required transportation route,
- 2) the contract with the ~~aqueous~~ anhydrous ammonia vendor describing the time of day limitation on deliveries, and
- 3) evidence that officials of the Ceres Unified School District have been consulted.

**HAZ-6** Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;
2. security guards;
3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;

4. written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on site or off site;
5. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and
6. Evacuation procedures.

Verification: At least 30 days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

**HAZ-7** The project owner shall revise and update the existing site-specific operations security plan and make it available to the CPM for review and approval. The project owner shall continue to implement existing site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The updated Operation Security Plan shall include the following additions to the existing security:

1. The existing man-gates located along the perimeter fence shall either be removed or replaced with a type that affords increased security by allowing immediate egress but which prohibits entry.
2. Written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;
3. A statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;
4. A statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;
5. A statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.802, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

6. An upgraded CCTV system including cameras able to pan, tilt, and zoom and that have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the anhydrous ammonia storage tank, the outside entrance to the control room, and the front gate from a monitor in the power plant control room.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components—transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with both appropriate law enforcement agencies and the Applicant.

Verification: At least 30 days prior to the start of commissioning of the A2PP, the project owner shall notify the CPM that a revised and updated site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed and that updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a statement that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

# **SAMPLE CERTIFICATION (Attachment A)**

## **Affidavit of Compliance for Project Owners**

I,

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(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

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(Company name)

for employment at

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(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

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(Signature of officer or agent)

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

**THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.**

**SAMPLE CERTIFICATION (Attachment B)**

**Affidavit of Compliance for Contractors**

I,

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(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

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(Company name)

for contract work at

---

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

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(Signature of officer or agent)

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.



## **SAMPLE CERTIFICATION (Attachment C)**

### **Affidavit of Compliance for Hazardous Materials Transport Vendors**

I,

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(Name of person signing affidavit)(Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

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(Company name)

for hazardous materials delivery to

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(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

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(Signature of officer or agent)

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

**THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.**

## REFERENCES

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HAZARDOUS MATERIALS  
**Appendix A**

**Basis for Staff's Use of 75 Parts Per Million Ammonia  
Exposure Criteria**

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## BASIS FOR STAFF'S USE OF 75 PARTS PER MILLION AMMONIA EXPOSURE CRITERIA

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Staff uses a health-based airborne concentration of 75 parts per million (PPM) to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by the U.S. Environmental Protection Agency and the California Environmental Protection Agency in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

**HAZARDOUS MATERIALS Appendix A Table-1  
Acute Ammonia Exposure Guidelines**

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH <sup>2</sup>	OSHA	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 minutes	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible injury, or impairment of the ability to escape.
IDLH/10 <sup>1</sup>	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL <sup>2</sup>	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL <sup>3</sup>	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL <sup>4</sup>	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA <sup>2</sup>	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated 8-hour work shifts.
ERPG-2 <sup>5</sup>	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

\* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

\*\* The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

## REFERENCES FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1

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## **ABBREVIATIONS FOR HAZARDOUS MATERIALS APPENDIX A, TABLE 1**

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ACGIH, American Conference of Governmental and Industrial Hygienists

AIHA, American Industrial Hygienists Association

EEGL, Emergency Exposure Guidance Level

EPA, Environmental Protection Agency

ERPG, Emergency Response Planning Guidelines

IDLH, Immediately Dangerous to Life and Health Level

NIOSH, National Institute of Occupational Safety and Health

NRC, National Research Council

STEL, Short Term Exposure Limit

STPEL, Short Term Public Emergency Limit

TLV, Threshold Limit Value

WHO, World Health Organization

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**HAZARDOUS MATERIALS  
Appendix B**

**Hazardous Materials Proposed for Use at the A2PP**

## HAZARDOUS MATERIALS

### Appendix B

#### Hazardous Materials Proposed for Use and Storage On Site at the A2PP

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Acetylene	47-86-2	Welding gas	Health: asphyxiant gas Physical: flammable	435 cubic feet
Anhydrous Ammonia (100 percent NH <sub>3</sub> by weight)	7664-41-7	Control NOx emissions through selective catalytic reduction	Health: Corrosive, irritation to permanent damage from inhalation, ingestion and skin contact Physical: Combustible, but difficult to burn	10,200 gallons
Anti-scalant	Various	Prevent scale in reverse osmosis membranes	Health: may cause slight irritation to the skin and moderate irritation to the eyes Physical: non flammable	250 gallons
<u>Argon</u>	<u>7440-37-1</u>	<u>Welding Gas</u>	<u>Health: Asphyxiant gas</u> <u>Physical: Non-flammable</u>	<u>450 cubic feet</u>
<u>Argon / Carbon Dioxide</u>	<u>7440-37-1 / 124-38-9</u>	<u>Welding Gas</u>	<u>Health: Asphyxiant gas, Exposure can cause nausea and respiratory problems; oxygen levels below 19.5% may cause asphyxia; high concentrations may cause vasodilation leading to circulatory collapse</u> <u>Physical: Non-flammable</u>	<u>342 cubic feet</u>
<u>Aviation Engine Oil</u>	<u>None</u>	<u>Lubricate rotation equipment (e.g., gas turbine bearings)</u>	<u>Health: hazardous if ingested</u> <u>Physical: can be combustible depending on manufacturer</u>	<u>250 gallons</u> <u>1,000 gallons (250 gal x4 Gas Turbines)</u>
<u>Bleach (Sodium Hypochlorite)</u>	<u>7681-52-9</u>	<u>Biological Control</u>	<u>Health: Corrosive, irritation to permanent damage from inhalation, ingestion and skin contact</u> <u>Physical: Nonflammable</u>	<u>800 gallons</u>
<u>Carbon Dioxide</u>	<u>124-38-9</u>	<u>Fire Protection for GT Packages</u>	<u>Health: Exposure can cause nausea and respiratory problems; oxygen levels below 19.5% may cause asphyxia; high concentrations may cause vasodilation leading to circulatory collapse</u> <u>Physical: Non-flammable</u>	<u>250 gallons</u> <u>Almond 1: 600 pounds</u> <u>A2PP: 7,200</u> <u>Total = 7,800 pounds</u>

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Citric Acid	77-92-9	Reverse osmosis membrane cleaning	Health: causes irritation to the skin, gastrointestinal tract, and respiratory tract Physical: slightly flammable	350 pounds
Cleaning Chemicals	Various	Cleaning	Health: refer to individual chemical labels Physical: refer to individual chemical labels	Varies (less than 25 gallons liquids or 100 pounds solids for each chemical)
Cleaning Chemicals/ Detergents	None	Periodic cleaning of combustion turbine	Health: refer to individual chemical labels Physical: refer to individual chemical labels	<del>55 gallons</del> 110 gallons
<u>Corrosion Inhibitor (365 Amine)</u>	<u>2008-39-1 (Amine Solution)</u>	<u>Corrosion inhibitor</u>	<u>Health: Harmful if swallowed; causes irreversible eye damage</u> <u>Physical: Non-flammable</u>	<u>75 gallons</u>
<u>Diesel No. 2</u>	<u>68476-34-6</u>	<u>Small equipment refueling</u>	<u>Health: May be carcinogenic</u> <u>Physical: Flammable</u>	<u>250 gallons</u>
EPA Protocol Gases	Various	Calibration gases	Health: refer to individual chemical labels Physical: refer to individual chemical labels	1,400 cubic feet  <u>4,060 cubic feet</u>
Hydraulic Oil	None	High-pressure combustion turbine starting system, turbine control valve actuators	Health: hazardous if ingested Physical: combustible	<u>600 gallons</u> <u>215 gallons</u>
Laboratory Reagents	Various	Water/wastewater laboratory analysis	Health: refer to individual chemical labels Physical: refer to individual chemical labels	130 pounds
<u>Lead Acid Batteries (10-45% Sulfuric Acid and 45-60% Lead)</u>	<u>7664-93-9</u> <u>7439-92-1</u>	<u>UPS Electrical power</u>	<u>Health: Causes severe eye and skin burns; causes burns of the mouth, throat, and stomach; acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping which may lead rapidly to systemic toxicity and must be treated by a physician</u> <u>Physical: Non-flammable</u>	<del>25,650 pounds (in batteries)</del>  <u>Almond 1: 25,650 pounds</u>  <u>A2PP: 40,000 pounds (est)</u>  <u>Total: 65,650 pounds</u>

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site
Lubrication Oil	None	Lubricate rotation equipment (e.g., generator bearings, gas compressors, pumps)	Health: hazardous if ingested Physical: flammable	<del>775 gallon</del> 12,775 gallons
Mineral Insulating Oil	8012-95-1	Transformers/switch yard	Health: minor health hazard Physical: can be combustible depending on manufacturer	<del>75,000</del> 150,000 0 gallons (in numerous transformers)
Nalco 3DT-183 Cooling Treatment (30-60% Phosphoric Acid)	7664-38-2	Corrosion control	Health: Corrosive, may cause tissue damage Physical: Non-flammable	400 gallons
Oxygen	7782-44-7	Welding gas	Health: therapeutic overdoses can cause convulsions Physical: oxidizing agent; actively supports combustion	562 cubic feet
Oxygen Scavenger	None	Oxygen scavenger for water conditioning	Health: Mild Irritation Physical: Non-flammable	75 gallons
Paint	Various	Touchup of painted surfaces	Health: Refer to individual container labels Physical: Refer to individual container labels	Varies (less than 25 gallons liquids or 100 pounds solids for each type)
Propane	74-98-6	Torch gas	Health: Asphyxiant gas, causes frostbite to area of contact Physical: Flammable	None
Propylene Glycol	57-55-6	Anti-icing system	Health: Hazardous if ingested Physical: Combustible	2,000 gallons (contained within equipment)
Sodium Bisulfite (NaHSO <sub>3</sub> )	7631-90-5	Reduce oxidizers in reverse osmosis feed to protect the RO membranes	Health: Corrosive, irritation to eyes, skin, and lungs; may be harmful if digested Physical: Non-flammable	<del>25 pounds</del> 200 pounds
Sodium Carbonate (Na <sub>2</sub> CO <sub>3</sub> )	497-19-8	Reverse osmosis membrane cleaning	Health: May cause irritation or burns to eyes, skin, and lungs; may be harmful if digested Physical: Non-flammable	200 pounds

<b>Material</b>	<b>CAS No.</b>	<b>Application</b>	<b>Hazardous Characteristics</b>	<b>Maximum Quantity On Site</b>
Sodium Hydroxide (NaOH)	1310-73-2	Convert CO <sub>2</sub> to alkalinity for removal by reverse osmosis	Health: Causes eye and skin burns, hygroscopic, may cause severe respiratory tract irritation with possible burns may cause severe digestive tract irritation with possible burns Physical: Non-flammable	400 gallons
Sodium Nitrite (NaNO <sub>2</sub> )	7632-00-0	Closed & chilled water loop corrosion inhibitor	Health: Very hazardous in case of eye contact (irritant), of ingestion, of inhalation, hazardous in case of skin contact (irritant), slightly hazardous in case of skin contact, prolonged exposure may result in skin burns and ulcerations, over-exposure by inhalation may cause respiratory irritation, severe over-exposure can result in death, inflammation of the eye is characterized by redness, watering, and itching Physical: Non-flammable	On site only periodically and during initial start-up
<u>Stabrex ST70 (9% Sodium Bromide and 6% Sodium Hypochlorite)</u>	<u>7647-15-6</u> <u>7681-52-9</u>	<u>Biological control</u>	<u>Health: Harmful by ingestion, inhalation and through skin contact</u> <u>Physical: Non-flammable</u>	<u>100 gallons</u>
<u>Sulfuric Acid</u>	<u>7664-93-9</u>	<u>pH control</u>	<u>Health: Causes severe burns</u> <u>Physical: Non-flammable</u>	<u>1,950 gallons</u>

Source: TID2009a, Tables 5.5-1 through 5.5-3.

a. Reportable quantities for a pure chemical, per the Comprehensive Environmental Response, Compensation, and Liability Act.

# LAND USE

Testimony of Jeanine Hinde

## SUMMARY OF CONCLUSIONS

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Energy Commission staff has evaluated the potential impacts to land use and agricultural resources from implementation of the proposed Almond 2 Power Plant (A2PP), in accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.) and the State CEQA Guidelines (14 Cal. Code Regs. § 15000 et seq.). The analysis is based on a review of information provided by Turlock Irrigation District (TID) (Applicant) on the A2PP. It includes an assessment of the A2PP's compliance with applicable laws, ordinances, regulations, and standards (LORS).

The proposed site for the A2PP project includes properties that are adjacent to the existing Almond Power Plant (APP). Most of the facilities for the main plant would be constructed on two properties that are owned by TID, including the parcel where the existing APP is situated. Some of the facilities associated with the proposed A2PP are proposed for siting on a separate parcel along the west side of the TID properties. Energy Commission staff has determined that the A2PP would be consistent with the applicable LORS upon the Applicant providing documentation demonstrating that the A2PP would be constructed and operated on a legal parcel of land. Condition of certification **LAND-1** is proposed to require the project Applicant to complete a lot line adjustment and record of survey for filing with the City of Ceres and Stanislaus County. Completing the required actions to move the property boundaries at the plant site would enable construction and operation of the A2PP on a legal parcel of land.

Implementation of the A2PP would require construction of two new 115-kilovolt (kV) transmission lines. Although installation of these new lines would occur within rights-of-way and along existing agricultural access roads, construction of one utility pole would result in the loss of approximately 4 square feet (sq. ft.) of Prime Farmland. The Stanislaus County General Plan requires mitigation to compensate for the loss of farmland resulting from residential development in the unincorporated areas of the county. Because the A2PP would not convert agricultural land to residential uses, no mitigation measure is required to compensate for this loss of Prime Farmland acreage. The A2PP would not cause any additional conversion of Important Farmland to nonagricultural uses.

Construction of the natural gas pipeline for the A2PP could result in minor and temporary impacts to Important Farmland, including Prime Farmland, Farmland of Local Importance, Farmland of Statewide Importance, and Unique Farmland. Installation of segments of the natural gas pipeline could also temporarily affect agricultural lands held under Williamson Act contracts. Condition of certification **LAND-2** is proposed to ensure that agricultural lands are restored to their pre-project condition for all areas that are disturbed during construction of the natural gas pipeline. With implementation of condition of certification **LAND-2**, Energy Commission staff finds the project would have less-than-significant impacts on Important Farmland and Williamson Act contracted lands.



## INTRODUCTION

The land use analysis for the A2PP is focused on the project's consistency with applicable LORS and the potential effects of converting existing uses (e.g., agricultural land) to other uses.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Land Use Table 1 provides a general description of land use LORS applicable to the proposed project. The project's consistency with these LORS is discussed in Land Use Table 2. No federal LORS pertaining to land use are applicable to the A2PP project.

<b>Land Use Table 1</b>	
<b>Laws, Ordinances, Regulations, and Standards (LORS)</b>	
<b>Source</b>	<b>Description of Applicable LORS</b>
<b>State</b>	
Professional Land Surveyors' Act (Business and Professions Code commencing with § 8700)	The California State Legislature adopted The California Professional Land Surveyors' Act (Act) to govern the land surveyor industry. The Act established the California Board for Professional Engineers and Land Surveyors as the governing board for the purposes of the Act. The law authorizes the board to develop and enforce the rules that are required to carry out the provisions of the Act.
Subdivision Map Act (Government Code commencing with § 66410)	The Subdivision Map Act (Map Act) regulates and controls the design and improvement of subdivisions. Any property divided into two or more parcels is subject to the Map Act. The Map Act is administered by the local agency in the county in which the property is located.
California Land Conservation Act of 1965 (Williamson Act) (Gov. Code commencing with § 51200)	<p>The Williamson Act addresses uses that are considered compatible in areas that are identified as agricultural preserves and on contracted lands. Construction and maintenance of various utilities are identified as compatible uses in areas identified as agricultural preserves (Gov. Code § 51238). The A2PP project would supply electric power, which is considered a compatible use.</p> <p>The Williamson Act establishes principles of compatibility on contracted lands. Approved uses may not compromise long-term productivity or displace or impair current or reasonably foreseeable agricultural operations (Gov. Code § 51238.1).</p>
<b>Local</b>	
<b>City of Ceres General Plan</b>	
Land Use and Community Design Element	The City of Ceres General Plan land use designations for the A2PP site are General Industrial (GI) and Community Facility (CF). The GI designation is applied primarily in the western part of the planning area, allowing for a wide range of industrial and manufacturing uses. The CF designation is applied to the city's major public and private facilities and institutional uses.
Public Facilities and Services Element, Goal 4.L	Goal 4.L: To provide adequate levels of service for utility services provided by private companies and ensure that these are constructed to minimize negative effects on surrounding development.
<b>City of Ceres</b>	
<b>Service Road Industrial Master Plan (SRIMP)</b>	

<b>Land Use Table 1 Laws, Ordinances, Regulations, and Standards (LORS)</b>	
<b>Source</b>	<b>Description of Applicable LORS</b>
Development Plan Approval, Land Use Classifications, and Development Standards	<p>The A2PP site is within an area that is governed by the Service Road Industrial Master Plan (SRIMP). The SRIMP addresses requirements for approval of development plans:</p> <p style="text-align: center;"><i>The approval of development plans...is required for specific development projects (Section 18.20.080 of the Ceres Municipal Code). Although the development plans...must be consistent with the approved Master Plan, minor variations from the Master Plan may be approved by the Planning Director or Planning Commission in conjunction with the review and approval of a development plan...provided that any such changes are consistent with the intent of the Master Plan's overall land use program.</i></p> <p>Land use classifications for the project area are identified in the SRIMP, as follows: 1) Community Facility (C-F), which applies to existing TID Facilities, and 2) General Industrial (M-2), which applies to heavy industrial uses and properties with the Planned Community (P-C) (50) zoning classification in the south portion of the Master Plan area. The P-C (50) Zone applies to land in the SRIMP plan area.</p> <p>Development standards and polices include the following:</p> <p style="text-align: center;"><i>Uses and/or development standards not specifically addressed in this Master Plan or a subsequent Development Plan as required by the P-C Zone shall be governed by the corresponding zones contained in the Ceres Municipal Code.</i></p> <p style="text-align: center;"><i>Developments processed independent of a subdivision proposal that are consistent with the master plan and standards in the corresponding zones contained in the Ceres Municipal Code can be processed with an Architectural Site Plan Approval rather than a Development Plan.</i></p>
<b>City of Ceres Code of Ordinances</b>	
Title 18, Chapter 18.20 Planned Community (P-C) Zone	<p>The A2PP site is within the P-C (50) Zone, which is an area where land uses are governed by the SRIMP.</p> <p>The purpose of the P-C Zone is to establish a level of preplanning for the development or redevelopment of land and to encourage innovative design solutions while retaining good land use relationships and compatibility of uses (Title 18, § 18.20.020).</p>
Title 18, Section 18.08.120 Property Development Standards in the Community Facilities (C-F) Zone (G. Building Height)	<p>The C-F Zone corresponds to the Community Facility land use classification in the SRIMP (see above). The C-F Zone is intended to accommodate governmental, public utility, public education facilities, and quasi-public medical, cultural, and service facilities.</p> <p>No main building erected in the C-F Zone shall have a height greater than thirty five feet or three stories, whichever is less. No accessory building erected in the C-F Zone shall have a height greater than one story or fifteen feet, whichever is less. Projections above this height may be permitted when approved by the Planning Commission, provided that they may be safely erected and maintained at such height in view of the surrounding conditions and circumstances.</p>

<b>Land Use Table 1 Laws, Ordinances, Regulations, and Standards (LORS)</b>	
<b>Source</b>	<b>Description of Applicable LORS</b>
Title 18, Section 18.08.120 Property Development Standards in the C-F Zone (I. Architectural and Site Plan Approval)	Before any building is erected on any lot; a site plan and floor plans of all buildings, elevations of all buildings and a landscape plan shall be submitted to and approved by the Planning Commission pursuant to the provisions of the C-F Zone in Title 18.
Title 18, Section 18.08.080 Conditional Uses in the C-F Zone  Title 18, Section 18.50.040 Uses Subject to a Conditional Use Permit (B.8. Public Utility Structures)	The following uses may be permitted in the C-F Zone subject to a conditional use permit as provided for in Chapter 18.50 of Title 18.  A. The facilities of all public utilities as defined by the Public Utilities Code of the state; B. The facilities of public utilities incorporated as political entities by the state.  Public utility structures may be permitted in any zone except where expressly prohibited, when such uses are deemed by the Planning Commission to be essential or desirable for the public welfare and convenience and in conformity with the General Plan and its goals and objectives.
Title 17, Chapter 17.36 Lot Line Adjustments	A lot line adjustment is any division of land not requiring a map as specified by the Subdivision Map Act, in which no more parcels are created by the division than existed prior to it. The process requires completion of an application and submittal to the City of Ceres for approval.
<b>1994 Stanislaus County General Plan</b>	
Agricultural Element	Goal One of the Agricultural Element is to strengthen the agricultural sector of the county's economy. Objective Number 1.2 addresses supporting the development of agricultural uses while recognizing that a variety of uses, including uses not directly related to agriculture, may be sited on lands that are zoned for agricultural uses.
<b>Stanislaus County Code, Title 21, Zoning</b>	
Section: 21.08.020 General Provisions, Uses (C. Facilities for Public Utilities)	This section of the Stanislaus County Code addresses uses associated with public utilities in areas zoned for agricultural uses:  Facilities for public utilities are permitted in the A-2 Zoning District provided that such use is demonstrated in connection with the approval of a use permit. Public utility transmission and distribution lines, both overhead and underground, are permitted in all districts without limitations as to height, but metal transmission towers are subject to all yard requirements as other structures. However, routes of proposed electrical transmission lines (including height, and placement of towers), shall be submitted to the Planning Commission for review and recommendations prior to the acquisition of rights-of-way, when such lines are not within a public street or highway.
Section: 21.20.030 General Agriculture District (A-2), Uses Requiring Use Permit (C. Tier Three)	This section of the Stanislaus County Code addresses permitted uses in the A-2 Zoning District:  Public utility development may be allowed (as a Tier 3 use) when the Planning Commission finds that the use as proposed will not 1) be substantially detrimental to or in conflict with the agricultural use of the property or in the vicinity, and 2) be located in one of the County's most productive agricultural areas, as defined by the General Plan and approved by the County. (For areas zoned General Agriculture [A-2], tier 3 includes uses not directly related to agriculture but that may be necessary to serve the A-2 Zoning District or that may be difficult to locate in urban areas.)
<b>City of Modesto Municipal Code, Title 10, Planning and Zoning</b>	

<b>Land Use Table 1 Laws, Ordinances, Regulations, and Standards (LORS)</b>	
<b>Source</b>	<b>Description of Applicable LORS</b>
Chapter 2 Zoning Regulations, Article 23 General Provisions, Section 10-2.2304 Utilities and Railroads	The regulations in Article 23 apply in the various zones established by the City of Modesto. With regard to utilities, the following applies:  (a) The provisions of this chapter shall not apply to the poles, lines or similar facilities, whether above ground or underground, whose sole purpose is non-wireless transmission of electricity or communications. This exclusion does not apply to the antennas, uni-poles, monopoles, towers, or any similar or related facilities of wireless communication services.

## SETTING

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### INTRODUCTION

The A2PP project would be constructed on approximately 4.6 acres. Of that total, approximately 1.4 acres are part of TID's property where the existing APP is located (Assessor's Parcel Number [APN] 041-006-026). The remaining 3.2 acres includes a vacant TID parcel (APN 041-006-039) adjacent to the north side of the existing APP. The proposed switchyard and the two 115-kV transmission lines for the A2PP would be constructed on land adjacent to the west side of the existing TID parcels, on property that is currently owned by WinCo (APN 041-006-038). Negotiations are proceeding between TID and WinCo relating to the purchase of a portion of the WinCo property; completion of the land purchase from WinCo would expand the acreage of TID's property (APN 041-006-039) to approximately 3.2 acres.

The associated construction laydown areas would be located on approximately ~~6.4~~ <sup>4.85</sup> acres of disturbed land directly ~~west north~~ of the A2PP project site. The ~~6.4~~ <sup>4.85</sup>-acre area is accessed from the access road to the existing APP and A2PP through the A2PP site. The existing land uses surrounding the project site are industrial, agricultural, and rural residential. The proposed A2PP is located within the southwest boundary of the Ceres city limits, approximately 2 miles from the city center (Land Use Figure 1).

The City of Ceres General Plan governs land uses in its planning area. The designated land use for the A2PP project site is General Industrial (GI). The 1.4-acre portion of the existing APP property where some of the A2PP facilities would be located, including one of the 58-megawatt (MW) turbines, is designated Community Facilities (CF) (Land Use Figure 2) (TID 2009a, City of Ceres 1997).

The proposed 115-kV electrical transmission lines and natural gas supply pipelines would be located on land that is designated General Industrial and Industrial Reserve by the City of Ceres and Agriculture by Stanislaus County. The ~~re-rated reconductoring~~ 69-kV sub-transmission line route is on land designated Industrial and Residential by the City of Modesto; and Light Industrial, General Industrial, Community Facilities, and Low-Density Residential by the City of Ceres (TID 2009a, City of Ceres 1997, Stanislaus County 1994, City of Modesto 2008).

## **SPECIAL DISTRICTS**

TID operates under the provisions of the California Water Code as a special district. A special district is defined by state law as “any agency of the state for the local performance of governmental or proprietary functions within limited boundaries.” (Gov. Code § 16271) In other words, a special district is a separate local government that delivers public services to a particular area. “District” means any irrigation district formed pursuant to any law of this State or to this division....” (Wat. Code § 20513) It is also established that “districts are state agencies formed and existing for governmental purposes.” (Wat. Code § 20570) Case law has established that districts are also considered local agencies.

The Government Code provides that certain district facilities are exempt from city and county building and zoning ordinances:

*Building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency (Gov. Code § 53091[d]).*

*Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities (Gov. Code § 53091[e]).*

A district has a legal obligation to ensure provision of reliable water and energy services; therefore, a district is exempt from compliance with city and county building and zoning ordinances for facilities that are connected and integral to the provision of water and energy services.

## **GENERAL PLAN LAND USE DESIGNATIONS AND ZONING WITHIN 1 MILE OF THE PROJECT STUDY AREA**

The City of Ceres General Plan land use designations for the 1.4-acre portion of the existing APP facility is designated Community Facilities (CF), and the area for the proposed A2PP facility as well as the construction laydown and the switchyard areas are designated General Industrial (GI) (Land Use Figure 2).

The A2PP site and construction areas are in an area that is governed by the Service Road Industrial Master Plan (SRIMP), which provides the conceptual framework for the installation of public facilities, provision of public services, and future development of the approximately 320-acre area that is bounded by Morgan Road on the east, TID Lateral No. 2 on the south, Crows Landing Road on the west, and Service Road on the north. The SRIMP was rezoned in 1990 to Planned Community (P-C). The SRIMP specifies community facilities, wholesale and community commercial, and light and general industrial as allowable uses within its plan area (City of Ceres 1996).

Uses and/or development standards not specifically addressed in one of the City's master plan areas are addressed by the corresponding zones contained in the Ceres Zoning Ordinance. The A2PP site and construction areas are within the P-C-50 Zone, which applies to the area encompassed by the SRIMP. Project facilities for the A2PP would be located on land having two corresponding zoning districts established by the Ceres Zoning Ordinance. The 1.4-acre portion of the existing APP facility is in the Community Facilities (C-F) Zone. The General Industrial (M-2) Zone applies to the area for the A2PP facility and the construction parking and laydown area (Land Use Figure 3).

The 115-kV transmission lines and natural gas line would be constructed in the Stanislaus County planning area. The County's General Plan land use designation for this area is Agriculture, and the zoning district is General Agriculture (A-2-40). The reconducted 69-kV transmission lines would be constructed in the City of Modesto planning area. The City's General Plan land use designation for this part of the project area is Industrial. The zoning classifications are primarily Heavy Industrial (M-2) and Low-Density Residential (R-1) (TID 2009a) (Land Use Figure 2).

Land Use Figures 2 and 3 show the general plan and zoning designations in the project study area, including a portion of the transmission line corridors.

### **Power Plant and Construction Laydown Area**

The A2PP is a nominal 174-MW, natural gas-fired, simple-cycle peaking plant and switchyard that is proposed for construction directly north of TID's existing 48-MW Almond Power Plant (APP). The Application for Certification (AFC) for the A2PP describes the existing APP facilities that would be shared with the proposed project; modifications would be required to accommodate sharing of these facilities (TID 2009a). A new stormwater retention pond would be constructed to accommodate stormwater runoff for both the existing APP and the A2PP on the property for the new plant site (TID 2009a). The switchyard would be constructed along the west side of the plant site. The construction laydown area would be on ~~6.4~~ 4.85 acres of WinCo property to the west ~~north~~ (Land Use Figure 1).

The proposed A2PP would include construction of three 80-foot-tall turbines ~~stacks~~ and associated equipment. Some of the new facilities for the A2PP would be located within the 1.4-acre portion of TID's existing power plant (APN 041-006-026), including one of the new turbines. Most of the facilities for the new plant would be constructed on the vacant parcel (APN 041-006-039) adjacent to the north side of the existing plant.

### **Linear Facilities**

#### **Electrical Transmission Poles and Lines**

Linear routes for the project would include two 115-kV transmission lines (Corridor 1 is 0.9 mile long and Corridor 2 is 1.2 miles long) interconnecting to the proposed Grayson Substation<sup>1</sup> located approximately 3,300 feet southwest of the A2PP project site. A

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<sup>1</sup>The proposed Grayson Substation referenced above is a component of TID Hughson-Grayson 115-kV Transmission Line and Substation Project (the "Hughson-Grayson Project"). A Draft Environmental Impact Report was published August 10, 2009 for the TID Hughson-Grayson Project.

portion of Corridor 2 would be routed along Crows Landing Road. Land use planning documents for Ceres and Stanislaus County have addressed improving several segments of Crows Landing Road, including a segment that is north of Keyes Road in the A2PP project area. Although these planned roadway improvements could be implemented in the future, Stanislaus County staff has confirmed that all planned improvements to Crows Landing Road have been delayed indefinitely for lack of funding (TID 2010).

The ~~re-rated reconductoring~~ of an existing 69-kV sub-transmission line would involve lowering the crossarms on the existing transmission poles along the route, hanging travelers on the insulators of the existing line and using the existing conductor as a pull-line for the new conductor. Digital communication for differential protection between substations would be provided through fiber optic communication cable, which would be attached to the poles on Corridor 1.

### Natural Gas Supply

A new natural gas supply pipeline is proposed to connect with the existing high pressure Pacific Gas and Electric Company (PG&E) natural gas line #215, approximately 11.6 miles from the A2PP project site (TID 2009b). The construction right-of-way within the corridor would be 85 feet wide and the permanent pipeline easement would be 50 feet wide.

### Water and Water Treatment and Storage

The A2PP would share service water by tying into the existing onsite water well located in the southeast corner of the existing APP site. Drinking water would be provided by an outside drinking water delivery service. Fire water would tie into the existing APP fire system. The A2PP project would receive process water that is currently delivered to the site by a 6-inch-diameter pipeline between the existing APP and the City of Ceres Wastewater Treatment Plant.

For a detailed description of the components and associated facilities for the A2PP, see the "Project Description" section of this document.

## **AGRICULTURAL LAND IN THE PROJECT AREA**

The Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation (DOC) provide statistics on conversion of farmland to nonagricultural uses for Stanislaus County. Energy Commission staff has reviewed the Stanislaus County 2006 Important Farmland mapping by the FMMP. The mapping indicates that the proposed project site and laydown areas are within an area classified as Urban and Built-up Land. The transmission poles and lines would be located within areas classified as Prime Farmland and Rural (Rural is included in Other Land) (TID 2009a). The Preferred Alignment for the natural gas line would cross or be adjacent to lands classified as Prime Farmland, and would cross several parcels that are held under Williamson Act contracts (TID 2009b).

Lands are divided and mapped into farmland categories and other categories based on their suitability for agricultural use. Some of these categories are listed below:

**Prime Farmland:** Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields.

**Urban and Built-up Land:** This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

**Other Land:** Land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres.

**Unique Farmland:** Land which does not meet the criteria for Prime Farmland or Farmland of Statewide Importance that has been used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality and/or high yields of a specific crop when treated and managed according to current farming methods. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

**Farmland of Local Importance:** Land that is either currently producing crops, has the capability of production, or is used for the production of confined livestock. Farmland of Local Importance is land other than Prime Farmland, Farmland of Statewide Importance or Unique Farmland. This land may be important to the local economy due to its productivity or value. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use. This land includes soils which qualify for Prime Farmland or Farmland of Statewide Importance, but generally are not cultivated or irrigated.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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Energy Commission staff has analyzed information provided by TID for the proposed A2PP to determine consistency of the proposed project with applicable land use LORS. The analysis addresses the potential for the A2PP to cause significant adverse impacts to land use and agricultural resources.

## **METHOD AND THRESHOLDS FOR DETERMINING SIGNIFICANCE**

Significance criteria used in this document are based on Appendix G of the State CEQA Guidelines and performance standards or thresholds identified by Energy Commission staff. An impact may be considered significant if the proposed project would result in:

- Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.



- Conflicts with existing zoning for agricultural use or a Williamson Act contract.
- Other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use.
- Physical disruption or division of an established community.
- Conflicts with any applicable habitat conservation plan or natural community conservation plan.
- Conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project. This includes, but is not limited to, a General Plan, redevelopment plan, or zoning ordinance.
- Environmental effects that are individually limited but cumulatively considerable. (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).

## **DIRECT AND INDIRECT IMPACTS AND MITIGATION**

### **Power Plant Site and Associated Facilities**

The City of Ceres Annexation Policy was adopted for the area-wide planning of the SRIMP in the City’s 1997 General Plan. The SRIMP provides the conceptual framework for future development areas surrounding and encompassing the proposed project. The planning area was designated mostly for industrial development with some commercial and community facility uses. Today, the SRIMP plan area consists of agricultural and rural residential uses, and industrial uses, including TID’s existing APP substation and energy facility.

The proposed project would be erected on a site that was formerly used by WinCo as a borrow pit during construction of the adjacent WinCo distribution center (TID 2009a). The proposed A2PP would not physically disrupt or divide an established community. The site is located within an established industrial area in Ceres, and it is adjacent to TID’s existing APP facility. The new power plant would be located entirely on private property. No new physical barriers would be created by the project (public access across the site is not currently allowed), and no existing roadways or pathways would be blocked. Given its location, the project would not alter existing land use patterns in the area.

The proposed project represents further development of a site already committed to industrial use and, therefore, would not introduce a new industrial use into a non-industrial area.

The linear facilities for the proposed project would be erected within existing transmission corridors and utility rights-of-way within industrial, agricultural and rural residential areas. The nature of these facilities would not result in the physical division of an established community nor would any physical barriers be created. There would be no alteration of the existing land uses in these areas.

No habitat conservation or natural community conservation plans are in effect that would apply to the project area, and the project would not conflict with any such plans.

### **Conversion of Farmland**

Based on FMMP mapping of farmland and land use data, the proposed project site and the switchyard and construction laydown areas are classified as Urban and Built-up Land. There would be no significant impacts to Important Farmland within the A2PP project site. Following project construction, the construction laydown area would be restored to its pre-construction land use condition.

The A2PP facilities for the proposed 115-kV electrical transmission poles and lines in Corridor 1 would be installed within an existing TID right-of-way and would cross or be adjacent to lands classified as Prime Farmland by the FMMP. Construction could result in minor and temporary disruptions to agricultural uses within areas outside of the TID right-of-way and access roads. Transmission poles and lines for Corridor 2 would be placed within county road or TID rights-of-way or along agricultural access roads.

The Stanislaus County General Plan requires mitigation to compensate for the loss of farmland resulting from residential development in the unincorporated areas of the county. The Stanislaus County Farmland Mitigation Program Guidelines applies to any development project requiring a general plan or community plan amendment from Agriculture to a residential land use designation (Stanislaus County 1994). The construction of one pole in Corridor 2 would result in the loss of approximately 4 sq. ft. of Prime Farmland. Implementation of the A2PP would not convert agricultural land to a residential land use designation, therefore, the mitigation requirements are not applicable to the loss of the 4 sq. ft. of Prime Farmland associated with construction of the utility pole in Corridor 2.

Based on data compiled by the FMMP, acreages of Important Farmland converted to other uses in Stanislaus County averaged approximately 620 acres per year from 1984 to 2000 (DOC 2007). (Important Farmland includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance.) Based on the most recent FMMP data, a total of approximately 1,500 acres of Important Farmland in the county were converted to Urban and Built-up Land from 2004 to 2006. The State CEQA Guidelines defines “significant effect on the environment” as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project...” (State CEQA Guidelines § 15382) The loss of 4 sq. ft. of Prime Farmland relating to installation of one utility pole for the Corridor 2 transmission line is not considered substantial relative to the total acreage of Important Farmland that is converted annually in the county, generally from implementation of various types of development projects.

The reconducted 69-kV sub-transmission line would not require ground disturbance, therefore, parcels within and outside of the transmission line right-of-way would not be impacted.

The natural gas pipeline for the A2PP would be installed in a 6- to 8-foot-deep trench along an approximately 11.6-mile route (TID 2009b). Segments of the gas pipeline would be located on land that is primarily classified as Prime Farmland and portions of

several parcels that are held under Williamson Act contracts. PG&E would own and operate the natural gas pipeline. The pipeline installation would not compromise the long-term productivity of the agricultural uses along the pipeline alignment. The use would not result in a significant removal of adjacent contracted land from agricultural uses. For these reasons, Energy Commission staff finds the proposed project's gas pipeline will not result in a significant impact to those parcels under Williamson Act contracts and other agricultural lands.

The Williamson Act addresses uses that are considered compatible in areas that are identified as agricultural preserves and on contracted lands. Construction and maintenance of various utilities are identified as compatible uses in areas identified as agricultural preserves (Gov. Code § 51238). The Williamson Act also establishes principles of compatibility on contracted lands. Approved uses may not compromise long-term productivity or displace or impair current or reasonably foreseeable agricultural operations (Gov. Code § 51238.1).

Installation of the natural gas pipeline could cause temporary construction-related impacts to Important Farmland and Williamson Act contracted lands. The Applicant proposes mitigation measures to restore the surface of the ground by removing any construction debris, grading to the original grade and contour, and revegetating disturbed areas as required (TID 2009b). Conditions of certification are proposed in this staff assessment (SA) to address temporary effects to biological resources during construction of the natural gas pipeline for the A2PP project (see conditions of certification **BIO-6** and **BIO-14** in this SA). Condition of certification **LAND-2** is proposed to ensure that agricultural lands are restored to their pre-project condition for all areas that are disturbed during construction of the natural gas pipeline. With implementation of condition of certification **LAND-2**, Energy Commission staff finds the project would have less-than-significant impacts on Important Farmland and Williamson Act contracted lands.

### **Compliance with Laws, Ordinances, Regulations, and Standards**

In accordance with applicable codes and regulations, Energy Commission staff has evaluated the information provided by the Applicant in the AFC to determine if elements of the proposed project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission's exclusive authority to license power plants in the state with a generating capacity of 50 MW or greater (20 Cal. Code Regs. § 1744; Pub. Resources Code §§ 25500–25543). The Energy Commission's license takes the place of other state, regional, and local permits (e.g., conditional use permits and variances) and other entitlements that would otherwise be required. The Energy Commission's licensing process includes preparation of findings regarding the conformity of the proposed facility with applicable local, regional, state, and federal standards, ordinances, and laws (Pub. Resources Code § 25523 [d][1]). A determination of noncompliance requires the Energy Commission to consult with the agencies responsible for implementation of identified ordinances or regulations to attempt to correct or eliminate the noncompliant condition.

As discussed above, most of the A2PP would be sited in an area that is designated as GI in the City of Ceres General Plan. The designation of GI allows for a wide range of industrial and manufacturing uses. The 1.4-acre portion of the existing APP property where some of the A2PP facilities would be sited is designated as CF, which applies to Ceres's major public and private facilities and institutional uses, including the existing APP. A power plant is considered an allowable use in areas with each of these general plan land use designations. The proposed A2PP site has a SRIMP land use classification of General Industrial (M-2), and the portion of the existing APP facility is classified as Community Facilities (C-F). The C-F classification applies to a total of 6 acres within the SRIMP plan area where TID facilities are currently sited, including the existing APP. The proposed A2PP is appropriately sited in an area designated for general industrial and public utility development and is proposed to be adjacent to TID's existing APP facility. Energy Commission staff has concluded that the proposed project does not conflict with the City's General Plan land use designations and applicable land use policies.

The proposed A2PP would include construction of three 80-foot-tall turbines stacks and associated equipment. Some of the new facilities for the A2PP would be located on the existing APP property, including one of the new turbines. The City of Ceres Code of Ordinances, the C-F Zone applies to areas with the corresponding land use designation of CF. The property development standards for the C-F Zone address building height requirements, which limit main buildings to a height of 35 feet. The existing APP includes a 92-foot-tall exhaust stack. The City's approval process to allow construction of structures exceeding the height limit would typically occur as part of its Architectural and Site Plan Approval (ASPA) process. The California Government Code provides that certain district facilities are exempt from city and county building and zoning ordinances. Exempt facilities include those that are necessary for the production or generation of electrical energy (Gov. Code § 53091[e]). Because TID operates under the provisions of the California Water Code as a special district, it is exempt from the City of Ceres's zoning ordinance, including the property development standards for development in the C-F Zone.

Some of the new facilities for the A2PP would be located within the 1.4-acre portion of TID's existing power plant (APN 041-006-026) (Land Use Figure 4). Most of the equipment and facilities for the A2PP would be constructed on an adjacent vacant parcel (APN 041-006-039). TID owns both parcels. The 115-kV switchyard and associated transmission lines would be installed along the west side of TID's properties. As discussed above, TID is planning to purchase a portion of the WinCo property; execution of this agreement would result in a total area of 4.6 acres for the proposed A2PP.

Energy Commission staff has determined that the project would be consistent with the applicable LORS upon the Applicant providing documentation demonstrating that the A2PP would be constructed and operated on a legal parcel of land. Condition of certification **LAND-1** is proposed to require the project Applicant to complete a lot line adjustment and record of survey for filing with the City of Ceres and Stanislaus County. Completing the required actions to move the property boundaries at the plant site would enable construction and operation the A2PP on a legal parcel of land.

Installation of the new 115-kV transmission lines would occur primarily within rights-of-way and along existing agricultural access roads, however, construction of one pole in Corridor 2 would result in the loss of approximately 4 sq. ft. of Prime Farmland. The Stanislaus County General Plan requires mitigation to compensate for the loss of farmland resulting from residential development in the unincorporated areas of the county. Because the A2PP would not convert agricultural land to residential uses, no mitigation is required to compensate for this loss of Prime Farmland acreage. The proposed project would not cause any additional conversion of Important Farmland to nonagricultural uses.

A portion of Corridor 2 would be routed along Crows Landing Road. This segment of the 115-kV transmission line would be installed 55 feet from the roadway centerline. Although Stanislaus County and the City of Ceres plan to widen Crows Landing Road between Service Road and State Route 33, implementation of roadway improvements has been delayed indefinitely because no funding sources have been identified for the proposed improvements (TID 2010). Because of the uncertainty of plans for the possible future widening of Crows Landing Road, no conflict would occur with any land use plan relating to placement of the Corridor 2 transmission line along the roadway.

No general plan or zoning inconsistencies would occur relating to re-rating ~~reconductoring~~ of the existing 69-kV sub-transmission line. The proposed project's linear utility facilities would be consistent uses within existing transmission line corridors and easements.

<b>Land Use Table 2</b>		
<b>Project Compliance with Adopted Applicable Land Use LORS</b>		
<b>Source</b>	<b>Consistency Determination</b>	<b>Basis for Consistency</b>
<b>State</b>		
Professional Land Surveyors' Act (Business and Professions Code commencing with § 8700)	Consistent, with implementation of <b>LAND-1</b> (see below)	The project Applicant will be required to comply with the Professional Land Surveyors' Act for completion of a record of survey and lot line adjustment to ensure construction and operation of the A2PP on a legal parcel of land.
Subdivision Map Act (Government Code commencing with § 66410)	Consistent, with implementation of <b>LAND-1</b> (see below)	The project Applicant will be required to comply with the Subdivision Map Act for completion of a record of survey and lot line adjustment to ensure construction and operation of the A2PP on a legal parcel of land.
California Land Conservation Act of 1965 (Williamson Act) (Gov. Code commencing with § 51200)	Consistent, with implementation of <b>LAND-2</b> (see below)	The natural gas pipeline for the A2PP would cross portions of parcels that are held under Williamson Act contracts. The A2PP project is considered consistent with Williamson Act objectives and principles of compatibility. However, installation of the gas pipeline could cause temporary construction-related impacts to Williamson Act lands. Returning affected Williamson Act contracted lands and agricultural preserves areas to pre-project conditions would ensure that the long-term productivity of these lands is not affected.
<b>Local</b>		
<b>City of Ceres General Plan</b>		

<b>Land Use Table 2 Project Compliance with Adopted Applicable Land Use LORS</b>		
<b>Source</b>	<b>Consistency Determination</b>	<b>Basis for Consistency</b>
Land Use and Community Design Element	Consistent	<p>The City of Ceres General Plan land use designations for the A2PP site are General Industrial (GI) and Community Facility (CF). Most of the A2PP site is within an area that is designated GI. A portion of the A2PP would be constructed adjacent to the existing APP within an area that is designated CF.</p> <p>The GI designation allows for a wide range of industrial uses, and the CF designation is applied to the city's major public and private facilities and institutional uses, including the APP. The A2PP is considered to be consistent with the City's intent for development projects in each of these designated land use categories. No conflict or inconsistency with the General Plan would occur from implementation of the A2PP project.</p>
Public Facilities and Services Element, Goal 4.L	Consistent	<p>The A2PP would provide needed electric generation capacity with improved efficiency and operational flexibility. It would provide additional generation to meet the demands of customers within TID's service territory. Corridor 2 would be equipped with future cross arms to allow for a future 12-kV distribution line, which would minimize negative impacts of retrofitting the poles in the future. Potential impacts relating to implementation of the A2PP are evaluated for the full range of environmental resource sections addressed in this staff assessment. Compliance with Goal 4.L would be achieved with implementation of conditions of certification for the identified impacts.</p>
<b>City of Ceres Service Road Industrial Master Plan (SRIMP)</b>		
Development Plan Approval, Land Use Classifications, and Development Standards	Consistent	<p>Land use classifications specified in the SRIMP for this area are consistent with the corresponding City of Ceres General Plan land designations. In the SRIMP, the Community Facility (C-F) classification corresponds to the CF land use designation in the General Plan, and the General Industrial (M-2) classification corresponds to the GI land use designation.</p> <p>As discussed above, no conflict or inconsistency with the City of Ceres General Plan would occur from implementation of the A2PP project. The A2PP is considered to be consistent with the City's intent for development projects in the City's planning area for the SRIMP.</p>
<b>City of Ceres Code of Ordinances</b>		
Title 18, Chapter 18.20 Planned Community (P-C) Zone	Consistent	<p>As discussed above, the P-C (50) Zone applies to land in the SRIMP plan area. The A2PP is consistent with the City of Ceres General Plan land use designations and the corresponding land use classifications in the SRIMP. Construction and operation of the A2PP is consistent with other uses within the P-C (50) Zone. No conflict or inconsistency with the SRIMP would occur from implementation of the A2PP project.</p>

**Land Use Table 2  
Project Compliance with Adopted Applicable Land Use LORS**

Source	Consistency Determination	Basis for Consistency
<p>Title 18, Section 18.08.120 Property Development Standards in the Community Facilities (C-F) Zone (G. Building Height)</p>	<p align="center">Consistent</p>	<p>Construction of the A2PP project would include installation of three 80-foot-tall stacks. Based on the existing General Plan land use designations and corresponding zoning at the project site, one of the turbines would be constructed in the C-F Zone where the height of main buildings is limited to 35 feet. The existing APP, which includes a 92-foot-tall exhaust stack, is located adjacent to the A2PP site in the C-F Zone. Construction of the A2PP is considered consistent with the City's intent relating to planned and approved land uses in the C-F Zone.</p> <p>The City of Ceres's approval process to allow construction of structures exceeding the height limit specified for the C-F Zone would typically occur as part of its Architectural and Site Plan Approval (ASPA) process. California law provides that certain district facilities are exempt from city and county building and zoning ordinances. Exempt facilities include those that are necessary for the production or generation of electrical energy (Gov. Code § 53091[e]). Because TID operates under the provisions of the California Water Code as a special district, it is exempt from the City's zoning ordinance, including the property development standards for development in the C-F Zone.</p>
<p>Title 18, Section 18.08.120 Property Development Standards in the C-F Zone (I. Architectural and Site Plan Approval)</p>	<p align="center">Consistent</p>	<p>As discussed above, the existing APP is located adjacent to the A2PP site in the C-F Zone. Construction of the A2PP is considered consistent with the City's intent relating to planned and approved land uses in the C-F Zone.</p> <p>The City of Ceres's approval process to allow construction of structures in the C-F Zone would typically occur as part of its ASPA process. California law provides that certain district facilities are exempt from city and county building and zoning ordinances. Exempt facilities include those that are necessary for the production or generation of electrical energy (Gov. Code § 53091[e]). Because TID operates under the provisions of the California Water Code as a special district, it is exempt from provisions of the City's ASPA process.</p>
<p>Title 18, Section 18.08.080 Conditional Uses in the C-F Zone</p> <p>Title 18, Section 18.50.040 Uses Subject to a Conditional Use Permit (B.8. Public Utility Structures)</p>	<p align="center">Consistent</p>	<p>Construction of the A2PP is considered consistent with the City's intent relating to planned and approved land uses in the C-F Zone. Public utilities are consistent with the City's purpose and intent for development projects in the C-F Zone (Title 18, § 18.08.020).</p> <p>The Energy Commission has the exclusive authority to license power plants in the state with a generating capacity of 50 MW or greater; therefore, all required local approvals and entitlements for the proposed A2PP, including a conditional use permit, would be covered under the Energy Commission's in-lieu permitting authority.</p>

<b>Land Use Table 2 Project Compliance with Adopted Applicable Land Use LORS</b>		
<b>Source</b>	<b>Consistency Determination</b>	<b>Basis for Consistency</b>
Title 17, Chapter 17.36 Lot Line Adjustments	Consistent, with implementation of <b>LAND-1</b> (see below)	The project Applicant will be required to comply with the City's approval process for completion of a record of survey and lot line adjustment to ensure construction and operation of the A2PP on a legal parcel of land.
<b>1994 Stanislaus County General Plan</b>		
Agricultural Element	Consistent	Objective Number 1.2 addresses development in the Stanislaus County A-2 Zoning District. Tier three includes uses that are not directly related to agriculture but may be necessary to serve the A-2 Zoning District or difficult to locate in urban areas. Segments of the 115-kV transmission lines and natural gas line for the A2PP project are located in the County's A-2 Zoning District, in an area that is designated as Agriculture in the County's General Plan.  The A2PP is considered to be consistent with the County's intent relating to planned and approved land uses in the A-2 Zoning District. No conflict or inconsistency with the General Plan would occur from implementation of the A2PP project.
<b>Stanislaus County Code, Title 21, Zoning</b>		
Section: 21.08.020 General Provisions, Uses (C. Facilities for Public Utilities)	Consistent	Installation of the 115-kV transmission lines and natural gas line for the A2PP project is considered consistent with the County's intent relating to planned and approved land uses in the A-2 Zoning District. Facilities for public utilities are consistent with the City's purpose and intent for development projects in the A-2 Zoning District.  The Energy Commission has the exclusive authority to license power plants in the state with a generating capacity of 50 MW or greater; therefore, all required local approvals and entitlements for the proposed A2PP, including approval of a use permit, would be covered under the Energy Commission's in-lieu permitting authority.
Section: 21.20.030 General Agriculture District (A-2), Uses Requiring Use Permit (C. Tier Three)	Consistent	As discussed above, facilities for public utilities are consistent with the City's purpose and intent for development projects in the A-2 Zoning District.  The Energy Commission has the exclusive authority to license power plants in the state with a generating capacity of 50 MW or greater; therefore, all required local approvals and entitlements for the proposed A2PP, including approval of a use permit, would be covered under the Energy Commission's in-lieu permitting authority.
<b>City of Modesto Municipal Code, Title 10, Planning and Zoning</b>		
Chapter 2 Zoning Regulations, Article 23 General Provisions, Section 10-2.2304 Utilities and Railroads	Consistent	Segments of the reconducted 69-kV transmission lines would be in an area that is primarily zoned for heavy industrial and low-density residential uses. The transmission lines for the A2PP are considered to be consistent with the County's zoning regulations for uses in these zoning districts.



## CUMULATIVE IMPACTS

Cumulative impacts are defined as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” A cumulative impact occurs from “the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.” Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.” (State CEQA Guidelines § 15355)

Impacts involving land use plans or policies and zoning generally will not combine to result in cumulative impacts. The determination of significance for impacts relating to these issues, as considered in Appendix G of the State CEQA Guidelines, is whether a project will conflict with any applicable land use plan or policy adopted for the purpose of reducing or avoiding environmental impacts. Such a conflict is site-specific and would be addressed on a project-by-project basis. As discussed in this land use analysis, implementing A2PP would not result in significant land use planning impacts, and the project’s ultimate consistency with applicable LORS would be ensured through implementation of conditions of certification **LAND-1** and **LAND-2**.

The A2PP’s impacts relating to land use are site-specific and would not combine with other related projects to compound or increase an environmental effect. The A2PP’s contribution to impacts on land use consistency would not result in significant cumulative impacts, and it would not otherwise contribute to impacts on this resource area.

As discussed above, the construction of one utility pole in Corridor 2 would result in the loss of approximately 4 sq. ft. of Prime Farmland. This relatively minor conversion of Prime Farmland is not comparable to other conversions of Important Farmland in the county to residential and other urban uses. Installation of the one utility pole would not contribute considerably to the significant future cumulative condition relating to the net loss of Important Farmland.

## CONCLUSIONS AND RECOMMENDATIONS

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Energy Commission staff has reviewed the AFC and other information provided by the Applicant and evaluated whether the A2PP would cause impacts relating to land use planning and agricultural resources. Staff recommends implementation of condition of certification **LAND-1** to ensure construction and operation of the A2PP on a legal parcel of land. Implementation of **LAND-2** is recommended to ensure that temporary construction-related impacts to Important Farmland and Williamson Act lands are reduced to a less-than-significant level. With implementation of conditions of certification **LAND-1** and **LAND-2**, the project would comply with all applicable LORS, and no significant impacts to land use and agricultural resources would occur from implementation of the A2PP. This analysis was conducted in accordance with CEQA (Pub. Resources Code § 21000 et seq.) and the State CEQA Guidelines (14 Cal. Code Regs. § 15000 et seq.).

## PROPOSED CONDITIONS OF CERTIFICATION

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**LAND-1** The project owner shall complete a lot line adjustment and record of survey for filing with the City of Ceres and Stanislaus County to ensure construction and operation of the Almond 2 Power Plant on a legal parcel of land. The record of survey shall be filed by a licensed land surveyor or registered civil engineer authorized to practice land surveying. Survey methods, practices, and monumentation shall comply with the Subdivision Map Act and the Professional Land Surveyors Act. ~~All documentation and submittals shall be completed to the satisfaction of the Director of the City of Ceres Development Services Department, Planning Division; the City Engineer for the City of Ceres; and the County Surveyor for the Stanislaus County Public Works Department, Survey Division.~~

Verification: Prior to commercial operation of the Almond 2 Power Plant, the project owner shall provide written documentation to the Compliance Project Manager (CPM) that all necessary actions and approvals relating to the lot line adjustment and record of survey have been completed and finalized. Written documentation submitted to the CPM shall include copies of all approved and recorded documents relating to the lot line adjustment and record of survey.

**LAND-2** The project owner shall ensure restoration of certain agricultural lands that are disturbed during project construction. Any lands that are identified by the Farmland Mapping and Monitoring Program as Important Farmland or located within agricultural preserves shall be restored to pre-project conditions, consistent with the agreement between PG&E and the landowner. Methods to restore affected agricultural lands shall include stock piling of top soil for replacement when project construction is completed. Restoration shall be considered complete when affected sites are graded and prepared for cultivation and top soil replacement is accomplished to match the conditions that were present prior to disturbance of affected farmlands.

Verification: Before the start of any project construction work on agricultural lands, the project owner shall submit written documentation to the Compliance Project Manager (CPM) describing methods that will be used to return the affected lands to pre-project conditions. Within 90 days of completion of construction of the Almond 2 Power Plant and related facilities, the project owner shall provide written documentation to the Compliance Project Manager (CPM) demonstrating that all necessary work to restore disturbed agricultural lands to pre-project conditions has been completed. Written documentation shall include detailed descriptions of restoration methods and corresponding maps for affected areas.

## REFERENCES

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DOC. See California Department of Conservation.

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TID. See Turlock Irrigation District.

Turlock Irrigation District 2009a—*TID Almond 2 Power Plant, Application for Certification (02-AFC-02)*, submitted by Turlock Irrigation District, submitted to the California Energy Commission, with technical assistance from CH2M HILL, May 2009.

Turlock Irrigation District 2009b—*TID Almond 2 Power Plant, Data Responses, Set 1D (Response to Data Requests 18 and 77 through 79) (02-AFC-02)*, submitted by Turlock Irrigation District, submitted to the California Energy Commission, with technical assistance from CH2M HILL, November 2009.

Turlock Irrigation District 2010—*TID Almond 2 Power Plant, Staff Queries, Set 3 (Responses to Staff Query 4) (02-AFC-02)*, submitted by Turlock Irrigation District, submitted to the California Energy Commission, with technical assistance from CH2M HILL, April 2010.

# NOISE AND VIBRATION

Testimony of Erin Bright

## SUMMARY OF CONCLUSIONS

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California Energy Commission staff concludes that the Turlock Irrigation District (TID) Almond 2 Power Plant (A2PP) can be built and operated in compliance with all applicable noise and vibration laws, ordinances, regulations, and standards and, if built in accordance with the conditions of certification proposed below, would produce no significant adverse noise impacts on people within the affected area, either direct, indirect, or cumulative.

## INTRODUCTION

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The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors combine to determine whether the facility would meet applicable noise control laws and ordinances and whether it would cause significant adverse environmental impacts. In some cases, vibration may be produced as a result of power plant construction practices, such as blasting or pile driving. The groundborne energy of vibration has the potential to cause structural damage and annoyance.

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the A2PP and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS) and to avoid creation of significant adverse noise or vibration impacts. For an explanation of technical terms and acronyms employed in this section, please refer to **NOISE Appendix A** immediately following.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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**Noise Table 1**  
**Laws, Ordinances, Regulations, and Standards**

<b>Applicable Law</b>	<b>Description</b>
<b>Federal</b> (OSHA): 29 U.S.C. § 651 et seq.	Protects workers from the effects of occupational noise exposure.
<b>State</b> (Cal/OSHA): Cal. Code Regs., tit. 8, §§ 5095–5099	Protects workers from the effects of occupational noise exposure.
<b>Local</b> Stanislaus County General Plan, Noise Element	Establishes acceptable noise levels.
Stanislaus County Ordinance Code (Title 10, Chapter 10.46)	Prohibits noisy steam blows.
City of Ceres General Plan, Noise Element	Establishes acceptable noise levels.

Applicable Law	Description
City of Ceres Municipal Code(Chapter 9.36: "Noise" and Chapter 18.38: "Material Effects")	Limits construction noise to daytime hours and establishes acceptable noise levels.

## FEDERAL

Under the Occupational Safety and Health Act of 1970 (29 USC § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure (29 CFR § 1910.95). These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **NOISE Appendix A, Table A4** immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

There are no federal laws governing off-site (community) noise.

The only guidance available for evaluation of power plant vibration is guidelines published by the Federal Transit Administration (FTA) for assessing the impacts of groundborne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess groundborne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB,<sup>1</sup> which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

## STATE

California Government Code section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure. The State land use compatibility guidelines are listed in **Noise Table 2**.

<sup>1</sup> VdB is the common measure of vibration energy.

## Noise Table 2 Land Use Compatibility for Community Noise Environment

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - Ldn or CNEL (db)							
	50	55	60	65	70	75	80	
Residential - Low Density Single Family, Duplex, Mobile Home								
Residential - Multi-Family								
Transient Lodging – Motel, Hotel								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditorium, Concert Hall, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								

	<b>Normally Acceptable</b>	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	<b>Conditionally Acceptable</b>	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.
	<b>Normally Unacceptable</b>	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	<b>Clearly Unacceptable</b>	New construction or development generally should not be undertaken.

Source: State of California General Plan Guidelines, Office of Planning and Research, June 1990.

The California Occupational Safety and Health Administration (Cal/OSHA) has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, §§ 5095–5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards (see the **Worker Safety and Fire Protection** section of this document, and **NOISE Appendix A, Table A4**).

## LOCAL

### **Stanislaus County General Plan, Noise Element**

The County's General Plan Noise Element identifies single-family and multiple-family residential uses in residential zones as noise sensitive land uses (Stanislaus 2006, Chapter 4, section 4.0). As shown in Figure 3 of the Noise Element the County General Plan adopts the state land use compatibility guidelines (shown in **Noise Table 2**, above). Additionally, Policy Two of the Noise Element requires new stationary noise sources to mitigate noise emissions so that noise levels at noise sensitive land uses do not exceed the noise level standards presented in Table 4; this table is reproduced here as **Noise Table 3**:

**Noise Table 3 – Stanislaus County Noise Element  
Maximum allowable Noise Exposure – Stationary Noise Sources**

	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Hourly level ( $L_{eq}$ ), dBA	55	45
Maximum level ( $L_{max}$ ), dBA	75	65

Source: Stanislaus 2006, Table 4

The General Plan further states that where measured ambient noise levels exceed the standards, the standards (as shown above in **Noise Table 3**) should reflect the ambient noise levels.

### **Stanislaus County Ordinance Code**

The County Code prohibits the production of “loud and raucous” noise, defined as noise that would be a nuisance to a person of ordinary sensibilities. The Code enumerates high pressure steam blows from stationary internal combustion engines as a public nuisance subject to this noise prohibition.

### **City of Ceres General Plan**

The City of Ceres General Plan, policy 7.H.2, requires that noise created by new proposed non-transportation sources be mitigated so as not to exceed the noise level standards presented in Table 7-1 as measured at the property line of lands designated for noise-sensitive uses. Table 7-1 of the city's general plan is identical to Table 4 of the Stanislaus County General Plan Noise Element, reproduced in **Noise Table 3**, above (City of Ceres 1997).

### **City of Ceres Municipal Code**

The City of Ceres has adopted the state land use compatibility guidelines (presented in **Noise Table 2** above) in its Municipal Code (City of Ceres 2008, section 18.36.060). Additionally, noise regulations applicable to the construction and operation of the project are set forth in the municipal code. Regulation section 9.36.020 limits noise level variation during nighttime hours, stating that “the erection (including excavation), demolition, alteration or repair of any building other than between the hours of seven o'clock (7:00) A.M. and eight o'clock (8:00) P.M” would be in violation of the provisions of the code.

## **SETTING**

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The A2PP would be constructed on land adjacent to the existing TID Almond Power Plant, located approximately 2 miles southwest of the City of Ceres, in Stanislaus County. The land surrounding the project site is zoned for agricultural and residential uses (TID2009a, AFC §§ 1.1, 5.6.1)

The ambient noise regime in the project vicinity consists primarily of traffic from Highway 99 and local roads. The nearest sensitive noise receptor is a residence located approximately 0.3 miles northeast of the project site (TID2009a, AFC § 5.7.2.1, Figure 5.7-1).

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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### **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE**

#### **California Environmental Quality Act**

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (Cal. Code Regs., tit. 14, App. G) sets forth some characteristics that may signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local General Plan or noise ordinance or applicable standards of other agencies;
2. exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying item 3 above to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by 5 dBA or more at the nearest sensitive receptor.

Staff considers it reasonable to assume that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA is considered significant. An increase between 5 and 10 dBA should be considered adverse, but may be either significant or insignificant, depending on the particular circumstances of the case.

Factors to be considered in determining the significance of an adverse impact as defined above include:



1. the resulting combined noise level;<sup>2</sup>
2. the duration and frequency of the noise;
3. the number of people affected;
4. the land use designation of the affected receptor sites; and
5. public concern or controversy as demonstrated at workshops or hearings or by correspondence.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- the construction activity is temporary;
- use of heavy equipment and noisy activities are limited to daytime hours; and
- all industry-standard noise abatement measures are implemented for noise-producing equipment.

Staff uses the above method and threshold to protect the most sensitive populations, including the minority population.

### **Ambient Noise Monitoring**

In order to establish a baseline for comparison of predicted project noise to existing ambient noise, the Applicant has presented the results of an ambient noise survey (TID2009a, AFC § 5.7.2.2; Tables 5.7-3 through 5.7-7). The survey was conducted January 20 through January 22, 2009, and monitored existing noise levels at the following locations, shown on **Noise Table 4**:

1. Location M1: Near a residence located approximately 2700 feet northwest of the project's northern boundary.
2. Location M2: Near the center of an existing residential development within the city of Ceres, located approximately 3,375 feet northeast of the project's northern boundary.
3. Location M3: Near the southern edge of a residential development within the city of Ceres, located approximately 1,875 feet to the northeast of the project's northern boundary. This location represents the nearest sensitive receptor, the one most likely to be impacted by project noise.
4. Location M4: Near a residence located approximately 3,375 feet southeast of the project's southern boundary.
5. Location M5: Near a residence located approximately 2,275 feet west of the project's western boundary.

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<sup>2</sup> For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA at nearby sensitive receptors, and the resulting noise level would be 40 dBA or less, the project noise level would likely be insignificant.

**Noise Table 4** summarizes the ambient noise measurements:

**Noise Table 4  
Summary of Measured Ambient Noise Levels**

Measurement Location	Measured Noise Levels, dBA		
	$L_{eq}$ – Daytime <sup>1</sup>	$L_{eq}$ – Nighttime <sup>2</sup>	$L_{90}$ – Nighttime <sup>3</sup>
M1: Northwest Residence	55	53	43
M2: Northeast Residences	55	46	41
M3: Nearest Receptor	60	55	40
M4: Southeast Residence	59	56	46
M5: West Residence	63	60	43

Source: TID2009a, AFC Tables 5.7-3 through 5.7-7

<sup>1</sup> Staff calculations of average of 15 daytime hours

<sup>2</sup> Staff calculations of average of 9 nighttime hours

<sup>3</sup> Staff calculations of average of 4 consecutive quietest hours of the nighttime

## **DIRECT IMPACTS AND MITIGATION**

Noise impacts associated with the project can be created by short-term construction activities and by normal long-term operation of the power plant.

### **Construction Impacts and Mitigation**

Construction noise is usually considered a temporary phenomenon. Construction of the A2PP is expected to be typical of similar projects in terms of schedule, equipment used, and other types of activities (TID2009a, AFC § 5.7.3.2).

### **Compliance with LORS**

Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances.

The Applicant has predicted the noise impacts of project construction on the nearest sensitive receptors (TID2009a, AFC § 5.7.3.2.1, Tables 5.7-9 through 5.7-11). A maximum construction noise level of 89 dBA  $L_{eq}$  is estimated to occur at a distance of 50 feet from the acoustic center of the construction activity (most often the power block) and attenuate to no more than 57 dBA  $L_{eq}$  at the nearest sensitive receptor, location M3 (TID2009a, AFC Table 5.7-9; and staff calculations). A comparison of construction noise estimates to measured ambient conditions is summarized in **Noise Table 5**.

**Noise Table 5**  
**Predicted Power Plant Construction Noise Impacts**

Receptor	Highest Construction Noise Level <sup>1</sup> (dBA L <sub>eq</sub> )	Measured Existing Ambient <sup>2</sup> (dBA L <sub>eq</sub> )	Cumulative (dBA L <sub>eq</sub> )	Change (dBA)
M1: Northwest Residence	54	55 daytime	57 daytime	+2 daytime
		53 nighttime	57 nighttime	+4 nighttime
M2: Northeast Residences	52	55 daytime	57 daytime	+2 daytime
		46 nighttime	53 nighttime	+7 nighttime
M3: Nearest Receptor	57	60 daytime	60 daytime	+0 daytime
		55 nighttime	59 nighttime	+4 nighttime
M4: Southeast Residence	52	59 daytime	60 daytime	+1 daytime
		56 nighttime	57 nighttime	+1 nighttime
M5: West Residence	55	63 daytime	64 daytime	+1 daytime
		60 nighttime	61 nighttime	+1 nighttime

1 Source: TID2009a, AFC Table 5.7-8; and staff calculations

2 Source: TID2009a, AFC Tables 5.7-3 through 5.7-7; and staff calculations of average of daytime and nighttime hours

The applicable local noise LORS do not limit the loudness of construction noise, but staff compares the projected noise levels with ambient levels (please see the following discussion under **CEQA Impacts**).

Noisy construction work would be allowed only during the daytime hours of 7:00 a.m. to 8:00 p.m. in compliance with the City of Ceres Municipal Code. To ensure that these hours are, in fact, enforced, staff proposes Condition of Certification **NOISE-6**. Therefore, the noise impacts of the A2PP construction activities would comply with the noise LORS.

### **CEQA Impacts**

Since construction noise typically varies with time, it is most appropriately measured by, and compared with, the L<sub>eq</sub> (energy average) metric. As seen in **Noise Table 5** above, last column, the highest increase in the ambient noise levels at the project's noise-sensitive receptors would be 7 dBA. An increase of 7 dBA would be noticeable and potentially significant. Given that noisy construction activities would be limited to daytime hours, however, the noise effects of plant construction are considered to be less than significant.

To ensure the project construction would create less than significant adverse impacts at the most noise-sensitive receptors, in addition to Condition of Certification **NOISE-6**, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a notification process and a noise complaint process to resolve any complaints regarding construction noise.

In light of the following proposed conditions of certification, the noise impacts of the A2PP construction activities would be less than significant.

### Linear Facilities

New offsite linear facilities will include an approximately 11.6-mile-long natural gas pipeline, as well as two transmission lines (approximately 0.9 and 1.2 miles long, respectively). The Applicant intends to utilize an existing water supply pipeline from the adjacent Almond Power Plant (TID2009a, AFC §§ 2.1, 2.1.1.1).

Construction of linear facilities typically moves along at a rapid pace, thus not subjecting any one receptor to noise impacts for more than two or three days. Further, construction activities would be limited to daytime hours. To ensure that these hours are, in fact, adhered to, in compliance with the LORS, staff proposes Condition of Certification **NOISE-6**.

### Pile Driving

The Applicant has not specifically discussed the possible use of pile driving during construction of The A2PP, but pile drivers have been listed as common construction equipment (TID2009a, AFC § 5.7.3.2.1, Table 5.7-11). If pile driving is required for construction of the project, the noise from this operation could be expected to reach 104 dBA at a distance of 50 feet. Pile driving noise would thus be projected to reach levels of 73 dBA at location M3, the nearest residential receptor (TID2009a, AFC Table 5.7-11; staff calculations). As shown in **Noise Table 6**, the greatest increase over ambient noise levels resulting from pile driving would occur at location M1 with an increase of 14 dBA. While this would produce a noticeable impact, staff believes that limiting pile driving to daytime hours, in conjunction with its temporary nature, would result in impacts tolerable to residents. Staff proposes Condition of Certification **NOISE-6** to ensure that pile driving, should it occur, would be limited to daytime hours.

**Noise Table 6  
Pile Driving Noise Impacts**

Receptor	Pile Driving Noise Level (dBA L <sub>eq</sub> )	Daytime Ambient Noise Level (dBA L <sub>eq</sub> )	Cumulative Level (dBA)	Change (dBA)
M1	69	55	69	+14
M2	67	55	67	+12
M3	73	60	73	+13
M4	67	59	67	+8
M5	71	63	72	+11

Source: TID2009a, AFC Table 5.7-11 and staff calculations

### Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving, should it be employed. Vibration attenuates rapidly; it is likely

that no vibration would be perceptible at any appreciable distance from the project site. Staff therefore believes there would be no significant impacts from construction vibration at the project's noise-sensitive receptors.

### Worker Effects

The Applicant has acknowledged the need to protect construction workers from noise hazards and has recognized those applicable LORS that would protect construction workers (TID2009a, AFC § 5.7.3.2.3). To ensure that construction workers are, in fact, adequately protected, staff has proposed Condition of Certification **NOISE-3**, below.

### Operation Impacts and Mitigation

The primary noise sources of the A2PP include combustion turbine generators, SCR units, stacks, compressors, and transformers (TID2009a, AFC § 2.1.2, 2.1.4, Table 5.7-11). Staff compares the projected noise with applicable LORS. In addition, staff evaluates any increase in noise levels at sensitive receptors due to the project in order to identify any significant adverse impacts.

### Compliance with LORS

The Applicant performed noise modeling to determine the project's noise impacts on sensitive receptors (TID2009a, AFC § 5.7.3.3.3, Table 5.7-13). The Applicant has predicted operational noise levels, summarized in **Noise Table 7** below.

**Noise Table 7**  
**Predicted Operational Noise Levels and Noise LORS**

Receptor	Project Alone Operational Noise Level $L_{eq}$ (dBA) <sup>1</sup>	Stanislaus County General Plan, $L_{eq}$ (dBA) <sup>2</sup>
M1	<del>46</del> <u>47</u>	55 day/ 53 night
M2	44 <del>45</del>	55 day/ 46 night
M3	49	60 day/ 55 night
M4	<del>44</del> <u>49</u>	59 day/ 56 night
M5	47	63 day/ 60 night

Sources: <sup>1</sup> TID2009a, AFC § 5.7.3.3.3; staff calculations  
<sup>2</sup> Noise Table 3 and Noise Table 4, above

The Applicant has incorporated noise reduction measures into the design of the project to ensure that there will not be a substantial increase in noise levels at the nearest receptors. The local planning policy guidelines for Stanislaus County and the City of Ceres require new projects to meet the acceptable exterior noise level standards listed in **Noise Table 3**, in residential areas. Existing ambient conditions at the residential receptors closest to the project site for the A2PP, however, are higher than those noise level standards described in the guidelines. The LORS state that in such an instance the noise level standards shall be increased to the ambient levels, as shown in **Noise Table 7**, above.

As seen in **Noise Table 7**, the project's operational noise level at the nearest receptors would be no more than 49 dBA  $L_{eq}$ . This is 11 decibels below the 60 dBA  $L_{eq}$  daytime noise limit and 26 decibels below the ~~46~~55 dBA  $L_{eq}$  nighttime limit at location M23, which is the most noise impacted sensitive receptor. Therefore, the project's operational

noise impacts at the nearest sensitive receptors (M1 through M5) would comply with both the City of Ceres and Stanislaus County noise LORS. To ensure compliance, staff proposes Condition of Certification **NOISE-4**.

### CEQA Impacts

Power plant noise is unique. A power plant operates as, essentially, a steady, continuous, broadband noise source, unlike the intermittent sounds that make up most of the noise environment. Power plant noise therefore contributes to, and becomes a part of, background noise levels, or the sound heard when most intermittent noises stop. Where power plant noise is audible, it tends to define the background noise level. For this reason, staff typically compares projected power plant noise to existing ambient background ( $L_{90}$ ) noise levels at affected sensitive receptors. If this comparison identifies a significant adverse impact, then feasible mitigation must be applied to the project to either reduce or remove that impact.

For residential receptors, staff evaluates project noise emissions by comparing them with nighttime ambient background levels; this evaluation assumes that the potential for public annoyance from power plant noise is greatest at night when residents are trying to sleep. Nighttime ambient noise levels are typically lower than daytime levels; differences in background noise levels of 5 to 10 dBA are common. Staff believes it is prudent to average the lowest nighttime hourly background noise levels to arrive at a reasonable baseline for comparison with the project's predicted noise level.

Adverse impacts on residential receptors can be identified by comparing predicted power plant noise levels with the nighttime ambient background noise levels at the nearest sensitive residential receptors.

The Applicant has predicted operational noise levels; they are summarized here in **Noise Table 8**.

**Noise Table 8**  
**Predicted Operational Noise Levels and CEQA**

Receptor	Project Alone Operational Noise Level $L_{eq}$ (dBA) <sup>1</sup>	Measured Existing Ambient, Average Nighttime $L_{90}$ (dBA) <sup>2</sup>	Project Plus Ambient $L_{90}$ (dBA)	Change in Ambient Level
M1	<del>47</del> 46	43	<u>48.5</u>	+5.46
M2	<del>45</del> 44	41	<u>46.5</u>	+5.46
M3	49	40	<del>49.5</del> 50	+9.5140
M4	<del>49</del> 44	46	<u>50.8</u> 48	+4.762
M5	47	43	<u>48.5</u>	+5.46

<sup>1</sup> Source: TID2009a, AFC § 5.7.3.3.3; staff calculations

<sup>2</sup> Source: TID2009a, AFC Tables 5.7-3 through 5.7-7; and staff calculations of average of four quietest consecutive nighttime hours

Combining the ambient noise level of 46 dBA  $L_{90}$  (**Noise Table 4**, above) with the project noise level of 44 dBA at M4 would result in 48 dBA  $L_{90}$ , 2 dBA over the ambient. As described above (in **Method and Threshold for Determining Significance**), staff regards an increase of up to 5 dBA as a less-than-significant impact. Therefore, staff considers the above noise impacts at M4 to be less than significant.

Combining the ambient noise level of 41 dBA  $L_{90}$  (**Noise Table 4**) with the project noise level of 44 dBA at M2 would result in 46 dBA  $L_{90}$ , 5 dBA above the ambient. Combining ambient noise levels with project noise levels at M1 and M5 also results in an increase of 5 dBA above the ambient. While this is a noticeable increase, it lies within the range staff considers less than significant. To ensure these noise levels are not further exceeded, staff proposes Condition of Certification **NOISE-4**, below.

Combining the ambient noise level of 40 dBA  $L_{90}$  (**Noise Table 4**) with the project noise level of 44 dBA at M3 would result in 50 dBA  $L_{90}$ , 10 dBA over the ambient. Staff regards an increase between 5 dBA and 10 dBA to be potentially significant; given that this increase would occur at nighttime when people are trying to sleep, a 10 dBA increase would be significant and mitigation would be required. For operational noise to be less than significant at receptor M3, the combined nighttime noise level (project operational plus ambient) would need to not increase the existing nighttime ambient noise by more than 5 dBA, or be greater than 45 dBA, which would equate to a project operational noise no greater than 44 dBA at location M3. The proposed Condition of Certification **NOISE-4** would ensure that this reduced project operational noise level at M3 is not exceeded.

### **Tonal Noises**

One possible source of disturbance would be strong tonal noises. Tonal noises are individual sounds (such as pure tones) that, while not louder than permissible levels, stand out in sound quality. The Applicant plans to address overall noise in project design, and to take appropriate measures, as needed, to eliminate tonal noises as possible sources of annoyance (TID2009a, AFC § 5.7.3.3.4). To ensure that tonal noises do not cause annoyance, staff proposes Condition of Certification **NOISE-4**, below.

### **Linear Facilities**

With the exception of the aboveground gas piping within the plant boundary, All gas piping would lie underground and would be silent during operation. Noise effects from the electrical interconnection line typically do not extend beyond the right-of-way easement of the line and would thus be inaudible to any receptors.

### **Vibration**

Vibration from an operating power plant could be transmitted through two primary means: ground (ground-borne vibration), and air (airborne vibration).

The operating components of a simple cycle power plant consist of high-speed gas turbines, compressors, and various pumps. All of these pieces of equipment must be carefully balanced in order to operate; permanent vibration sensors are attached to the turbines and generators. Based on experience with numerous previous projects employing similar equipment, Energy Commission staff believes that ground-borne vibration from the A2PP would be undetectable by any likely receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves, and can rattle the walls of lightweight structures. The A2PP's chief source of airborne vibration would be the gas turbines' exhaust. In a power plant such as the A2PP,

however, the exhaust must pass through the selective catalytic reduction (SCR) modules and the stack silencers before it reaches the atmosphere. The SCRs act as efficient mufflers. The combination of SCR units and stack silencers makes it highly unlikely that the A2PP would cause perceptible airborne vibration effects

### **Worker Effects**

The Applicant has acknowledged the need to protect plant operating and maintenance workers from noise hazards and has committed to comply with applicable LORS (TID2009a, AFC § 5.7.3.3.1). Signs would be posted in areas of the plant with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required. To ensure that plant operation and maintenance workers are, in fact, adequately protected, Energy Commission staff has proposed Condition of Certification **NOISE-5**, below.

### **CUMULATIVE IMPACTS AND MITIGATION**

Section 15130 of the CEQA Guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence, but need not provide as much detail as the discussion of the impacts attributable to the project alone.

The Applicant has identified thirty-three projects in the vicinity of the A2PP that have been approved by the City of Ceres Planning Department; only one of these projects (increased stand-by power at Blaker Reservoir) introduces a potential new noise source(TID2009a, AFC § 5.7.4). However this project is more than 2 miles away from the A2PP site; too far to cause cumulative impacts when combined with the A2PP.

### **FACILITY CLOSURE**

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In the future, upon closure of the A2PP, all operational noise from the project would cease, and no further adverse noise impacts from operation of the A2PP would be possible. The remaining potential temporary noise source is the dismantling of the structures and equipment and any site restoration work that may be performed. Since this noise would be similar to that caused by the original construction, it can be treated similarly. That is, noisy work could be performed during daytime hours, with machinery and equipment properly equipped with mufflers. Any noise LORS that were in existence at that time would apply. Applicable conditions of certification included in the Energy Commission decision would also apply unless modified.

### **CONCLUSIONS AND RECOMMENDATIONS**

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Staff concludes that the A2PP, if built and operated in conformance with the proposed conditions of certification below, would comply with all applicable noise and vibration LORS and would produce no significant adverse noise impacts on people within the project area, including the minority population, directly, indirectly, or cumulatively.



## PROPOSED CONDITIONS OF CERTIFICATION

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**NOISE-1** Prior to ground disturbance of each project component, the project owner shall notify all residents within one ~~two~~ mile of the that project component site ~~and one mile of the linear facilities~~ by mail or other effective means, of the commencement of ~~project~~ construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: At least 15 days prior to the start of ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

### NOISE COMPLAINT PROCESS

**NOISE-2** Throughout the construction and operation of the A2PP, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours or 72 hours if the complaint is made over the weekend;
- Conduct an investigation to determine the source of noise related to the complaint;
- Take all feasible measures to reduce the noise at its source if the noise is project related; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts, and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

**NOISE-3** The project owner shall submit to the CPM for review and approval a noise control program and a statement, signed by the project owner's project

manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM the noise control program and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/OSHA upon request.

## **NOISE RESTRICTIONS**

**NOISE-4** The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the noise levels attributable due to operation of the project alone will not exceed: an hourly average of 47 dBA at M1, 45 dBA at M2, 49 dBA at M3 and M4, and 47 dBA at M5. 44 dBA, measured at or near monitoring locations M2 (approximately 3,375 feet northeast of the project site boundary), M3 (approximately 1,875 feet northeast of the project site boundary), and M4 (approximately 3,375 feet southeast of the project site boundary); an hourly average of 46 dBA, measured at or near monitoring location M1 (approximately 2,700 feet northwest of the project site boundary); and an hourly average of 47 dBA, measured at or near monitoring location M5 (approximately 2,275 feet west of the project site boundary).

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

~~A. When the project first achieves a sustained output of 85% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location M3, or at a closer location acceptable to the CPM. This survey during the power plant's full-load operation shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.~~

~~During the period of this survey, the project owner shall conduct a survey of noise at monitoring locations M1, M2, M4 and M5, or at closer locations acceptable to the CPM. The short-term noise measurements at these locations shall be conducted during the nighttime hours of 10:00 p.m. to 7:00 a.m.~~

~~The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.~~

- ~~B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.~~
- ~~C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.~~

Verification: The project owner shall conduct a 25-hour noise survey shall take place within 30 days of the project first achieving a sustained output of 85% or greater of rated capacity. The project owner shall conduct the survey at monitoring location M3, or at a closer location acceptable to the CPM. During the period of this survey, the project owner shall also conduct short-term noise measurements between the nighttime hours of 10:00 p.m. to 7:00 a.m. at monitoring locations M1, M2, M4, and M5 or at closer locations acceptable to the CPM. All surveys shall measure one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project. During the 25-hour survey, full load operation shall be maintained between midnight and 3 a.m. Outside of these hours, output shall be maintained at a level of 50% or greater. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limit, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

- A. As indicated above, the measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence.
- B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.
- C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

**NOISE-5** Following the project's first achieving a sustained output of 85% or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations sections 5095–5099 and Title 29, Code of Federal Regulations section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal/OSHA upon request.

## **CONSTRUCTION TIME RESTRICTIONS**

**NOISE-6** Heavy equipment operation and noisy construction work relating to any project features, including pile driving, shall be restricted to the times delineated below:

Any Day: 7:00 a.m. to 8:00 p.m.

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

**EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM**

Almond 2 Power Plant  
(09-AFC-2)

**NOISE COMPLAINT LOG NUMBER** \_\_\_\_\_

Complainant's name and address:

Phone number: \_\_\_\_\_

Date complaint received: \_\_\_\_\_

Time complaint received: \_\_\_\_\_

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: \_\_\_\_\_

Initial noise levels at 3 feet from noise source \_\_\_\_\_ dBA      Date: \_\_\_\_\_

Initial noise levels at complainant's property: \_\_\_\_\_ dBA      Date: \_\_\_\_\_

Final noise levels at 3 feet from noise source: \_\_\_\_\_ dBA      Date: \_\_\_\_\_

Final noise levels at complainant's property: \_\_\_\_\_ dBA      Date: \_\_\_\_\_

Description of corrective measures taken:

Complainant's signature: \_\_\_\_\_      Date: \_\_\_\_\_

Approximate installed cost of corrective measures: \$ \_\_\_\_\_

Date installation completed: \_\_\_\_\_

Date first letter sent to complainant: \_\_\_\_\_ (copy attached)

Date final letter sent to complainant: \_\_\_\_\_ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: \_\_\_\_\_

(Attach additional pages and supporting documentation, as required).

## REFERENCES

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Ceres 1997 – City of Ceres General Plan, Chapter 7. February 1997

Ceres 2008 – City of Ceres Municipal Code, Chapters 18.38 and 9.36. 2008.

Stanislaus 2006 – Stanislaus County General Plan Noise Element. 2005.

Stanislaus 2008 – Stanislaus County Code, Chapter 10.46. 2006.

TID2009a –Turlock Irrigation District/ R. Baysinger (tn: 51502). Application for Certification, Volume 1& 2. Dated 5/11/09. Submitted to CEC/Docket Unit on 5/11/09.

## NOISE APPENDIX A FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that “A-weighting” of sound intensities best reflects the human ear’s reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **NOISE Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period ( $L_{eq}$ ), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA ( $L_{dn}$ ). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical  $L_{dn}$  values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, those higher levels nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (U.S. Environmental Protection Agency, Effects of Noise on People, December 31, 1971).

To help the reader understand the concept of noise in decibels (dBA), **NOISE Table A2** illustrates common noises and their associated sound levels, in dBA.

**NOISE Table A1**  
**Definition of Some Technical Terms Related to Noise**

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L <sub>10</sub> , L <sub>50</sub> , & L <sub>90</sub>	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L <sub>90</sub> is generally taken as the background noise level.
Equivalent Noise Level, L <sub>eq</sub>	The energy average A-weighted noise level during the noise level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L <sub>dn</sub> or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.



<b>NOISE Table A2</b>			
<b>Typical Environmental and Industry Sound Levels</b>			
Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980

## **Subjective Response to Noise**

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of 1 dB cannot be perceived.
2. Outside of the laboratory, a 3-dB change is considered a barely noticeable difference.

3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
4. A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response (Kryter, Karl D., The Effects of Noise on Man, 1970).

### **Combination of Sound Levels**

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a 3-dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus 3 dB). **NOISE Table A3** indicates the rules for decibel addition used in community noise prediction.

<b>NOISE Table A3 Addition of Decibel Values</b>	
When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to $\pm 1$ dB.	

Source: Architectural Acoustics, M. David Egan, 1988.

### **Sound and Distance**

Doubling the distance from a noise source reduces the sound pressure level by 6 dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

### **Worker Protection**

OSHA noise regulations are designed to protect workers against the effects of noise exposure and list permissible noise level exposure as a function of the amount of time to which the worker is exposed, as shown in **NOISE Table A4**.

**NOISE Table A4**  
**OSHA Worker Noise Exposure Standards**

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 CFR § 1910.95.

# SOCIOECONOMICS

Testimony of Kristin Ford

## SUMMARY OF CONCLUSIONS

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Staff concludes that construction and operation of the Almond 2 Power Plant (A2PP) would not cause significant direct, indirect, or cumulative adverse socioeconomic impacts on the study area's housing, schools, law enforcement, and parks. Staff also concludes that the project would not induce substantial growth or concentration of population, substantial increases in demand for housing or public services, or displace a large number of people.

## INTRODUCTION

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Staff's socioeconomic impact analysis evaluates the project's induced changes on existing population and employment patterns, and community services. Staff discusses the estimated impacts of the construction and operation of the A2PP Application for Certification (AFC) on local communities, community resources, and public services, and provides a discussion of the estimated beneficial economic impacts of the construction and operation of the proposed project.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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**SOCIOECONOMICS Table 1** contains socioeconomic laws, ordinances, regulations, and standards (LORS) applicable to the proposed project.

**SOCIOECONOMICS Table 1**  
**Laws, Ordinances, Regulations, and Standards (LORS)**

<b>California Education Code, Section 17620</b>	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
<b>California Government Code, Sections 65996-65997</b>	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

## SETTING

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The A2PP plant site is located in the city of Ceres, approximately 2 miles southwest of the Ceres city center. The proposed 4.6 acre project site parcel would be composed of 1.4 acres of the existing 48 MW Almond Power Plant site and 3.2 vacant acres of disturbed industrial land. The project address is 4500 Crows Landing Road, Modesto, California. Although the address identifies the site as in Modesto, it is located within the city limits of Ceres. The city of Modesto is approximately five miles to the north (AFC, 1.1, A2PP, 2009). The entire project site is owned by the Turlock Irrigation District (TID). A WinCo Foods distribution warehouse is located to the west, a farm supply facility is

located to the north, and various industrial facilities are located to the east. The project site was previously used by WinCo as a borrow pit during construction of the WinCo distribution warehouse before being filled and graded to the current site elevation.

Stanislaus County is bordered by Calaveras County to the north, Tuolumne County to the northeast, Mariposa County to the southeast, Merced County to the south, Santa Clara County to the southwest, and San Joaquin/Alameda counties to the northwest. There are nine incorporated cities in Stanislaus County; Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock and Waterford (AFC, 5.10-1, A2PP, 2009). The closest single-family residences are located approximately 0.3 mile northeast of the project site and the city of Ceres Wastewater Treatment Plant is approximately 0.5 mile east of the project site (AFC, 5.6-1, A2PP, 2009).

### **Demographic Screening**

Staff's demographic screening is designed to determine the existence of a minority or below-poverty-level population or both within a six-mile area of the proposed project site. The demographic screening process is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, 1997) and *Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses National* (Council on Environmental Quality, 1998). The screening process relies on Year 2000 U.S. Census data to determine levels of minority and below-poverty-level populations.

### **Minority Populations**

According to *Environmental Justice: Guidance Under the National Environmental Policy Act*, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified when the minority population of the potentially affected area is greater than 50% or when one or more U.S. Census blocks in the potentially affected area have a minority population greater than 50%.

The minority population within the six-mile radius of the proposed site is 146,356 persons or about 55% of the total population (see **Socioeconomics Figure 1**). Therefore, staff in several technical areas identified in the Executive Summary of this document, have considered environmental justice in their environmental impact analyses.

### **Below-Poverty-Level Populations**

Staff also identified the below-poverty-level population based on Year 2000 U.S. Census block group data within a six-mile radius of the project site. Poverty status excludes institutionalized people, people in military quarters, people in college dormitories, and unrelated individuals under 15 years old. The below-poverty-level population within a six-mile radius of the A2PP consists of approximately 20% ~~22%~~ of the total population in that area or approximately 35,061 ~~34,078~~ people.

# ASSESSMENT OF IMPACTS

## METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The socioeconomic resource areas evaluated by staff are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines and shown in **Socioeconomics Table 2**. Staff's assessment of impacts on population, housing, emergency medical services, police protection, schools, and parks and recreation, are based on professional judgments, input from local and state agencies, and the industry-accepted two-hour commute range for construction workers. Typically, substantial long-term relocation due to employment of people from regions outside the study area would have the potential to result in significant adverse socioeconomic impacts. Criteria for subject areas such as utilities, fire protection, water supply, and wastewater disposal are analyzed in the **Reliability, Worker Safety and Fire Protection, and Water Resources** sections of this document.

**SOCIOECONOMICS Table 2  
CEQA Environmental Checklist Form**

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
<b>POPULATION AND HOUSING</b> —Would the project:				
A. Induce substantial population growth in a new area, either directly or indirectly.				X
B. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
C. Displace substantial numbers of people, necessitating construction of replacement housing elsewhere?				X
<b>PUBLIC SERVICES</b> —Would the project:				
D. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: Emergency medical services Police protection Schools Parks Other public facilities			X X X	X X
<b>RECREATION</b> —Would the project:				
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

## DIRECT/INDIRECT IMPACTS AND MITIGATION

### Induce Substantial Population Growth

For the purpose of this analysis, staff defines “induce substantial population growth” as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the project would induce population growth, staff analyzes the availability of the local workforce and the population within the region. Staff defines “local workforce” as the Stanislaus, Merced and Santa Clara County Statistical Areas (MSAs). **SOCIOECONOMICS Table 3** shows the historical and projected populations of the study area.

**SOCIOECONOMICS Table 3  
Historical and Projected Populations**

Area	2000 Population	2010(p) Population	2020(p) Population
City of Ceres	34,609	N/A	N/A
Stanislaus County	446,997	559,903	699,144
California	33,873,090	39,049,460	43,851,740
(p) = Projected Source: AFC, Table 5.10-1, A2PP, 2009			

**SOCIOECONOMICS Tables 4 and 5** show that the total labor by skill for the Stanislaus, Merced and Santa Clara County MSAs would be more than adequate to provide construction labor for the proposed project.

**SOCIOECONOMICS Table 4  
Total Labor by Skill in  
MSA Annual Average for 2016**

Discipline	Stanislaus County MSA	Peak # of Workers for Project Construction by Craft
<b>Plant</b>		
Boilermaker (Structural Iron and Steel Workers)	100	20
Bricklayers/Masons	100	2
Carpenters	1,830	8
Electricians	920	26
Insulation Workers	160	8
Laborers	2000	8
Millrights (Industrial Production Managers)	270	10
Operating Engineers	240	6
Painters	950	3
Pipefitters	550	12
Sheetmetal Workers	240	4
Surveyors	150	3
Teamsters	N/A	4
Total Manual Staff	440	113

(Other Construction and Related Workers)		
Total Contractor Staff (Helpers, Construction Trades)	670	10
<b>Natural Gas Pipeline</b>		
Electricians	920	2
Laborers	2000	10
Operating Engineers	240	6
Painters	950	2
Pipefitters	550	10
Surveyors	150	2
Teamsters	N/A	4
Total Manual Staff (Other Construction and Related Workers)	440	32
Total Contractor Staff (Helpers, Construction Trades)	670	4
<b>Transmission Lines</b>		
Electricians	920	6
Laborers	2000	6
Operating Engineers	240	4
Surveyors	150	2
Teamsters	N/A	2
Total Manual Staff (Other Construction and Related Workers)	440	18
Total Contractor Staff (Helpers, Construction Trades)	670	2

The Applicant estimates construction would take place over 12 months, from the third quarter of 2010 to the third quarter 2011. The project construction would require an average of 97 employees per day over the entire 12-month construction period with manpower requirements peaking at approximately 149 workers in month 6 of construction.

Project operation would require 16 full-time employees; 4 new full-time employees and 12 current full-time employees at the Almond Power Plant. The workers are expected to commute to the project site from surrounding communities from Merced, San Joaquin and Santa Clara counties. Given the large labor force within two hours commuting time of the project, staff does not expect potential employees to relocate to the immediate project area.

Staff concludes that the construction and operation workforce would not induce substantial growth or concentration of population, and the A2PP would not encourage people to permanently move into the area. The A2PP would have no direct or indirect impact on population growth in a new area.

### **Housing Supply**

As of January 1, 2008, existing housing for Stanislaus County consisted of the following; 139,712 single-family homes, 27,579 multiple-family dwellings and 9,331 mobile homes



(AFC, 5.10-2, A2PP, 2009). There are approximately 47 hotels/motels with 3,332 rooms in Stanislaus County to accommodate workers who may choose to commute to the project site on a workweek basis. Hotel occupancy rates for the period November 2007 through October 2008 averaged about 42% (AFC, 5.10-16, A2PP, 2009). In addition to the available hotel/motel accommodations, recreational vehicle parks are located within the project site vicinity.

Because of the large labor force within commuting distance of the project, staff expects the majority of construction workers would commute to the project daily from their existing residences. No new housing construction would be required.

The project would have four new full-time employees; the Applicant expects all four employees would be hired within commuting distance of the project. Given the labor force in Stanislaus County and surrounding counties within commuting distance of the project, staff does not expect employees would relocate to the immediate project area.

Housing in Stanislaus County has fluctuated between a 3.75 to (January 2008) 3.73 rate of vacancy. Ceres' vacancy rate has fluctuated between 3.14 and (January 2008) 3.13%. The housing vacancy rate in the city and county is limited compared to the federal standard vacancy rate of 5%. There are approximately 419 available housing units in Ceres and 6,586 housing units available in Stanislaus County (AFC, Table 5.10-3, A2PP, 2009).

Operation of the A2PP would require four new employees. If all four new employees relocated to Ceres, only four dwelling units would be needed. Staff concludes that the proposed project would not displace any people or necessitate construction of replacement housing elsewhere.

Staff concludes that the construction and operation workforce would not have a significant adverse impact on the housing supply within the immediate project area and the regional areas of Stanislaus, Merced and Santa Clara counties.

### **Displace Existing Housing and Substantial Numbers of People**

The approximately 4.6 acre proposed A2PP project site is composed of disturbed industrial land. West of the project site boundary is a WinCo distribution warehouse. An approximately ~~6.4~~ ~~4.85~~-acre unpaved area of WinCo's property ~~west~~ ~~north~~ of the project site would be used as a project construction laydown area. North of the project site boundary is farm supply facility; east is various industrial facilities and a railroad line owned by Union Pacific Railroad is aligned along the eastern boundary of the project site.

Land within a 1-mile radius of the proposed project is located within the City of Ceres and Stanislaus County. The lands are primarily agricultural fields and almond orchards (west, south, and east of the project site), single-family residences (northeast of the project site), and a community agricultural center (northwest of the project site). The closest single-family residences are located approximately 0.3 mile northeast of the project. The City of Ceres Wastewater Treatment Plant is approximately 0.5 mile east of the project site (AFC, A2PP, 5.6-1, 2009).

The power plant and construction laydown area are zoned “Planned Community (PC)-50” by the City of Ceres. In addition, the power plant and construction laydown area, are designated as General Industrial by the City of Ceres General Plan (AFC, A2PP, 5.6-22)

The proposed project would be located in an existing industrial area with outlying agriculture land uses. Because A2PP proposes to add 3.2 acres to an existing 1.4 acre existing power plant, and the 4.6 acres would be located within a primarily industrial area, there would be no displacement of existing housing or necessitate construction of replacement housing elsewhere.

### **Result in Substantial Physical Impacts to Government Facilities**

As discussed under the subject headings below, the A2PP would not cause significant impacts to service ratios, response times, or other performance objectives relating to emergency medical services, law enforcement, or schools. Fire protection, including the Applicant’s proposed onsite Fire Protection and Prevention Plan, is analyzed in the **Worker Safety and Fire Protection** section of this document.

#### **Emergency Medical Services**

As stated in the AFC and verified by staff, the project site is within the Ceres Emergency Services – Fire Division (CFD) jurisdiction (<http://www.ci.ceres.ca.us/3092.html>). The CFD has a staff of 30 full-time personnel and four stations. The primary responding fire station, Station #3, is approximately 0.3 mile to the east of the proposed project site. Response time to an emergency at the proposed project site from Station #3 is approximately two to three minutes during the day and two to four minutes during the night (AFC, 5-16-16 & 5.10-11, A2PP, 2009).

The nearest hospital with emergency services is Memorial Medical Center in Modesto, which is approximately 8 miles from the proposed A2PP site. Memorial Medical Center is a Level II trauma center which is equipped to handle industrial incidents and has a full helipad should the incident require transfer to another hospital. Serious burns would require transfer to the Bay Area and/or Sacramento (AFC, 5.10-11, A2PP, 2009).

As discussed in AFC Sections 2.0, **Project Description**, 5.18, **Worker Safety and Fire Protection**, and 5.6, **Hazardous Materials Handling**, the A2PP would be designed to meet all applicable standards to reduce the risk of an accidental hazardous materials release and operate in a manner that complies with safety standards and practices to provide a safe workplace for plant personnel.

The Applicant’s proposed safety procedures and employee training would minimize potential unsafe work conditions and the need for outside emergency medical response. Staff concludes that the emergency medical services provided by Ceres Emergency Services - Fire Division and Medical Center would be adequate during construction and operation. Thus, the project would not require construction of new or physically altered emergency medical facilities.

## Law Enforcement

The A2PP proposed project site within the jurisdiction of the Ceres Public Safety Department – Police Division (CPD) (<http://www.ci.ceres.ca.us/3091.html>). The CPD has one station, which is located approximately 2.1 miles from the A2PP site. There are approximately 57 full-time officers. The CPD's response time would be six to twelve minutes for more serious incidents and 26 to 27 minutes for less serious incidents. Mutual aid response would come from the Stanislaus County Sheriff. The Stanislaus County Sheriff Central Area Command serves the unincorporated areas north of Keyes Road, west of Geer Road, south of the Tuolumne River, and West of Dale Road. The Central Area Command station is located approximately 1.18 miles from the proposed project site (<http://www.stanislaussheriff.com>).

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. Services include law enforcement, traffic control, accident investigation and the management of hazardous material spill incidents. The nearest CHP office is located approximately 12.2 miles (<http://www.chp.ca.gov>) from the project site in Modesto, California.

In comparison to residential or commercial developments, power plants do not attract large numbers of people and thus require little in the way of law enforcement. Because of this factor and the proposed onsite safety and security measures, staff concludes that the existing law enforcement resources would be adequate to provide services to the A2PP during construction and operation. Thus, the project would not require new or physically altered law enforcement facilities.

## Education

There are 26 school districts located within the Stanislaus County Board of Education. The A2PP site is located with the Ceres Unified School District (CUSD). Historical enrollments for grade levels kindergarten through twelfth grade for the school years of 2005-06 were 10,896, 2006-07 were 11,885, and 2007-08 were 12,476 students. Current enrollment figures for the 2008-09 school year were 12,245, with declines in almost every grade (AFC, Table 5.10-6, A2PP, 2009).

During construction, staff expects the labor force would commute daily from the region. Due to the commuting habits of construction workers, staff does not expect any construction workers to relocate their families to the area. Thus, the proposed project would not require construction of new or physically altered school facilities.

A total of four new workers are needed to operate the A2PP. As previously stated, the Applicant expects to hire the operation workforce from within the area and no operation workers are expected to relocate with their families. However, if all four new operation workers relocate within Ceres School District, an average family size of 3.03 persons per household (U.S. Census Bureau, Household and Families, 2000 for Stanislaus County) would result in the addition of approximately four children to the local schools.

As previously noted in **SOCIOECONOMICS Table 1**, other than the requirement authorized under Section 17620 of the Education Code, the Energy Commission cannot impose developer fees to mitigate the cost of school facilities. Because the proposed

project would be located on property owned by the Turlock Irrigation District, the A2PP would be exempt from paying school impact fees to Ceres Unified School District.

Given the small number of students who potentially could relocate to schools within the CUSD, staff does not expect the construction or operation of the project to have a significant adverse impact on schools.

### **Increase the Use of Existing Recreation Facilities**

The Stanislaus County Department Parks and Recreation maintains a variety of community parks, off-road parks, fishing assesses and special activities. The community parks amenities include swimming pools, picnic tables, baseball/softball fields, basketball courts, fishing, community centers, playgrounds, walking trails and barbeques (<http://www.stancounty.com/er/parks/index.shtm>).

Given the labor force and two hour commuting time within Stanislaus, Merced and Santa Clara counties, staff does not expect employees to relocate to the immediate project area. Staff concludes that there are a number and variety of parks within the regional project area and the project would not require construction of new parks nor substantially increase the use of existing parks. Therefore, the construction and operation workforce would not have a significant adverse impact on parks and recreation.

## **CUMULATIVE IMPACTS**

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A project may result in significant adverse cumulative impacts when its effects are cumulatively considerable; that is, when the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects [*Public Resources Code* Section 21083; *California Code of Regulations*, Title 14, Sections 15064(h); 15065 (c); 15130; and 15355]. Mitigation requires taking feasible measures to avoid or substantially reduce the impacts.

In a socioeconomic analysis, cumulative impacts could occur when more than one project in the same area has an overlapping construction schedule, thus creating a demand for workers that cannot be met locally. An increased demand for labor could result in an influx of non-local workers and their dependents, resulting in a strain on housing, schools, parks and recreation, law enforcement, and emergency services.

As shown in **SOCIOECONOMICS Table 5**, the total construction labor force by MSA for the region is more than sufficient to accommodate the labor needs for construction of power generation facilities and other large industrial projects. Because of the robust local and regional construction labor force, staff does not expect an influx of non-local workers and their dependents to the project area. Therefore, staff does not expect any significant and adverse impacts on housing, schools, parks and recreation, law enforcement, and emergency services. Staff does not expect construction or operation of the A2PP to contribute to any significant adverse cumulative socioeconomic impacts.

**SOCIOECONOMICS Table 5**  
**Occupational Employment Projections by MSA**

<b>Construction and Extraction Occupations for Selected MSAs</b>	<b>Average Annual Employment for 2006</b>	<b>Average Annual Employment for 2016</b>
Stanislaus County MSA	13,300	12,090
Merced County MSA	3,740	3,180
Santa Clara County MSA ' (Part of San Jose-Santa Clara-Sunnyvale)	50,960	53,480
Source: EDD 2009 Projections of Employment by Industry and Occupation		

**NOTEWORTHY PUBLIC BENEFITS**

Noteworthy public benefits include the direct, indirect, and induced impacts of a proposed power plant. For example, the dollars spent on or resulting from the construction and operation of the A2PP would have a ripple effect on the local economy. This ripple effect is measured by an input-output economic model. The model relies on a series of multipliers to provide estimates of the number of times each dollar of input or direct spending cycles through the economy in terms of indirect and induced output, or additional spending, personal income, and employment. The typical input-output model used by economists and the one used for this analysis by the Applicant is the IMPLAN model. IMPLAN multipliers indicate the ratio of direct impacts to indirect and induced impacts. Staff reviewed the results of the IMPLAN model and found them to be reasonable considering data provided by the Applicant as well as data obtained by staff from governmental agencies, trade associations, and public interest research groups. TID owners would employ workers and purchase supplies and services for the life of the A2PP. Employees would use salaries and wages to purchase goods and services from other businesses. Those businesses make their own purchases and hire employees, who also spend their salaries and wages throughout the local and regional economy. This effect of indirect (jobs, sales, and income generated) and induced (employees' spending for local goods and services) spending continues with subsequent rounds of additional spending, which is gradually diminished through savings, taxes, and expenditures made outside the area.

For purposes of this analysis, direct impacts were said to exist if the project resulted in permanent jobs and wages; indirect impacts, if jobs, wages, and sales resulted from project construction; induced impacts, from the spending of wages and salaries on food, housing, and other consumer goods, which in turn creates jobs. Indirect and induced economic impacts from construction would take place over 12 months, from the third quarter of 2010 to the third quarter 2011. Indirect and induced economic impacts from operation would begin in the fourth quarter of 2011. All indirect and induced operation impacts would result from annual operations and maintenance expenditures. All construction and operation impacts would take place within Stanislaus County. The economic benefits of the proposed project, as required by the Energy Commission regulations and resulting from the IMPLAN model are shown below in **Socioeconomics Table 6**.

<b>Table 6, A2PP Economic Benefits (2008 dollars)</b>	
<b>Fiscal Benefits</b>	
Estimated annual property taxes	Exempt
State and local sales taxes: Construction	\$73,750 - \$147,500
State and local sales taxes: Operation	\$110,625
School Impact Fee	Exempt
<b>Non-Fiscal Benefits</b>	
Total capital costs	\$200 million
Construction payroll	\$7.56 million
<b>Annual Operations and Maintenance</b>	
Construction materials and supplies	\$175 million
Operations and maintenance supplies	\$1.8 million
<b>Direct, Indirect, and Induced Benefits</b>	
<b>Estimated Direct</b>	
Construction	97 jobs
Operation	4 full-time positions
<b>Estimated Indirect</b>	
Construction Jobs	33
Construction Income <sup>1</sup>	\$556,020
Operation Jobs	26
Operation Income	\$1,072,600
<b>Estimated Induced</b>	
Construction Jobs	38
Construction Income <sup>1</sup>	\$1,130,290
Operation Jobs	10
Operation Income	\$326,600
<sup>1</sup> The numbers shown for construction income (both indirect and induced) are based on local expenditures of \$1 million. Source: AFC, A2PP, 5.10 Socioeconomics.	

## PROPERTY TAX

The Almond 2 Power Plant would be owned and operated by Turlock Irrigation District (TID). TID is a public agency which is governed by a Board of Directors and elected by its ratepayer-owners. TID is exempt from property taxes.

## RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff has received no agency or public socioeconomic comments on this project.

## CONCLUSIONS

Estimated gross public benefits from the A2PP include employment and income for the project area and region. Staff concludes that construction and operation of the A2PP would not cause significant direct, indirect or cumulative adverse socioeconomic impacts on the study area's housing, schools, law enforcement, emergency services and parks.

Staff concludes that the project would not cause significant direct or cumulative adverse impacts to emergency services. Staff also concludes that the A2PP would not induce substantial growth or concentration of population; induce substantial increases in demand for housing or public services; or displace a large number of people.

## REFERENCES

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California Highway Patrol, <http://www.chp.ca.gov>

Ceres Emergency Services – Fire Division, <http://www.ci.ceres.ca.us/3092.html>

Ceres Public Safety Department – Police Division, <http://www.ci.ceres.ca.us/3091.html>

Stanislaus County Department Parks and Recreation,  
<http://www.stancounty.com/er/parks/index.shtm>

Stanislaus County Sheriff, Central Area Command, <http://www.stanislaussheriff.com>

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City/County Population and Housing Estimates, 1/1/2009.

State of California, Employment Development Department (EDD) 2009. Labor Market  
Information, Occupational Employment Projections 2006-2016 Riverside and San  
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# SOIL & WATER RESOURCES

Testimony of Vince Geronimo, PE and Rachel Cancienne, EIT

## SUMMARY OF CONCLUSIONS

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This section of the Staff Assessment (SA) analyzes the potential effects on soil and water resources that would occur by construction and operation of the proposed Turlock Irrigation District's (TID) Almond 2 Power Plant (A2PP) project. Based on its assessment of the proposed A2PP Project, staff concludes the following:

- Implementation of Best Management Practices (BMPs) during A2PP construction and operation in accordance with effective Storm Water Pollution Prevention Plans (SWPPP) and a Drainage, Erosion and Sedimentation Control Plan (DESCP) would avoid significant adverse effects that could be caused by transport of sediments or contaminants from the A2PP site and associated linear facilities by wind or water erosion.
- The proposed reclaimed water supply for the project would not cause a significant adverse environmental impact on current or future users of the water supply.
- ~~The Waste Discharge Requirements for the City of Ceres Wastewater Treatment Plant may be revised by the Central Valley Regional Water Quality Control Board during the life of the project, which could affect both the water supply and wastewater disposal for the A2PP site.~~
- The proposed project would be constructed to comply with 100-year flood requirements and would not exacerbate flood conditions in the vicinity of the project.
- The proposed project would comply with all applicable federal, state, and local laws, ordinances, regulations and standards with the adoption of the recommended conditions of certification.
- A2PP would not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources with adoption of the conditions of certification.
- The project complies with the state water policies by using reclaimed water.

Staff concludes that A2PP would not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources and would comply with all applicable laws, ordinances, regulations and standards (LORS) if all of the recommended conditions of certification are adopted by the Commission and implemented by TID.

## INTRODUCTION

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This section of the Assessment (SA) analyzes the potential effects on soil and water resources by the proposed TID Almond 2 Power Plant (A2PP). This analysis specifically focuses on the potential for A2PP to:

- cause accelerated wind or water erosion and sedimentation;



- exacerbate flood conditions in the vicinity of the project;
- adversely affect surface or groundwater supplies;
- degrade surface or groundwater quality; and
- comply with all applicable laws, ordinances, regulations and standards (LORS) and State policies.

## LAWS, ORDINANCES, REGULATION, AND STANDARDS

**Soil and Water Resources Table 1  
Laws, Ordinances, Regulations, and Standards (LORS) and Policies**

<b>Federal</b>	
Clean Water Act/Water Pollution Control Act. P.L. 92- 500, 1972; amended by Water Quality Act of 1987, P.L. 100-4 (33 USC 466 et seq.); NPDES (CWA, Section 402)	The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. This includes regulation of storm water discharges during construction and operation of a facility normally addressed through a general National Pollutant Discharge Elimination System (NPDES) permit.
Natural Resources Conservation Service (NRCS), National Engineering Handbook, Sections 2 and 3 (1983)	Sections 2 and 3 of the USDA-NRCS National Engineering Handbook (1983) provide standards for soil conservation and erosion prevention during construction activity.
<b>State</b>	
California Constitution, Article X, Section 2	The State Constitution requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.
Porter Cologne Water Quality Control Act (PCWQCA) (Water Code §13000 et seq.)	PCWQCA requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. These standards are typically applied to the proposed project through the Waste Discharge Requirements (WDR) permit. These regulations require that the RWQCB issue Waste Discharge Requirements specifying conditions regarding the construction, operation, monitoring and closure of waste disposal sites, including injection wells and evaporation ponds for waste disposal. WDRs are updated periodically to reflect changing technology standards and conditions.
SWRCB Res. 2009-0011 (Recycled Water Policy)	<p>This policy supports and promotes the use of recycled water as a means to achieve sustainable local water supplies and reduction of greenhouse gases. This policy encourages the beneficial use of recycled water over disposal of recycled water. This policy states the following recycled water use goals:</p> <ul style="list-style-type: none"> <li>• "Increase the use of recycled water over 2002 levels by at least one million acre-feet per year (AF/y) by 2020 and by at least two million AF/y by 2030;</li> <li>• Increase the use of stormwater over use in 2007 by at least 500,000 AF/y by 2020 and by at least one million AF/y by 2030;</li> <li>• Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20% by 2020; and</li> </ul> <p>Included in these goals is the substitution of as much recycled water for potable water as possible by 2030."</p>

SWRCB Resolution 75-58	The SWRCB has adopted policies that provide guidelines for water quality protection. The principal policy of the SWRCB that specifically addresses the siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted by the Board on June 19, 1975 as Resolution 75-58). This policy states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. This SWRCB policy requires that power plant cooling water should come from, in order of priority: wastewater being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, and other inland waters. This policy also includes cooling water discharge prohibitions such as land application.
California Water Code (CWC) Section 461	CWC Section 461 addresses the conservation of all available water resources and requires the maximum reuse of reclaimed water in satisfaction of the requirements for beneficial uses of water.
California Water Code (CWC) Section 13550	CWC Section 13550 requires the use of reclaimed water for industrial purposes subject to reclaimed water being available and meeting certain conditions such as the quality and quantity of the reclaimed water are suitable for the use, the cost is reasonable, and the use is not detrimental to public health.
California Water Code (CWC) Section 13551	CWC Section 13551 limits the use of water with quality suitable for potable domestic use for nonpotable uses if suitable recycled water is available.
California Water Code (CWC) Section 13751	CWC Section 13751 mandates that within 60 days of construction, alteration, abandonment or destruction of a groundwater well a completion report be filed to the appropriate water agency.
Recycling Act of 1991 (Water Code § 13575 et esq.)	The Water Recycling Act of 1991 encourages the use of recycled water for certain uses and establishes standards for the development and implementation of recycled water programs.
<b>Local</b>	
Stanislaus County General Plan; Chapter 7, Agricultural Element	Provides limits for development of agricultural soils.
Stanislaus County Code; Title 13, Streets, Sidewalks, and Public Places	Provides requirements for construction of underground utilities along County roads.
Stanislaus County Code; Title 16, Buildings and Construction	Provides the Building Code for Stanislaus County, including general design standards and an amendment to the California Building Code for grading.
Stanislaus County Code; Title 21, Zoning	Provides information on zoning and outlines the accepted uses for lands under a Williamson Contract.
Stanislaus County Standards and Specifications	Provides the County's minimum requirements for excavation safety, dust controls, earthwork, erosion and pollution prevention, and more.
Stanislaus County Storm Water Management Plan	Regulates Best Management Practices (BMPs) for construction activities.
City of Ceres Municipal Code	Provides requirements for development of land within the City limits and requirements for obtaining permits for water wells. Provides grading requirements and permit information, preliminary soil report requirements, regulates BMPs for construction activities, and gives general design standards.
City of Ceres General Plan; Chapters 4 (Public Utilities and Services) and 6 (Agricultural and Natural Resources)	Policies for water supply and delivery; wastewater collection, treatment, and disposal; stormwater drainage; and water resources.
City of Ceres Improvement Standards	Provides the City's minimum requirements for earthwork and construction activities.

## REGIONAL SETTING

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### REGIONAL WATER RESOURCES

#### Surface Waters

The proposed project site is located within the lower San Joaquin Valley in Stanislaus County in the City of Ceres, California. Major surface water bodies in Stanislaus County include the Stanislaus and Tuolumne Rivers which terminate in the San Joaquin River west of project site. The project site is approximately 3 miles south of the Tuolumne River and approximately eight miles to the east of the San Joaquin River.

The Central Valley Regional Water Quality Control Board (RWQCB) implements water quality regulations in the Ceres area, which include: setting water quality standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. Each RWQCB adopts a water quality control plan, or Basin Plan, which establishes water quality objectives to ensure the reasonable protection of beneficial uses and a program of implementation for achieving water quality objectives within their basin. Water quality objectives for the Tuolumne and San Joaquin rivers are contained in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) (CVRWQCB1998). The lower Tuolumne River between Don Pedro Reservoir and the San Joaquin River, as well as the San Joaquin River between the Merced and Tuolumne tributaries are considered impaired water bodies per the Basin Plan. Ceres, CA is located between the Merced River and Tuolumne River along Hwy 99.

#### Climate

Average annual rainfall is about 12 inches in the City of Modesto, just north of the project site. Most of the precipitation occurs between November and April, while the summer months are virtually rainless. **Soil and Water Resources Table 2** provides average historical rainfall from the meteorological station in Modesto.

**Soil and Water Resources Table 2**  
**Average Rainfall near the Proposed Project Site (1906-2007)**

Precipitation	Annual	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Average	12.20	0.62	1.24	2.06	2.47	2.06	1.93	1.02	0.45	0.12	0.02	0.04	0.17

Source: WRRC2009

#### Groundwater

The A2PP project site is located within the Turlock Subbasin of the San Joaquin Valley Groundwater Basin. The Turlock Subbasin lies between the Tuolumne and Merced Rivers and is bounded on the west by the San Joaquin River and on the east by the basement rock of the Sierra Nevada foothills. The subbasin shares its northern, western, and southern boundaries with the Modesto, Delta-Mendota, and Merced Groundwater Subbasins, respectively. Groundwater in the Turlock Subbasin flows primarily to the southwest following the regional dip of basement rock and sedimentary units towards the San Joaquin River (DWR2006).

Groundwater levels in the Turlock Subbasin have steadily declined over time, with a steep decline of approximately 15 feet between 1970 and 1992. The primary hydrogeologic units in the Turlock Subbasin include both consolidated and unconsolidated sedimentary deposits. Well yields in the Turlock Subbasin range from 200 to 4,500 gallons per minute, with an average yield of 1,000 to 2,000 gallons per minute. Well depths in the subbasin range from 50 to 350 feet (DWR2006). Groundwater in the Turlock Subbasin is of the sodium-calcium bicarbonate type and has total dissolved solids values ranging from 100 to 930 milligrams per liter (mg/L) throughout the subbasin. There are localized areas of hard groundwater, nitrate, chloride, boron, and dibromochloropropane (DBCP); however, unless otherwise designated by the Central Valley RWQCB, all ground waters are considered suitable for municipal and domestic water supply, agricultural supply, and industrial service and process supply (DWR2006).

## **PROJECT, SITE, AND VICINITY DESCRIPTION**

The proposed A2PP would be a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts (MW). The project site is a 4.6-acre parcel near Ceres, California. The site is located on land owned by TID and is adjacent to the existing TID Almond Power Plant (APP) to the south. ~~A2PP would be operated in tandem with the existing APP.~~ Based on the Applicant's AFC, oral responses to questions asked during the public workshop held on Sept. 22, 2009, and written Data Responses, staff believes that all existing facilities in APP that would be shared between sites, discussed herein, are adequate for the A2PP expansion. A WinCo distribution warehouse sits to the west, a farm supply facility to the north, and a modular building distributor and drilling equipment storage facility to the east. In addition to the A2PP site, the project includes an approximately ~~6.4~~ ~~4.85~~ 4.85-acre laydown and parking area to the ~~west north~~ west of the project site. The project includes a new 11.6-mile long natural gas pipeline, two transmission corridors (0.9 and 1.2 miles long with 0.0066 and 0.0092 acre, respectively, required for pole footprints), and the ~~re-rating~~ re-conductoring of an existing 69-kV transmission line (TID2009a and CH2MHILL2009k).

### **Water Supply during Construction**

During construction, workers would utilize the existing fire system on the APP site, which is supplied via groundwater from the well on the APP site, or pump and truck fresh water to the A2PP site from the TID irrigation canal to the south. Construction of the A2PP project is scheduled to last 12 months. The entire project site, approximately 4.6 acres, would be graded during construction. Construction water would be required primarily for dust suppression. The average daily water use for construction would be 36,000 gallons per day and daily maximum water use would be 144,000 gallons per day. The average water use for the 12-month construction period would be 13.14 million gallons (40.3 acre feet (AF)); maximum would be 52.56 million gallons (161.3 AF).

### **Project Water Supply**

Project water use would be for combustion turbine air inlet evaporative cooling, SPRay INTer-cooling water injection (SPRINT feature of the LM6000 Sprint) for power augmentation, combustion turbine water injection for control of oxides of nitrogen, and turbine washing. A2PP process water would be supplied to the site via the existing water delivery system used for APP. Water for APP is pumped from approximately 35 to

65 feet below ground surface near the City of Ceres Waste Water Treatment Plant (WWTP) percolation-evaporation (P-E) basins. Water is delivered to the power plant site via a 6-inch diameter pipeline between the APP and the City of Ceres WWTP. A2PP's average daily water use would be approximately 459,360 gallons of water per day (gpd) assuming 60°F (see **Soil and Water Resources Table 3**). The power plant would use about 293 acre-feet of process water per year assuming typical expected operation of 5,000 hours per year (57% capacity factor) and average daily temperatures. The case for operating 8,760 hours per year (100% capacity factor) was also evaluated by the Applicant. Total water use for this case would be approximately 514 acre-feet per year (AFY), assuming average daily temperatures. When ambient temperatures increase to 110°F, the expected daily water use increases to 502,560 gpd, which would increase projected annual use values. Staff estimates that the annual increase could not be greater than 50 AFY because the maximum daily use (with a heat balance case of 110°F) equates to approximately 563 AFY.

**Soil and Water Resources Table 3**  
**Estimated Maximum and Average Annual Water Use for A2PP Operations**

Process and Cooling Water Use Annual Hours of Operation	Projected Annual Use	
	At 60°F (ac-ft)	At 110°F (ac-ft)
2,917 hours per year (33% Capacity)		188
5,000 hours per year	293	

Source: TID2009a

The estimate of 514 AFY would be an upper bound estimate of water use since it is unlikely the project would be operated at 100% capacity. As discussed in the Air Quality section staff agrees with the Applicant that although the facility would be allowed to operate at greater than 60% capacity factor if needed, A2PP is not designed or intended to do so. This simple-cycle facility is not expected to operate at greater than 33% capacity factor, and Energy Commission staff experience indicates that this type of facility is only likely to exceed 30% annual capacity factor in an emergency or crisis situation.

### **Groundwater**

The City of Ceres relies on groundwater as its municipal water supply (Ceres1997). The city maintains ten wells, eight of which are active (TID2009a). One of the city's municipal wells is located adjacent to the Ceres WWTP. TID pumps approximately 16,000 gallons per day (gpd) of groundwater from their existing well on the APP site. The groundwater is used for sanitary service water for the APP. A2PP would rely on the existing APP groundwater well, owned and operated by TID, for sanitary service water.

TID owns wells in the vicinity of the Ceres WWTP. The Ceres WWTP pumps groundwater, via TID-owned wells, to maintain the groundwater levels below the crop root zone (about 6 to 10 feet below ground surface). Groundwater extraction is

necessary to lower the local shallow groundwater table and improve percolation at the Ceres WWTP. The extracted water is piped to concrete-lined laterals within the TID network for use by other areas in the district.

The Ceres WWTP is located about one-half mile ~~feet~~ from APP/A2PP. APP currently pumps groundwater extracted near the Ceres WWTP Percolation-Evaporation (P-E) basins for industrial use. The groundwater is best described as reclaimed wastewater infiltrated through the P-E basins. The reclaimed wastewater comes primarily from sanitary wastewater (TID2009a). The wastewater receives primary treatment and is discharged to the Ceres WWTP P-E basins. **Soil and Water Resources Table 4** shows typical concentrations of select harmful constituents in discharge waters of Ceres WWTP (TID2009a). As the wastewater percolates into the ground, the soil acts as a filter for organic material, microorganisms, and nutrients such as nitrogen and phosphorus. The soil-filtered wastewater is pumped via the existing collection well and delivered to APP. A2PP will utilize the same 6" pipeline to deliver process water to the proposed project. The extraction well might also draw as much as 5% of the total water it obtains from adjacent groundwater sources with unknown water quality (CH2MHILL2009g). Prior to use as process and cooling water, the extracted intake water would be filtered through the existing APP reverse osmosis system.

**Soil and Water Resources Table 4**  
**Select A2PP Water Quality Constituents**

Parameter	Units	Extraction Well Intake <sup>a</sup>	Wastewater Discharge (Peak Flow) <sup>b</sup>	Wastewater Discharge (Average Flow) <sup>c</sup>
Total Dissolved Solids	mg/L	833	2714.6	2380.4
Total Alkalinity (CaCO <sub>3</sub> )	mg/L	256	822.1	720.8
Nitrate (NO <sub>3</sub> )	mg/L	3.6	11.5	10.1
Sodium	mg/L	162	519.8	455.8

<sup>a</sup> Ceres WWTP water quality data

<sup>b</sup> Expected A2PP discharge at 100°F dry bulb temperature

<sup>c</sup> Expected A2PP discharge at 60°F dry bulb temperature

Source: TID2009a

## **Wastewater Collection, Treatment, Discharge and Disposal**

A2PP general plant wastewater from containment area washdown, sample drains, and facility equipment drains, as well as non-reclaimable process wastewater, would be combined with the APP effluent and conveyed to the Ceres WWTP via the existing 6-inch-diameter pipeline from the APP to the Ceres WWTP P-E basins. The wastewater from APP is currently not treated by the Ceres WWTP prior to discharge to the P-E basins. No additional treatment is expected as a result of the increased effluent from A2PP. **Soil and Water Resources Table 4** shows expected concentrations of select contaminants in the A2PP discharge stream under peak and average flows, which are dependent on ambient temperature.

Drains that could potentially contain oil or grease would first be routed through an oil-water separator and hazardous wastewater would be hauled offsite for appropriate disposal. A2PP would utilize the existing onsite septic tank and leach field at APP to manage sanitary wastewater.

## **Stormwater Runoff and Drainage**

The existing APP stormwater system incorporates a series of inlets and drainage pipes that discharge to an onsite retention pond, which is currently situated on the proposed location of A2PP. This existing stormwater system would be resized and relocated to the north to accommodate the A2PP. The stormwater system for the A2PP would include a series of inlets and storm drain pipes that convey rainfall runoff to the new retention pond. The retention pond would be sized for 2.41 acre-feet capacity to accommodate the 100-year runoff volume with 2.65 feet of freeboard (CH2MHILL2009f). Areas of potential oil contamination would use secondary containments that prevent the potential contaminants from entering the stormwater collection system. Drainage from these areas would be contained separate from the stormwater collection system, treated and disposed of offsite.

## **Soil Resources**

In general, soils at the proposed A2PP project site are medium to coarse grained and range between sandy loam and loam sand in texture (USDA-NRCS2008). However, the northern three-quarters of the project site was formerly a borrow area used during the development of the adjacent WinCo facility and, due to the developed, industrial nature of the site, soil conditions could vary significantly from those shown in the NRCS soil survey. Additionally, the southern quarter of the project site is currently used as the retention pond for the existing Almond Power Plant. The pond would be filled to ground level at the beginning of construction with imported soils.

The industrial nature of the site suggests that there has been significant mixing of local soils and that imported construction fill soils have been used beneath foundations and roadways. These imported soils would have to be suitable for engineered structures and roadways, and would be expected to consist of well-graded materials. Imported soils previously used to fill the borrow pit as well as the non-native soil material used to fill the retention basin would not be expected to contain materials that are unsuitable for engineering purposes, such as organic debris or expansive clays.

The proposed A2PP is on land zoned for industrial use. Surrounding land uses include industrial, municipal, residential, and agricultural uses. Proposed linear features would primarily run along existing corridors and rights of way, including roadways, rail lines, and existing transmission lines. Only portions of each of the two new transmission line routes would be constructed on land that is currently in agriculture. Agricultural lands surrounding the project site include several fields of nut trees, including one field of almond trees directly south of APP.

The A2PP laydown area would be located to the immediate west north of the proposed project site and would be approximately 4.6 4.85 acres in size. Process water and wastewater connections would be located in the existing APP facilities. Natural gas would be provided via a 11.6 mile-long pipeline that would take the following route: from the meter set, the gas pipeline would exit the existing Almond Power Plant boundary and turn east for approximately 0.6 mile paralleling Turlock Irrigation District (TID) Lateral #2. At the intersection of TID Lateral #2 and Morgan Road, the gas pipeline would turn south and continue along Morgan Road for approximately 3 miles. The gas pipeline would then turn west on East Zeering Road for approximately 0.5 mile, and

then turn south on Bystrum Road and on unpaved farm access roads for approximately 4.5 miles, before turning west on W. Harding Road (paralleling Harding Drain) for approximately 1.5 miles. Next, the gas pipeline would turn south on an unnamed farm road for 0.3 mile, west through a farm field for 0.5 mile, and finally south on an unnamed farm road for approximately 0.7 mile, before joining with PG&E's Line #215 at W. Bradbury Road. PG&E will also construct a 1.8 mile gas pipeline reinforcement located on the west side of the San Joaquin River run south along Morgan Road, west along East Zeering Road, south along Bystrum Road and west along West Harding Road, south along an unnamed farm road for 0.3 miles, west through a farm field for 0.5 mile and finally south on an unnamed farm road msocom\_1#\_msocom\_1 for approximately 0.7 mile to connect to PG&E's existing Line #215 at West Bradbury Road (Figure 1, DR Set 1D, Attachment DR 18-1; CH2MHILL2009k). Two new transmission lines have been proposed: an approximately 0.9-mile-long 115 kV transmission line (Corridor 1), and an approximately 1.2-mile-long, 115-kV transmission line (Corridor 2) (see Figure 1.1-3; CH2MHILL2009k).

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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This section provides a discussion of the potential direct, indirect, and cumulative impacts to soil and water resources that may result from construction, operation, and maintenance of the proposed A2PP. While all projects would likely have impacts, the goal is to limit any adverse impacts to an insignificant or acceptable level, or to avoid them altogether, if possible. Staff's analysis of potential impacts consists of a brief description of the potential impact, an analysis of the relevant facts, and application of the threshold criteria for significance to the facts. Mitigation measures may be necessary to reduce potentially significant impacts to a level of insignificance. If mitigation is warranted, staff provides a summary of TID's proposed mitigation and a discussion of the adequacy of the proposed mitigation. Where necessary, staff presents additional or alternative mitigation measures or recommends specific conditions of certification related to a potential impact and any required mitigation measures.

## **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE**

Staff evaluated the potential impacts to soil and water resources including the effects of construction and operation activities that could result in erosion of soils, the deposition of sediments into surface waters or the contamination of either groundwater or surface water. Staff also evaluated the potential of the project's proposed water use to cause a significant depletion or degradation of local and regional water resources.

To evaluate if significant impacts to soil or water resources would occur, staff assessed:

- Whether construction or operation would lead to accelerated wind or water erosion and sedimentation.
- Whether the project would exacerbate flood conditions in the vicinity of the project.
- Whether the project's water use would cause a substantial, or potentially substantial, adverse change in the quantity or quality of groundwater or surface water.
- Whether project construction or operation would lead to degradation of surface or groundwater quality.



- Whether the project would comply with all applicable LORS.

These criteria are based on the California Environmental Quality Act (CEQA) Guidelines and performance standards. The threshold of significance for project impacts is based on the ability of the project to be built and operated without violating applicable erosion, sedimentation, flood, surface or groundwater quality, water supply, or wastewater discharge standards. The federal, state, and local LORS and policies presented in **Soil and Water Resources Table 1** represent the applicable standards used for the A2PP analysis. These LORS support a comprehensive regulatory system, with adopted standards and established practices designed to prevent or minimize adverse impacts to soil and water resources. For those impacts that exceed standards or result in a significant adverse impact, conditions of certification may be necessary to ensure compliance with standards or reduce the impacts to a less than significant level.

Staff's analysis, determination of potential impacts, and evaluation of appropriate mitigation measures relies on estimates and information provided by TID regarding the construction and operation of A2PP. Applicable scientific, technical, and LORS/policy-related literature and expert opinion was also consulted in the development of staff's analysis.

## **DIRECT/INDIRECT IMPACTS AND MITIGATION**

This direct and indirect impact and mitigation discussion is divided into impacts related to construction and to operation. For each potential impact evaluation, staff briefly describes the potential effect and applies the threshold criteria for significance to its analysis of the project. If mitigation is warranted, staff provides a summary of TID's proposed mitigation and a discussion of the adequacy of the proposed mitigation. In the absence of TID's proposed mitigation or if mitigation proposed by TID is inadequate, staff mitigation measures are recommended. Staff also provides specific conditions of certification related to a potential impact and the required mitigation measures.

### **Construction Impacts and Mitigation**

Construction of A2PP would include soil excavation, grading, installation of utility connections and the use of fresh water, primarily for dust suppression. Potential impacts to soils related to increased erosion or release of hazardous materials are possible during construction. Potential stormwater impacts could result if increased runoff flow rates and volume discharges from the site were to increase flooding offsite. Water quality could be impacted by discharge of eroded sediments from the site, discharge of hazardous materials released during construction, or migration of any existing hazardous materials present in the subsurface soil and groundwater. However, staff does not believe there would be any potential adverse impacts associated with soil and groundwater contamination that would be exacerbated by construction of the proposed A2PP project. Project construction water demand could affect quantity of surface water resources. Potential construction related impacts to soil, stormwater, and water quality or quantity, including the Applicant's proposed mitigation measures and staff's proposed mitigation measures are discussed below.

## Erosion Control and Stormwater Management

Construction activities for managing erosion and stormwater must be addressed to avoid potential adverse impacts to water quality and soil resources. Accelerated wind and water-induced erosion may result from earth-moving activities associated with construction of the proposed project. Alteration of the soil structure leaves soil particles vulnerable to detachment and removal by wind or water. Soil erosion can cause the loss of topsoil and can increase the sediment load in surface receiving waters downstream of areas affected by construction activity. Increasing the amount of impervious surfaces would increase the amount of runoff and peak discharges. Runoff from stormwater can also convey contaminants to soil, groundwater, and surface water if hazardous materials and waste are not properly stored, handled, and disposed.

Construction activity would increase short-term soil erosion. With the implementation of Best Management Practices (BMP) including stabilizing construction entrances, applying water for dust suppression, placement of silt fencing, berms, and hay bales as needed, erosion would be reduced to less than significant and water quality would not be adversely affected by runoff from the site.

Staff recommends two conditions, **SOIL&WATER-1** & **-2**, which address mitigation measures designed to reduce any soil erosion and stormwater construction impacts to less than significant levels.

Condition of Certification **SOIL&WATER-1** would require the project owner to comply with all of the requirements of the General NPDES Permit for Discharges of Storm Water Associated with Construction Activity, including the development and implementation of a Storm Water Pollution Prevention Plan for Construction.

To qualify for the NPDES statewide General Permit for Storm Water Discharges Associated with Construction Activity (General Construction Permit), prior to construction TID would be required to develop a Construction SWPPP to prevent the offsite migration of sediment and other pollutants, and to reduce the effects of runoff from the laydown sites to offsite areas. Successful implementation of the SWPPP would ensure that construction impacts to soil resources are mitigated to a less-than-significant level. SWPPP procedures include submitting a Notice of Intent (NOI) to the State Water Resources Control Board (SWRCB) and developing the SWPPP prior to the start of construction activities. The construction SWPPP would also be submitted to the Stanislaus County Stormwater Management Engineer for review.

The construction sequence of taking the existing operational stormwater retention basin offline and constructing the new retention basin should be described in the Drainage, Erosion, and Sediment Control Plan (DESCP) project schedule recommended by staff in Condition of Certification **SOIL&WATER-2**. Condition of Certification **SOIL&WATER-2** requires the project owner to obtain Compliance Project Manager (CPM) approval for a site-specific final DESCP that addresses all project elements. Compliance with the requirements of this condition would reduce potential soil erosion and stormwater quality impacts to less than significant for the construction phase of the project.

## Temporary Erosion Control Measures

Temporary erosion control measures would be implemented at the start of construction, and would be evaluated, inspected and maintained during construction. TID suggests these BMP measures would include silt fences, fiber rolls, and mulching. TID would not utilize temporary stormwater runoff detention or sedimentation basins, drainage diversion, and other large-scale sediment traps due to the relatively small size of the construction site, level topography, and density of paved areas surrounding the site. These temporary erosion control measures would be removed from the site after the completion of construction or converted to permanent BMPs.

During construction of the project, dust erosion control measures would be implemented to minimize the wind-blown loss of soil from the site. TID states that water of a quality equal to or better than existing surface runoff would be sprayed on the soil in construction areas to control dust.

Sediment barriers slow runoff and trap sediment. TID proposes to place sediment barriers, such as straw bales, sand bags, straw wattles, and silt fences around sensitive areas to prevent contamination by sediment-laden water. They would be placed downstream of disturbed areas, at the base of exposed slopes, and along streets and property lines below the disturbed area.

Since the site would be constructed on relatively level ground, TID would not utilize sediment barriers around the entire perimeter of the site; however, they would place some barriers in locations where onsite to offsite drainage could occur to prevent sediment from leaving the site. TID states that sediment barriers would be properly installed (staked and keyed), then removed or used as mulch after construction. Any soil stockpiles, including sediment barriers around the base of the stockpiles, would be stabilized and covered. Staff believes that with the implementation of BMPs suggested in the draft construction SWPPP and execution of Condition of Certification **SOIL&WATER-1**, temporary erosion control measures would satisfy all applicable LORS and reduce soil and water resources impacts to less than significant.

## Laydown Areas

The area proposed for the A2PP construction laydown is approximately 6.4 ~~4.85~~-acres and would be located west ~~north~~ of the proposed project site. There are nearly level conditions at the site and laydown areas; however, due to compaction from previous activity on the site, the soils are expected to have slow to very slow permeability (and consequently, high runoff). TID expects the laydown area to be graded within one month and then be immediately covered with gravel or other material to permit wet season use and to prevent subsequent wind erosion losses.

Vehicle traffic and equipment staging would result in soil compaction in the laydown area. Soil compaction increases soil density by reducing soil pore space. This, in turn, exacerbates the ability of the soil to absorb precipitation and transmit gases for respiration of soil microfauna. Soil compaction can result in increased runoff, erosion, and sedimentation. TID proposes to store heavy equipment on dunnage (loose scrap material that provides ventilation) to protect it from ground moisture. Compaction beneath the laydown area can also be mitigated by removing and stockpiling topsoil for

later reuse and by deep ripping the subsoil after removing the material and gravel covering. Given the limited area over which permanent compaction would occur, it is considered that this impact would be less than significant. It is also assumed that soil loss would be negligible from the laydown areas once it is covered.

The highest potential for soil loss would occur immediately following grading and prior to the cover material being placed or during the period following the end of construction, when gravel is removed. TID has described the existing laydown area as bare soil and that the laydown area would be returned to its current condition. Given the former construction activity at the site, it is likely that the soil structure in this area may be significantly changed. With the implementation of Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-2**, staff believes any potential significant adverse impacts caused by erosion or storm water discharge during construction of the project would be mitigated.

### **Water Supply**

The primary use of water for site construction would be dust control. TID would use fresh water from either the onsite fire system at the APP or TID's Lateral #2 irrigation canal for all non-domestic construction water uses. Construction water used for dust control and soil compaction would not result in discharge. TID estimates the daily average and maximum construction water use to be 36,000 and 144,000 gallons, respectively. The maximum water use for the entire 12-month construction period would be 52.56 million gallons (161.3 AF). Tank and pipeline hydrostatic testing at the A2PP site would require 18,200 gallons and the volume required to flush all the pipelines would be 36,400 gallons. However, a relatively limited amount of water (an average of approximately 50 gallons per minute and approximately 200 gallons per minute per 1 hour for dust control and soil compaction, at peak use) would be needed daily.

The total amount of water needed for construction would equate to less than 0.5 AF per day. Due to the low production rate relative to the capable production of the local aquifer, use of the APP onsite well via the APP fire system tank would not impact other users or result in significant impacts to the groundwater basin. The use of surface water managed and distributed by TID from Lateral #2 for construction would not impact TID's ability to meet delivery requirements to other users, since average daily requirements would be about 0.11 cfs (50 gpm). The canal normally flows at 60 to 80 cfs during the irrigation season, which ideally would coincide with peak construction activity. During the rainy season, the canal flows at about 5 cfs. Drinking water would be supplied by an outside water delivery service.

### **Wastewater and Sanitary Waste**

During the construction period, TID states that all sanitary waste would be collected in portable toilets (no discharge) supplied by a licensed contractor for collection and disposal at an appropriate receiving facility. Equipment wash water would also be collected and disposed of offsite; therefore, there would be no impacts from disposal of sanitary wastewater. ~~Staff recommends TID handle the wastewater from hydrostatic testing similar to the handling of the equipment wash water.~~ Handling, storing and disposal of all construction wastewater would be fully described in the construction SWPPP; required as part of Condition of Certification **SOIL&WATER-1**. Staff believes

implementation of this condition would be sufficient to ensure there were no impacts due to construction wastewater.

## **Operational Impacts and Mitigation**

Operation of A2PP could lead to potential impacts to soil, stormwater runoff, water quality, water supply, and wastewater treatment. Soils may be potentially impacted through erosion or the release of hazardous materials used in the operation of A2PP. Stormwater runoff from the A2PP site could result in potential impacts if increased runoff flow rates and volumes discharged from the site increase downstream flooding. Water quality could be impacted by discharge of eroded sediments from the A2PP site, or discharge of hazardous materials released during operation. Water supply for plant processes, cooling, fire protection and landscape irrigation could lead to potential quantity or quality impacts to regional groundwater or surface water resources. Potential impacts to soil, stormwater, water quality, water supply, and wastewater related to the operation of A2PP, including the Applicant's proposed mitigation measures and staff's proposed mitigation measures, are discussed below.

### **Stormwater**

The development of A2PP would result in approximately 4.6 additional acres of impervious surfaces on the project site. However, the increase in the amount of impervious surface is not expected to significantly change the amount or timing of runoff from the A2PP project site as the site would be built on relatively level ground. The existing APP stormwater drainage system would be expanded to accommodate the A2PP plant and the existing APP onsite retention pond would be relocated to the northern side of the A2PP site to incorporate stormwater drainage from both APP and A2PP. Because stormwater would be collected and discharged to the onsite retention pond, the A2PP project would not result in substantial erosion, siltation, or flooding on- or offsite; therefore, staff believes that with the implementation of Conditions of Certification **SOIL&WATER-2** and **SOIL&WATER-3**, operational impacts to drainage patterns would be less than significant. **SOIL&WATER-2** requires the project owner to identify results of stormwater BMP monitoring and maintenance activities and **SOIL&WATER-3** compels TID to comply with all requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity.

### **Water Supply**

The Second Amendment to the Water Services Agreement (Amendment 2) (CH2MHILL2009i), modifies the Water Services Agreement (Agreement) (CH2MHILL2009f) and the First Amendment to the Water Services Agreement (Amendment 1) (CH2MHILL2009f) between TID and the City of Ceres. Amendment 2 permits the use of up to 1,135,000 gallons per day of (primary-treated) reclaimed water, via pumping through an extraction well adjacent to the Ceres WWTP percolation-evaporation (P-E) basins, as a process water supply source. The Agreement states that Ceres WWTP P-E basins will have enough capacity at all times during the year. Staff confirmed that the 12 acre P-E ponds have a percolation capacity of 3.5 inches per day, which is sufficient to meet TID's expansion pumping needs (Riddell2009). TID has stated that service from Ceres WWTP provides a high level of reliability of reclaimed water and no back-up water source is identified for A2PP. Staff confirmed that the existing reclaimed water treatment process at APP is not currently permitted and that

the Central Valley RWQCB does not require the treatment process to be permitted. Staff finds that the A2PP use and delivery of reclaimed water using the existing APP facilities for delivery and treatment would also not require additional Central Valley RWQCB permits (CH2MHILL2010, Izzo2010). The basis for this finding is that the effluent from the treatment process is discharged to the permitted Ceres WWTP.

Staff reviewed the Applicant's steady-state, 3-dimensional, finite-element groundwater model (CH2MHILL2009g) and agrees with the conclusion that 95% of the process water supply pumped from the extraction well originates from the P-E basins.

The Agreement is based on mutual benefits provided to TID and the City of Ceres. TID is offered an economical source of reclaimed water for use in power plant processes and the pumping increases the percolation rate of the WWTP P-E basins. The added demand for A2PP water helps draw down the local groundwater table in the vicinity of the Ceres WWTP to drive down mounding that inhibits percolation capacity. (Riddell2009). The Agreement allows TID to discharge process wastewater (about 50-60% of the volume extracted) directly to the P-E basins. Michael Riddell, Ceres WWTP Wastewater Systems Supervisor, stated that the terms of the Agreement allow TID to discharge process wastewater into the P-E basins only while the extraction well is in operation as there would be no benefit to Ceres WWTP when the extraction well was not increasing the percolation rate of the P-E basins (Riddell2009). This flow cycle of draw down and return flow has a net benefit that increases wastewater storage capacity in the P-E basins. Therefore, Staff is concerned that although Amendment 2 acknowledges the capacity of Ceres WWTP to provide a sufficient volume of water for the proposed A2PP, the Ceres WWTP's WDRs may be revised by the Central Valley RWQCB in the future. Should changes to water quality standards in those WDRs prohibit the inclusion of A2PP's waste discharge into the Ceres WWTP, a new process water supply source or pretreatment at the project prior to discharge to the Ceres WWTP would be needed.

The Agreement between TID and the City of Ceres requires meters to record the daily flows of reclaimed water and process water returned to the plant. Condition of Certification **SOIL&WATER-4** requires TID to provide verification of operational metering devices and complete an annual Water Use Summary to be provided in annual compliance reports.

### **Wastewater and Sanitary Waste**

Amendment 2 (CH2MHILL2009i) allows TID to discharge up to a maximum of 560,000 gallons (1.72 AF) per day with a maximum annual total up to 52,000,000 gallons per year (160 AFY) of process wastewater from the combined existing APP facility and proposed A2PP facility directly to the Ceres WWTP P-E basins. With the addition of A2PP, the demand on the 6 inch return line is approximately 314,000 gallons per day (0.964 AF) (CH2MHILL2009f), well under the maximum daily discharge allowed in Amendment 2. The City of Ceres has agreed to accept the process wastewater from A2PP with the understanding that the Ceres WWTP could continue to meet the water quality standards of their current WDRs. Currently, no numerical limitations are in place for constituents in the Ceres WWTP's WDRs (CH2MHILL2009f). Therefore, the Almond 2 project would comply with existing WDRs.

Waste Discharge Requirements (WDRs), issued by the Central Valley RWQCB, in the San Joaquin Valley are being updated (Landau2009) and these changes will have an effect on the Ceres WWTP and ultimately could impact the Water Services Agreement with TID. Mr. Landau could not confirm the exact date that new WDRs for Ceres WWTP would be completed; however, WDR changes are anticipated within the lifespan of the A2PP project. The Central Valley RWQCB is generally concerned about salinity in the Central Valley (Wass2009; Landau2009) and staff is concerned that this may result in changes to treatment methods and water quality standards at the Ceres WWTP as it is a primary-treated system that may leach large quantities of salts into the soils and local shallow aquifer system. Staff believes that if the Ceres WWTP is required to improve their treatment methods the City could impose restrictive water quality standards on the process wastewater from A2PP as provided for in Amendment 2 (Landau2009).

Modifications of the WDRs for Ceres WWTP or a change to the County's overall treatment operations could disrupt process wastewater service via the existing 6-inch discharge pipe to the Ceres WWTP. Staff is primarily concerned that updated WDRs would make direct discharge into the P-E basins prohibitive if the quality of the process wastewater exceeds the Ceres WWTP's ability to meet new Regional Board requirements. If pre-treatment of wastewater to comply with stricter water quality standards in the Ceres WWTP P-E basins cannot be accomplished, TID would have to find a different means of wastewater disposal. Based on the speculative nature of future WDR modifications A2PP has objected to data requests from staff that are intended to understand what treatment processes would be implemented to comply with new WDR.

Staff notes that future changes in water quality and WDR's could result in limitations on discharges on A2PP discharges and require changes in project operation. However, it is currently unknown how these changes would be implemented by the RWQCB and it is difficult to analyze any potential changes that would be required for project compliance. Any changes in response to new regulatory requirements could result in the need for a project modification or amendment. Staff has included Condition of Certification **SOIL&WATER-5** that requires the project owner to report to the CPM any violations of wastewater discharge from A2PP to the City of Ceres. The Condition also requires notification to the CPM for any suspensions, nullifications, or amendments to the Water Services Agreement (Amendment 2) (CH2MHILL2009i).

A2PP sanitary waste water will utilize the existing septic tank on APP. Staff has determined that the existing septic tank / leach field is sized appropriately to handle the additional load.

## **CUMULATIVE IMPACTS AND MITIGATION**

Cumulative impacts consist of impacts that may occur as a result of the proposed project in combination with impacts from other past, present and reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant actions taking place over time.

Temporary and permanent disturbances associated with construction of the proposed project would cause accelerated wind- and water-induced erosion. However, staff has concluded that the implementation of proposed mitigation measures, the SWPPP and

the DESCOP would ensure that the project would not contribute significantly to cumulative erosion and sedimentation impacts.

The industrial wastewater and contact stormwater from the A2PP site would be routed to the existing onsite holding tank and hauled offsite for disposal at a licensed facility. All sanitary waste water would be discharged into the existing APP septic tank / leach field. Therefore, no wastewater-related cumulative impacts are expected. The stormwater discharge would be retained on site and would not exacerbate flooding conditions in the area.

A2PP would use percolated wastewater pumped from an existing extraction well near the Ceres WWTP primary-treated percolation-evaporation basins. APP is currently the only user of this wastewater, and since A2PP would be an expansion of that power plant operation, staff does not expect the increased pumping rate to negatively affect any other water users.

No significant cumulative impacts are expected to result from the A2PP project. The A2PP project would use less than 13.2 million gallons (40.51 AF) of fresh water for construction, assuming average daily use, during the entire 12 month construction period. Though the A2PP would be a wet-cooled system, TID would be reclaiming wastewater that has percolated to groundwater near the Ceres WWTP P-E basins. The requirements for fresh water include minimal use of groundwater, for sanitary water purposes, to be pumped via the existing well at the APP site. The A2PP site would not significantly alter offsite runoff quantity or quality, nor would it significantly impact soil resources as the site was previously disturbed. Soils not covered by the plant buildings, pavement, and ancillary improvements would not be changed over the long-term. Staff believes A2PP would not contribute to a cumulative soil and water resources impact.

## **COMPLIANCE WITH LORS**

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The Energy Commission's power plant certification process requires staff to review each of the proposed project's elements for compliance with LORS and policies. Staff has reviewed the project elements and concludes that the proposed A2PP project would comply with all applicable LORS addressing protection of water resources, storm water management, and erosion control, as well as drinking water, use of freshwater, and wastewater discharge requirements, as long as staff's proposed conditions of certification are adopted and implemented. Summary discussions of project compliance with significant LORS and policies are provided below.

### **CLEAN WATER ACT**

Staff has determined that the A2PP project would satisfy the requirements of the General National Pollutant Discharge Elimination System permit with the adoption of Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-3**, which require the development and implementation of SWPPPs for construction and industrial activity.

### **PORTER-COLOGNE WATER QUALITY CONTROL ACT**

Staff has concluded that A2PP would satisfy the applicable requirements of the Porter-Cologne Water Quality Control Act and adequately protect the beneficial uses of waters of the state through implementation of federal, state, and local requirements for



management of storm water discharges and pollution prevention and compliance with local grading and erosion control requirements, and compliance with local onsite wastewater treatment system (septic system) requirements.

## **CALIFORNIA WATER CODE**

Staff has determined that the A2PP site would comply with all sections of the California Water Code addressed in **Soil and Water Resources Table 1**. The A2PP project would utilize reclaimed water for all process and cooling water needs.

## **ENERGY COMMISSION WATER POLICY**

### **California Constitution**

Article X, Section 2 calls for water to be put to beneficial use, and that “waste or unreasonable use or unreasonable *method of use* be prevented.” (Cal. Const., art. X, § 2; emphasis added.) The article also limits water rights to reasonable use, including reasonable methods of use. (*Ibid.*) Groundwater is subject to reasonable use. (*Katz v. Walkinshaw* (1903) 141 Cal. 116.)

### **Warren-Alquist Act**

Section 25008 of the Commission’s enabling statutes echoes the Constitutional concern, by promoting “all feasible means” of water conservation and “all feasible uses” of alternative water supply sources. (Pub. Resources Code § 25008.)

### **Integrated Energy Policy Report**

In the 2003 Integrated Energy Policy Report (“IEPR” or “Report”), the Commission reiterated certain principles from SWRCB’s Resolution 75-58, discussed below, and clarified how they would be used to discourage use of fresh water for cooling power plants under the Commission’s jurisdiction. The Report states that the Commission will approve the use of fresh water for cooling purposes only where alternative water supply sources or alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.” (IEPR (2003), p. 41.) In the Report, the Commission interpreted “environmentally undesirable” as equivalent to a “significant adverse environmental impact” under CEQA, and “economically unsound” as meaning “economically or otherwise infeasible,” also under CEQA. (IEPR, p. 41.) CEQA and the Commission’s siting regulations define feasible as “capable of being accomplished in a successful manner within a reasonable amount of time,” taking into account economic and other factors. (Cal. Code Regs., tit. 14, § 15364; tit. 20, § 1702, subd. (f).) (IEPR, p. 39.)

### **State Water Resources Control Board Resolutions**

In 1975, the Board determined that surface water with total dissolved solids (“TDS”) of 1,000 mg/l or less should be considered fresh water. (Resolution 75-58) One express purpose of that Resolution was to “keep the consumptive use of fresh water for powerplant cooling to that *minimally essential*’ for the welfare of the state. (*Ibid*; emphasis added.) In 1988, the board designated all groundwater and surface waters of the States as potential sources of drinking water, worthy of protection for current or future beneficial uses, except where: (a) the total dissolved solids are greater than

3,000 milligrams per liter, (b) the well yield is less than 200 gallons per day (gpd) from a single well, (c) the water is a geothermal resource, or in a water conveyance facility, or (d) the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices. (Resolution 88-63.) State Water Resources Control Board Resolution 2009-0011 encourages and promotes reclaimed water use for non-potable purposes. The A2PP project uses three combustion turbines operating in simple cycle mode without a steam cycle. During operation, the Applicant estimates approximate 293 acre feet of water will be required each year. Reclaimed water is available from the City of Ceres.

Because the project would pump groundwater solely for sanitary uses onsite, and because the project is using reclaimed water for project processes, including cooling, staff finds that the Almond 2 project complies with state and Energy Commission water policies.

## **NOTEWORTHY PUBLIC BENEFITS**

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The Water Services Agreement between TID and the City of Ceres is based on mutual benefits provided to TID and the City of Ceres. TID is offered an economical source of reclaimed water for use in power plant processes and the pumping increases the percolation rate of the WWTP P-E basins. The added demand for A2PP water helps draw down the local groundwater table in the vicinity of the Ceres WWTP to drive down mounding that inhibits percolation capacity (Riddell, 2009). Neither the Applicant nor staff has identified any noteworthy benefits to soil or water resources that would be provided by the project.

## **RESPONSE TO AGENCY AND PUBLIC COMMENTS**

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No comments on Soil and Water Resources were received.

## **CONCLUSIONS**

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Based on its assessment of the proposed TID Almond 2 Power Plant (A2PP) project, staff concludes the following:

- Implementation of Best Management Practices (BMPs) during A2PP construction and operation in accordance with effective SWPPPs and a DESCP would avoid significant adverse effects that could be caused by transport of sediments or contaminants from the A2PP site and associated linear facilities by wind or water erosion.
- The proposed reclaimed water supply for the project would not cause a significant adverse environmental impact on current or future users of the water supply.
- ~~The Waste Discharge Requirements for the City of Ceres Wastewater Treatment Plant may be altered by the Central Valley Regional Water Quality Control Board in the future, which could affect the both the water supply and wastewater disposal for the A2PP site.~~

- The proposed project would be constructed to comply with 100-year flood requirements and would not exacerbate flood conditions in the vicinity of the project.
- The proposed project would comply with all applicable federal, state and local laws, ordinances, regulations and standards with the adoption of the recommended conditions of certification.
- A2PP would not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources with adoption of the conditions of certification.
- The project complies with the state water policies by using reclaimed water.

Staff concludes that A2PP would not result in any unmitigated project-specific or cumulative significant adverse impacts to soil or water resources and would comply with all applicable laws, ordinances, regulations and standards (LORS) if all of the recommended conditions of certification are adopted by the Commission and implemented by TID.

## PROPOSED CONDITIONS OF CERTIFICATION

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**SOIL&WATER-1:** The project owner shall comply with the requirements of the General National Pollutant Discharge Elimination System (NPDES) permit for discharges of storm water associated with construction activity. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the construction of the entire TID Almond 2 Power Plant (A2PP).

Verification: ~~At least 60 days before construction begins, the project owner shall submit a copy of the construction SWPPP to the Stanislaus County Stormwater Management Engineer for review.~~ At least 30 days before construction begins, the project owner shall submit copies to the Compliance Project Manager (CPM) a copy of the construction SWPPP and copies of all correspondence between the project owner and the Central Valley Regional Water Quality Control Board (RWQCB) regarding the General NPDES permit for the discharge of storm water associated with construction activities. This information shall include copies of the Notice of Intent and the Notice of Termination sent to the State Water Resources Control Board for the project construction. Once construction is complete the project owner shall submit to the CPM a copy of the Notice of Termination sent to the State Water Resources Control Board.

**SOIL&WATER-2:** The project owner shall develop a site-specific DESCOP that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in offsite flooding potential, meet local requirements, and identify all monitoring and maintenance activities. Monitoring activities shall include routine measurement of the volume of accumulated sediment in the stormwater retention basin. Maintenance activities must include removal of accumulated sediment from the retention basin when an average depth of 0.5 feet of sediment has accumulated in the retention basin. The plan shall be

consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**. The DESCP shall contain the following elements. All maps shall be presented at a legible scale no less than 1" = 100'.

- **Vicinity Map** – A map shall be provided indicating the location of all project elements with depictions of all significant geographic features to include watercourses, washes, irrigation and drainage canals, and sensitive areas.
- **Site Delineation** – The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.
- **Watercourses and Critical Areas** – The DESCP shall show the location of all nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site.
- **Drainage** – The DESCP shall include hydrologic calculations for onsite areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow. Provide hydraulic calculations to support the selection and sizing of the drainage network, retention facilities and best management practices (BMPs). Spot elevations shall be required where relatively flat conditions exist. The spot elevations and contours shall be extended off site for a minimum distance of 100 feet in flat terrain or to the limits of the offsite drainage basins that drain toward the site.
- **Clearing and Grading** – The plan shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCP shall include a statement of the quantities of material excavated at the site, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the project. Areas of no disturbance shall be properly identified and delineated on the plan maps.
- **Project Schedule** – The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization). Separate BMP implementation schedules shall be provided for each project element for each phase of construction.

- **Best Management Practices** – The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction.
- **Erosion Control Drawings** – The erosion control drawings and narrative shall be designed, stamped and sealed by a professional certified engineer or erosion-control specialist.

Verification: ~~No later than 90 days prior to start of construction, the project owner shall submit a copy of the DESCP to Stanislaus County for review and comment. No later than 60 days before the start of construction, the project owner shall submit a copy of the DESCP to the CPM for review and approval. The project owner shall promptly submit a copy of any comments from Stanislaus County regarding the DESCP to the CPM.~~ During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment-control measures and the results of monitoring and maintenance activities. Once operational, the project owner shall provide in the annual compliance report information on the results of stormwater BMP monitoring and maintenance activities. The information required in the DESCP may be included as part of the SWPPP.

**SOIL&WATER-3:** The project owner shall comply with the requirements of the General NPDES permit for discharges of storm water associated with industrial activity. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the operation of the site. The project owner shall ensure that only stormwater is discharged onto the site. The project owner shall comply with the requirements of the general NPDES permit for discharges of storm water associated with industrial activity. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the operation of the site.

Verification: At least 30 days prior to commercial operation, the project owner shall submit the operational Storm Water Pollution Prevention Plan for the A2PP site to the CPM. Within 10 days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the RWQCB about the general NPDES permit for discharge of storm water associated with industrial activity. This information shall include a copy of the notice of intent sent by the project owner to the State Water Resources Control Board. A letter from the RWQCB indicating that there is no requirement for a general NPDES permit for discharges of storm water associated with industrial activity would satisfy this condition.

**SOIL&WATER-4:** Water used for project operation processing shall exclusively be reclaimed water from the City of Ceres Wastewater Treatment Plant. Pumping or purchasing groundwater for this supply source is prohibited. Water use shall not exceed 514 acre-feet per year. The project owner shall monitor and record the total water used on a monthly basis. For calculating

the annual water use, the term “year” will correspond to the date established for the annual compliance report submittal.

~~The project owner shall maintain metering devices as part of the water supply and distribution systems to monitor and record, in gallons per day, the total volume(s) of water supplied to A2PP from the City of Ceres. Those metering devices shall be operational for the life of the project.~~

~~For the first year of operation, the project owner shall prepare an annual Water Use Summary, which will include the monthly average of daily water usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. For subsequent years, the annual Water Use Summary shall also include the annual water used by the project in prior years. The annual Water Use Summary shall be submitted to the CPM as part of the annual compliance report (ACR).~~

Verification: At least 60 days prior to commercial operation of A2PP, the project owner shall submit to the CPM evidence that metering devices are operational on the water supply and distribution systems.

The project owner shall maintain metering devices as part of the water supply and distribution systems to monitor and record, in gallons per day, the total volume(s) of water supplied to A2PP from the City of Ceres. Those metering devices shall be operational for the life of the project.

For the first year of operation, the project owner shall prepare an annual Water Use Summary, which will include the monthly average of daily water usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. For subsequent years, the annual Water Use Summary shall also include the annual water used by the project in prior years. The annual Water Use Summary shall be submitted to the CPM as part of the annual compliance report (ACR). The project owner, in the annual compliance report, shall provide a Water Use Summary that states the source and quantity of water used on a monthly basis and on an annual basis in units of acre-feet. The ACR shall also report the average daily water usage in gallons per day for each month. Prior annual water use shall be reported in subsequent annual compliance reports.

**SOIL&WATER-5:** The A2PP process wastewater will discharge to the Ceres WWTP Percolation-Evaporation basins at a maximum discharge of 560,000 gallons per day per the City of Ceres, CA and Turlock Irrigation District Water Services Agreement and its Amendments. ~~In the event the Water Services Agreement is suspended, nullified, or amended, the project owner shall provide the CPM with all information and documentation related to A2PP water supply or waste discharge to the City of Ceres Waste Water Treatment Plant (WWTP).~~ During operation, any monitoring reports provided to the City of Ceres shall also be provided to the CPM. The CPM shall be notified of any violations of discharge limits or amounts.

Verification: During A2PP operation, the project owner shall submit to the CPM any wastewater quality monitoring reports required by the City of Ceres, in the annual

compliance report. The project owner shall submit any notice of violations from the City of Ceres to the CPM within 10 days of receipt and fully explain the corrective actions taken in the annual compliance report. The project owner shall also promptly provide to the CPM copies of all correspondence between the Ceres WWTP and TID related to suspensions, nullifications, or amendments to the Water Services Agreement.

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# TRAFFIC AND TRANSPORTATION

Testimony of Marie McLean

## SUMMARY OF CONCLUSIONS

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The Almond 2 Power Plant (A2PP) would be consistent with the Circulation Element in the Stanislaus County General Plan and the City of Ceres General Plan. In addition, with implementation of the three proposed conditions of certification, the A2PP would be consistent with all other applicable laws, ordinances, regulations, and standards.

During the construction and operation phases, local roadway and highway demand resulting from the daily movement of workers and materials would not increase beyond significance thresholds established by the City of Ceres and Stanislaus County. During the operational phase, the project would not adversely affect local roads or aviation operations associated with any airport flight traffic.

## INTRODUCTION

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In the traffic and transportation analysis, staff addresses the extent to which the project may affect the transportation system in the local area. In this analysis, staff identifies:

1. Proposed roads and routings to be used for construction and operation
2. Potential traffic-related problems associated with the use of those routes by construction workers and truck deliveries
3. Anticipated encroachment on public rights-of-way during the construction of the proposed project and associated facilities
4. Frequency of trips and probable routes associated with the delivery of hazardous materials
5. Possible effects of project operations on local airport flight traffic.

In addition to assessing potential project-related impacts, staff has reviewed the applicable laws, ordinances, regulations, and standards (LORS) to determine compliance. The LORS that govern the project are listed in **Traffic and Transportation Table 1**, followed by information about the potential impacts related to traffic operations and safety hazards resulting from the construction and operation of the A2PP.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

**Traffic and Transportation Table 1  
Laws, Ordinances, Regulations, and Standards**

Applicable LORS	Description
<p><b>Federal</b></p> <p>Code of Federal Regulations (CFR), Title 14, Transportation; Chapter 1, Part 77</p> <p>Code of Federal Regulations (CFR), Title 14, Transportation; Subtitle B, Other Regulations Relating to Transportation</p>	<p>Includes standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the Federal Aviation Administration of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.</p> <p>Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.</p>
<p><b>State</b></p> <p>California Vehicle Code, Division 2, Chapter. 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14.1, Chap. 1 &amp; 2; Div. 14.8; Div. 15</p> <p>California Streets and Highway Code, Division 1 &amp; 2, Chapter 3 &amp; Chapter 5.5</p>	<p>Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.</p> <p>Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits.</p>
<p><b>Local</b></p> <p>City of Ceres General Plan; Transportation and Circulation Element, February 24, 1997</p> <p>Stanislaus County of Governments Regional Transportation Plan, 2007</p> <p>County of Stanislaus 1997 General Plan; Circulation Element</p>	<p>Requires level of service (LOS) D for major roadways (arterials, expressways, and roadways) and LOS C for secondary collector or local roadways or better operating conditions for all roadway links and intersections.</p> <p>Establishes regional transportation goals, policies, objectives and actions for various modes of transportation, such as improvements to mobility, improvement of goods movement, and so forth.</p> <p>County will maintain at least a level of service (LOS) C or better operating conditions for all county roadways and intersections, except in a sphere of influence of a city when the city has adopted a lower level of service.</p>

## SETTING

The A2PP is located on Crows Landing Road, approximately three miles south of State Route (SR) 99, in Ceres, California, County of Stanislaus, on an approximately 4.6-acre parcel, next to the existing 48-MW Almond Power Plant (A1PP). Both the A2PP and the existing A1PP are owned and operated by the Turlock Irrigation District (TID). The TID is the first publicly-owned irrigation district in California and one of only four districts that sells electric energy to its customers. Construction is scheduled to begin in third quarter 2010 and be completed in third quarter 2011.

Access to the site from the north is from SR 99 through Crows Landing Road. From the south, access is via Keyes Road, which intersects with Crows Landing Road approximately two miles west of SR 99.

See **Traffic and Transportation Figure 1, Regional Transportation System**, for a map of the region surrounding the project site. This figure includes locations of airports; bus and train stations; railroads; freeways; highways, and major roads located near the project site. This figure may be found at the end of this analysis.

## **CRITICAL HIGHWAYS AND ROADS**

This section includes information about state highways and local roads located near to the project site. These roads are used to access the project during construction and operation.

**State Route (SR) 99** is a major north-south highway in California's Central Valley. Its northern terminus is CA-36 in Red Bluff; the southern terminus is Interstate 5 south of Bakersfield. State Route 99 extends through Ceres approximately two miles southwest of the project site. Access to the project site is from SR 99 through Crows Landing Road. From the south, access is through Keyes Road, which intersects with Crows Landing Road approximately two miles west of SR 99.

According to traffic counts published by the California Department of Transportation (Caltrans) in 2007, the average daily traffic volume on SR 99 was 118,000 vehicles per day north of Crows Landing Road and 108,000 vehicles per day south of Mitchell Road.

**State Route (SR) 132**, a two-lane to four-lane highway, begins at exit 72A, Interstate 580, just west of town of Vernalis and runs due east into Modesto. State Route 13 ends at the intersection of SR 49 in Coulterville. State Route 132 connects to SR 99 approximately five miles north of the project site.

According to Caltrans' 2007 traffic counts, the average daily traffic volume on SR 132 was 24,400 vehicles per day east of El Vista Avenue; 26,600 vehicles per day west of El Vista Avenue; and 14,400 vehicles west of Carpenter Road.

**Crows Landing Road**, a two-lane to four-lane roadway running north to south, is located between I-5 and SR 99. Local access to the project site for southbound SR 99 traffic is via Crows Landing Road. The project site is located approximately three miles west of SR 99 via Crows Landing Road.

According to the Stanislaus County Department of Public Works, Traffic Section, the average daily traffic counts for Crows Landing Road on roads closest to the plant are as follows. Year of count is in parenthesis.

1. South of Service Road, 8,432 (2007)
2. North of Whitmore Road, 0,967 (2005)
3. North of West Main, 5,522 (2008)

**Service Road**, a 13-mile-long, east-west roadway, begins west of Carpenter Road and ends east of Geer Road. Running through the city of Ceres, the road is used to access the project by northbound traffic traveling on SR 99.

According to the Stanislaus County Department of Public Works, Traffic Section, the average daily traffic counts for Service Road on roads closest to the plant are as follows. Year of count is in parenthesis.

1. East of Crows Landing Road, 5,417 (2004)
2. West of Crows Landing Road, 1,434 (2008)

**Whitmore Avenue**, a two-lane, east-west undivided roadway through downtown Ceres and unincorporated sections of Stanislaus County, begins west of Carpenter Road and ends at Montpelier Road. The road is used to access the project site via Central Avenue. Center Avenue intersects with Service Road, which is located south of Center Avenue.

According to the Stanislaus County Department of Public Works, Traffic Section, the average daily traffic counts for Whitmore Avenue on roads closest to the plant are as follows. Year of count is in parenthesis.

1. East of Crows Landing Road, 13,114 (2006)
2. West of Crows Landing Road, 0,142 (2005)

**Hatch Road**, a two-to-four-lane, east-west roadway, runs through downtown Ceres and unincorporated parts of Stanislaus County. Hatch Road begins west of Carpenter Road and ends at Greer Road. Located north of the project site, Hatch Road consists of two lanes from Crows Landing Road to SR 99 and four lanes from SR 99 to Mitchell Road.

According to the Stanislaus County Department of Public Works, Traffic Section, the average daily traffic counts for Hatch Road on roads closest to the plant are as follows. Year of count is in parenthesis.

1. West of Santa Fe Avenue, 546 (2009)
2. East of Crows Landing Road, 3,114 (2009)
3. West of Crows Landing Road, 10,142 (2005)

**Mitchell Road**, a two-lane to four-lane, north-south parkway running north-south through Stanislaus County, is located between SR 108 and SR 99. A four-lane highway near the project site, Mitchell Road provides access to the project site for traffic coming south from Modesto.

According to the Stanislaus County Department of Public Works, Traffic Section, the average daily traffic counts for Service Road on roads closest to the plant are as follows. Year of count is in parenthesis.

1. South of Service Road, North of Highway 99, 23,972 (2005)
2. North of Finch Road, 24,633 (2003)

## LEVEL OF SERVICE

Level of Service (LOS) is a qualitative measure used to describe operational conditions within a traffic stream. The term is used to quantify a level of congestion on a particular roadway or intersection through the use of such factors as *speed*, *travel time*, and *delay*.

The *Highway Capacity Manual* includes descriptions of six levels of service for roadways or intersections. Those six levels of service range from LOS A, used to describe the best operating conditions, to LOS F, used to describe the worst.<sup>1</sup>

**Traffic and Transportation Table 2** includes statistics about existing daily traffic volumes and levels of service (LOS) in and around the project area. Plant construction and operation traffic would use the existing local roadways, which include Mitchell Road, East Hatch Road, Crows Landing Road, and East Whitmore Avenue. According to the Stanislaus County Department of Public Works, Traffic Section, those roads have a LOS of C or better.

The principal highways in the area are SR 99; SR 132; and I-205. Level of Service (LOS) for those roads is as follows:

1. SR 99, North of Crows Landing Road, LOS C
2. SR 99, South of Mitchell Road, LOS C
3. SR 20, West of SR 99, LOS B
4. SR 132, East of El Vista Avenue, LOS A
5. SR 132, West of El Vista Avenue, LOS A
6. SR 132, West of Carpenter Road, LOS A
7. I-205, West of I-5, LOS F
8. I-5, North of I-205, LOS B
9. I-580, North of SR 132, LOS A<sup>2</sup>

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<sup>1</sup> National Research Council, *Highway Capacity Manual, Third Edition*, 1994.

<sup>2</sup> The level-of-service (LOS) system uses the letters *A* through *F*, with *A* being the best and *F* being the worst to measure the efficiency with which traffic flows on highways. On a road with traffic classified as LOS A, traffic flows at or above the posted speed limit and all motorists have complete mobility between lanes. LOS B is slightly more congested and maneuverability is somewhat reduced; LOS C has more congestion than B; at LOS C roads remain safely below but close to capacity; and posted speed is maintained. LOS C is often the target designation for urban highways; LOS D is often the level of service of a busy shopping corridor in the middle of the weekday or a functional urban highway during commuting hours; with LOS E, traffic flow is irregular and speed varies rapidly, but rarely reaches the posted limit. LOS F is the lowest measurement. Traffic flow is forced; and every vehicle moves in lockstep with the vehicle in front. Stops are frequent, with a drop in speed to nearly zero mph. See the *Highway Capacity Manual* for additional information.

**Traffic and Transportation Table 2  
Roadway Segment Level of Service (LOS) Existing Conditions**

Roadway Segment	Traffic Flow	Divided/Undivided	Number of Lanes	Year ADT Count	Original AM Peak Hour Volume	AM Peak LOS	Original PM Peak Hour Volume	PM Peak LOS	Acceptable LOS
Crows Landing Road	North of Hatch Road	Undivided	4	2008	1,986	C	2,795	D	D
Crows Landing Road	North of Whitmore Avenue	Undivided	4	2008	1,472	C	1,828	C	D
Crows Landing Road	South of Whitmore Avenue	Undivided	4	2008	1,213	C	1,386	C	D
Whitmore Avenue	East of Crows Landing Road	Undivided	2	2008	656	C	1,041	C	D
Service Road	East of Central Avenue	Undivided	2	2008	460	C	775	C	D

**Source:** Almond 2 Power Plant (09-AFC-2) E-Mail Queries Set 1

<sup>1</sup>No adjustment needed for 2008 peak volumes or trucks PCE

<sup>2</sup>No adjustment needed for 2008 peak volumes or trucks PCE

Delays and LOS for the intersections in the vicinity of the project site are presented in Traffic and Transportation Table 3. Delays for the entire intersection are available for signalized intersections; if the intersection is stop-controlled, the delay for the controlled approach is available. All intersections operate at an acceptable level of service.

**Traffic and Transportation Table 3  
Freeway Segment Level of Service (LOS) Existing Conditions**

Roadway Segment	Traffic Flow	Undivided/Divided	Number of Lanes	Year ADT Count	Original and Adjusted Average Daily Traffic <sup>1</sup>	Daily LOS	Acceptable LOS
State Route 99	North of Crows Landing Road	Undivided	6	2007	118,000	C	D
State Route 99	South of Mitchell Road	Undivided	6	2007	108,000	C	D
State Route 132	East of El Vista Avenue	Undivided	4	2007	24,400	A	D
State Route 132	West of El Vista Avenue	Undivided	4	2007	26,600	A	D
State Route 132	West of Carpenter Road	Undivided	2	2007	14,400	A	D
Interstate 205	West of Interstate 5	Divided	4	2007	101,000	F	D
Interstate 5	North of Interstate 205	Divided	10	2007	160,000	B	D
State Route 120	West of State Route 99	Divided	4	2007	70,000	B	D
Interstate 580	North of State Route 132	Divided	4	2007	37,000	A	D

**Source:** Almond 2 Power Plant (09-AFC-2) E-Mail Queries Set 1

<sup>1</sup>No adjustment needed for 2008 peak volumes or trucks PCE

**Traffic and Transportation Table 4  
Existing Intersection Level of Service (LOS) Summary**

Intersection	Traffic Control	AM Peak- Hour Delay	LOS	PM Peak- Hour Delay*	LOS
Crows Landing Road/Service Road	Signal	28	C	27	C
Crows Landing Road/Hackett Road	Signal	25	C	26	C
Crows Landing Road/Whitmore Avenue	Signal	30	C	43	D
Crows Landing Road/Hatch Road	Signal	28	C	33	C
Crows Landing Road/Northbound SR 99 Ramps	Two-Way Stop Control	28 (East-bound)	D	43 (East-bound)	E
Carpenter Road/Service Road	All-Way Stop Control	9	A	9	A
Service Road/Morgan Road	All-Way Stop Control	10	A	11	B
Service Road/Blaker Road	All-Way Stop Control	10	B	16	C
Service Road/Central Avenue	Signal	25	C	25	C
Mitchell Road/Service Road	Signal	26	C	32	C
Carpenter Road/Whitmore Avenue	All-Way Stop Control	10	B	15	C
Whitmore Avenue/Morgan Road	Signal	24	C	29	C
Whitmore Avenue/Blaker Road	Signal	19	B	27	C
Whitmore Avenue/Ustick Road	Signal	11 (North-bound)	B	13 (North-bound)	B

Source: AFC Table 5.12-2, *TIDAlmond II Power Plant*, 2009

\*Delay is measured in second/vehicle for the intersection

## AIRPORTS

Stanislaus County is home to five airports, four of which are located more than 20,000 feet from the A2PP site. The airport closest to the site, Modesto City-County Airport, is located approximately 20,000 feet northeast of the site. An average of 235 aircraft operations per day occurred at the Modesto City-County Airport in 2007.

Staff has reviewed the requirements for filing with the Federal Aviation Administration (FAA) FAA Form 7460-1, Notice of Proposed Construction, and concludes that the filing of FAA Form 7460-1 is not necessary for the following reasons:

1. The three 80-foot stacks at an elevation of 81.6 feet do not exceed the FAA's 200-foot requirement
2. The slope ratio as calculated by the FAA Notice of Criteria Tool indicates the Notice Criteria has not been exceeded.

3. A2PP does not require construction of a highway, railroad, waterway, and so forth, and neither will it be in an instrument approach area that might exceed FAA requirements or be located on an airport or heliport.

A private airstrip for crop dusters is located on Redwood Road, between Washington Road and Faith Home Road. That airstrip is also located more than 20,000 feet from the project site.

## **PUBLIC TRANSPORTATION**

Public transportation in the area consists of fixed-route and share-a-ride bus service provided by Ceres Area Transit; Ceres Dial-A-Ride and Stanislaus Regional Transit and school bus service provided by the Ceres Unified School District. Information about those services follows. See also **Traffic and Transportation Figure 2**.

### **Public Transportation**

The following types of public transportation are available in the area of A2PP:

1. Ceres Area Transit (CAT) provides fixed-route bus services in Ceres and Modesto.
2. Ceres Dial-A-Ride provides shared public transportation in Ceres and nearby unincorporated areas of Stanislaus County.
3. Stanislaus Regional Transit (StaRT) provides intercity fixed route and dial-a-ride services within Stanislaus County. Ceres Dial-A-Ride provides shared public transportation in Ceres and nearby unincorporated areas of Stanislaus County.

### **School Bus Service**

According to Ceres Unified School District, at least ~~three~~<sup>two</sup> school bus stops are located on Crows Landing Road between Service Road and Grayson Road. The school bus stops occur at approximately the following times:

1. Morning: 6:30 am – ~~8:30~~<sup>45</sup> am
2. Midday: 11:00 am – 1 pm
3. Afternoon: ~~2:30~~<sup>3:00</sup> pm – ~~4:00~~<sup>4:30</sup> pm
4. Evening: 5:00 pm – ~~6:15~~ pm

Crows Landing Road will be used by the workforce going to and from the project site as well as by trucks hauling equipment and materials to be used during construction of the project.

## **RAILROADS**

The Union Pacific Railroad (UPRR) tracks are located on the eastern boundary of the project site. According to the Applicant, the railroad tracks adjacent to the project site are currently used to transport, among other things, food items to and from the industrial park located in the city of Turlock. In addition, rail deliveries also include feedstock for the Foster Farms Plant, which is also located in Turlock. (CH2MHill, Data Request 71, September 14, 2009; Docket 09-AFC-2). Passenger service is not provided. See **Traffic and Transportation Figure 2** for location of the tracks.



The tracks are not designed to transport heavy loads and will not be used to deliver equipment to the project site. In addition, passenger service is not provided.

## **BICYCLE ROUTES**

The city of Ceres has located three classes of bikeways in the city, including Class 1 bikeways or bike paths; Class II bikeways or bike lanes; and Class III bikeways or signed routes.

The following bike routes are located near the A2PP:

1. Class I bikeway located south of Service Road and Grayson Road
2. Class II and Class III bikeways located along Whitmore Avenue, Service Road, Crows Landing Road, Morgan Road, Blaker Road, and Central Avenue.

A Class III bikeway, considered a rural bike lane, is generally designated by a white line along the edge of a roadway. Energy Commission staff observed no bicycle or pedestrian activity in the area of the project site. See **Traffic and Transportation Figure 2** for locations of the bicycle routes.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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### **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE**

According to Appendix G of the California Environmental Quality Act (CEQA), Guidelines, Appendix G, a project may have a significant effect on traffic and transportation if the project would:

- Conflict with adopted policies, plans, or programs
- Cause a substantial increase in traffic when compared with the existing traffic load and capacity of the street system (for example, result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)
- Exceed, either individually or cumulatively, a level of service (LOS) standard established by the county congestion management agency for designated roads or highways
- Substantially increase hazards due to a design feature (for example, sharp curves or dangerous intersections) or incompatible uses (farm equipment, for example)
- Result in inadequate parking capacity or a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks or in inadequate emergency access

## DIRECT/INDIRECT IMPACTS AND MITIGATION

### **Construction Impacts and Mitigation**

When evaluating a project's potential impact on the local transportation system, staff uses level of service (LOS) determinations as the foundation on which to base its analysis. In this section staff (1) identifies potential traffic impacts associated with the construction of the A2PP; (2) assesses the impacts; and (3) recommends mitigation of impacts when necessary.

The Application for Certification (AFC) includes an analysis of projected traffic conditions with the addition of project construction traffic trips. Project construction is expected to take 12 months. A 6.4 1.85-acre parcel adjacent to the western northern border of the existing Almond Power Plant and the project site within the WinCo property will be used for parking as well as laydown of construction materials (A2PP, 2009a, p. 5.13-15). See **Traffic and Transportation Figure 2**. Staff has determined that the on-site parking areas are adequate for the number of construction workers involved in the project.

### **Construction Workforce Traffic**

According to the Applicant, construction will occur eight hours a day between 7:00 am and 3:30 pm. As a result, inbound worker trips will occur before the morning peak hour for existing traffic. Outbound worker trips will occur before the evening peak hour.

Traffic will consist of both delivery/haul trucks and workers, some of whom will carpool. The majority of traffic will result from workers traveling to the site. The Applicant assumes that 20% of the workforce will carpool and the average occupancy per vehicle would be two persons. Trips by inbound workers will occur before morning peak-hour traffic and outbound workers will be leaving the site before the evening peak-hour traffic.

However, to determine impacts, the Applicant chose the worst-possible scenario: Construction trips were assumed during morning and evening peak periods. Truck trips were assumed to be distributed evenly throughout the day. Truck trips were converted to passenger-car equivalent units (PCEs) at a ratio of 1.5 passenger cars for each truck. In addition, the Applicant assumed that 20% of the workforce will carpool and the average vehicle occupancy would be two persons per vehicle.

Based on the assumptions in the previous paragraphs, the Applicant estimates that the A2PP project will generate 394 daily passenger car equivalent trips, with 156 trips occurring during the morning and evening peak hours. Given experience with previous projects and the fact that the Applicant based his analysis on the worst-possible scenario, staff believes that the estimated construction traffic trips and assumptions about peak construction activity are more than reasonable.

Most of the construction traffic—at least 70%—will originate from the Stanislaus County cities of Modesto and Ceres; 20% will originate San Joaquin County; and 10% from Merced and Stanislaus counties. Traffic will use state routes, interstate highways, and local roads.

## Total Construction Traffic

Based on the worst-case scenario, the Applicant estimates that the A2PP project will generate 394 daily passenger car equivalent trips, with 156 trips occurring during the morning and evening peak hours (268 worker trips plus 126 PCE for truck and delivery trips.)

Information about existing and construction-related traffic conditions on local roadway segments, including level of service (LOS), may be found in the following four tables **Traffic and Transportation Table 5**, Existing and Construction-Related Local Traffic Conditions, Including LOS, AM Peak Hour; **Traffic and Transportation Table 6**, Existing and Construction-Related Local Traffic Conditions, Including LOS, PM Peak Hour; **Traffic and Transportation Table 7**, Existing and Construction-Related Freeway Traffic Conditions, Including LOS, by Project Trips Added; and **Traffic and Transportation Table 8**, Construction Delays at Intersections, Including LOS, by Peak Hours.

**Traffic and Transportation Table 5** and **Traffic and Transportation Table 6** follow. As indicated in **Table 5**, all local roadway segments operate at LOS C during AM peak hour traffic. However, as indicated in **Table 6**, during PM peak hour traffic, Crows Landing Road, North of Hatch Road, operates at LOS D. All other roads operate at LOS C.

**Traffic and Transportation Table 5**  
**Existing and Construction-Related Local Traffic**  
**Conditions, Including LOS, AM Peak Hour**

Roadway Segment		Location	Volume	Trips Added	Daily V/C	LOS
Local Roadway Segments	Crows Landing Road	North of Hatch Road	1,986	71	0.66	C
	Crows Landing Road	North of Whitmore Avenue	1,472	102	0.51	C
	Crows Landing Road	South of Whitmore Avenue	1,213	133	0.43	C
	Whitmore Avenue	East of Crows Landing Road	656	32	0.44	C
	Service Road	East of Central Avenue	460	16	0.31	C

Source: TID Almond 2 Power Plant AFC, May 2009; page 5.12-19.

**Traffic and Transportation Table 6**  
**Existing and Construction-Related Local Traffic**  
**Conditions, Including LOS, PM Peak Hour**

Roadway Segment		Location	Volume	Trips Added	Daily V/C	LOS
Local Roadway Segments	Crows Landing Road	North of Hatch Road	2,795	71	0.92	D
	Crows Landing Road	North of Whitmore Avenue	1,828	102	0.62	C
	Crows Landing Road	South of Whitmore Avenue	1,386	133	0.49	C
	Whitmore Avenue	East of Crows Landing Road	1,041	32	0.69	C
	Service Road	East of Central Avenue	775	16	0.51	C

Source: TID Almond 2 Power Plant AFC, May 2009; page 5.12-19.

**Traffic and Transportation Table 7** and **Traffic and Transportation Table 8** follow. Table 7, Existing and Construction-Related Freeway Traffic Conditions, Including LOS, by Project Trips Added, includes information about existing and construction-related traffic conditions on state highway segments, including level of service (LOS), according to project trips added.

**Traffic and Transportation Table 7  
Existing and Construction-Related Freeway Traffic  
Conditions, Including LOS, by Project Trips Added**

Roadway Segment		Location	Average Daily Traffic	Project Trips Added Daily	Percent of ADT	Daily V/C	LOS
Freeway Traffic	State Route 99	North of Crows Landing Road	118,000	178	<1	0.96	E
	State Route 99	South of Mitchell Avenue	108,000	40	<1	0.76	C
	State Route 120	West of SR 99	70,000	20	<1	0.63	B
	State Route 132	East of El Vista Avenue	24,000	20	<1	0.69	B
	State Route 132	West of El Vista Avenue	16,600	20	<1	0.74	C
	State Route 132	West of Carpenter Road	14,400	20	<1	0.75	C
	I-205	West of I-5	101,000	20	<1	0.86	D
	I-5	North of I-205	160,000	20	<1	0.59	A
	I-580	North of SR 132	37,00	20	<1	0.46	A

Source: TID Almond 2 Power Plant AFC, May 2009; page 5.12-19.

**Traffic and Transportation Table 8**, Construction Delays at Intersections, Including LOS, by Peak Hours, includes information about delays at various intersections in the project area according to morning and evening peak hour traffic. As indicated in Table 8, twelve study intersections are forecast to operate at LOS C or better during construction conditions. One intersection is forecast to operate at LOS D; one at LOS E, and one at LOS A.

**Traffic and Transportation Table 8  
Construction Delays at Intersections, Including LOS, by Peak Hour**

Intersection	AM Peak Hour Delay (Seconds)	LOS	PM Peak Hour Delay (Seconds)	LOS
Crows Landing Road/Service Road	27	C	26	C
Crows Landing Road/Hackett Road	23	C	27	C
Crows Landing Road/Whitmore Road	29	C	45	D
Crows Landing Road/Hatch Road	28	C	34	C
Crows Landing Road/Northbound SR 99 Ramps	28 (EB)	D	46 (EB)	E
Carpenter Road/Service Road	9	A	9	A
Service Road/Morgan Road	10	A	11	B
Service Road/Blaker Road	10	B	16	C
Service Road/Central Avenue	25	C	25	C
Mitchell Road/Service Road	28	C	33	C
Carpenter Road/Whitmore Avenue	10	B	16	B
Whitmore Avenue/Morgan Road	24	C	29	C
Whitmore Avenue/Blaker Road	19	B	28	C
Whitmore Avenue/Ustick Road	11 (NB)	B	13 (NB)	B

Source: TID Almond 2 Power Plant AFC, May 2009; page 5.12-18.

Staff has recommended a traffic and transportation control plan that will be prepared in coordination with the city of Ceres, Stanislaus County, and Caltrans (see Condition of Certification **TRANS-2**). This transportation plan will require methods to reduce the project's impact at locations projected to have a negative change in LOS due to construction traffic.

Staff is also proposing Condition of Certification **TRANS-3** to repair any damage to Mitchell Road, East Hatch Road, and Crows Landing Road from construction traffic, particularly from heavy trucks.

### **Linear Facilities**

In the AFC submitted by the Applicant in May 2009, two natural gas pipeline alignments were proposed by PG&E and included in the AFC. In November 2009, PG&E settled on a preferred alignment. This preferred alignment is analyzed in this section.

According to PG&E, natural gas would be provided through an 11.6-mile natural gas pipeline that begins at a new PG&E metering set to be located along the south fence line of the existing A1PP. See **Traffic and Transportation Figure 2**, Local Transportation Network.

After exiting the A2PP site, it would continue east for approximately 0.6 mile paralleling Turlock Irrigation District; turn south and continue along Morgan Road for approximately three miles; turn west on East Zeering Road for approximately one-half mile; turn south on Bystrum Road and continue on unpaved farm access roads for approximately 4.5 miles; then turn west on W. Harding Road for approximately 1.5 miles.

The pipeline then would turn south on an unnamed farm road for 0.3 mile, then west through a farm field for 0.5 mile, and finally south on an unnamed farm road for approximately 0.7 mile, before joining with PG&E's line at W. Bradbury Road. A 1.8 mile gas pipeline reinforcement will also be constructed on the west side of the San Joaquin River.

According to the Applicant, construction of the natural gas pipeline would employ 20 workers, who would meet at the corporate yards of both the Turlock Irrigation District and PG&E; travel together in trucks; and park adjacent to the corridors.

In addition, two 115-kV transmission line corridors and the re-rating/reconductoring of a 69-kV subtransmission line will be constructed. The two 115-kV line corridors will be constructed to connect with the proposed Grayson Substation located about 3,300 feet southwest of A2PP, east of the intersection of Grayson Road and Crows Landing Road.

The construction of the natural gas pipeline and transmission lines may impact the local area traffic. It is more than likely that the gas pipeline would be open cut trenched and will be within the county right-of-way. The need for flagmen and proper signage would be needed both for the installation of the gas pipeline and transmission lines. Consequently, to reduce impacts on area traffic as well as to facilitate safety during construction, staff has recommended Condition of Certification **TRANS-2** to ensure traffic control measures are in place.

## **Construction Phase Transport of Hazardous Materials and Waste**

Deliveries to the A2PP project site would include small quantities of hazardous materials to be used during the project's construction. Hazardous materials will be transported over prearranged routes, State Route 99 and Interstate 5. Deliveries will be made to the plant via Crows Landing Road and the Almond Power Plant access road.

The Applicant has indicated that the delivery and disposal of hazardous materials to and from the site as well as handling of the materials on site would be done according to all applicable state and federal standards. See Hazardous Materials Management in this staff assessment for additional information.

## **OPERATION IMPACTS AND MITIGATION**

### **Hazards and Public Safety**

#### **Employee and Truck Traffic**

The site on which the A2PP power plant is to be located on the existing site of the A1PP, which employs twelve workers. The operation of A2PP will result in four additional workers traveling to the site.

Those four workers will generate eight additional trips to and from the project site. Staff assumes those four workers will use the same routes as workers at the A1PP. Other project-related trips—delivery trucks, visitors, and other business-related trips—are expected to be minimal and occur during business hours.

Consequently, staff determined that these minor traffic additions to local streets and highways would not significantly affect the LORS of these roads.

#### **School Bus Routes**

As discussed earlier in the analysis, Crows Landing Road will be used by the workforce going to and from the project site as well as by trucks hauling equipment and materials to be used during construction of the project. Several school bus stops exist on Crows Landing Road, including one directly across the street from the construction site. As part of the response to a Data Request by staff, the project owner has contacted the Ceres Unified School District to obtain information necessary to determine an adequate traffic control plan for avoiding impacts on school bus service in the area (*Data Response Set 1A*; September 14, 2009).

Staff proposes Condition of Certification **TRANS-1** which would require the Applicant to coordinate with the Ceres United School District and prepare a traffic control plan designed to ensure school bus routes are not negatively affected by construction traffic. (E-mail from Nancy Krigbaum, Office of Director of Transportation, Ceres Unified School District, to Marie McLean, July 7, 2009, Subject: School Bus Traffic Routes). See **Traffic and Transportation Figure 3** for location of school bus stops.

## Transport of Hazardous Materials and Waste

The transportation and handling of hazardous materials associated with the proposed A2PP project could result in roadway hazards. However, the potential impacts can be mitigated to less than a significant level by complying with existing federal and state standards for transporting hazardous substances. For example, California has developed general requirements for transporting hazardous materials. In general, those requirements may be found in the California Vehicle Code beginning with Section 31301 and continuing through Section 32053. In addition, the federal government has included in the Code of Regulations, Title 49, regulations for transporting hazardous materials as has the California Highway Patrol.

For example, the California Department of Motor Vehicles exclusively licenses all drivers who transport hazardous materials. Drivers are also required to check for weight limits and conduct period brake inspections. Commercial truck operators who handle hazardous materials are also required to take instruction in first aid and procedures for handling hazardous waste spills.

Drivers who transport hazardous waste must carry a manifest that is reviewed by the California Highway Patrol at inspection stations along major highways, including interstate highways. In addition, the manifest must be available for review in the event of a spill.

In the AFC, the Applicant indicated that the transportation of hazardous materials will be carried out according to local, state, and federal regulations (AFC, A2PP, May 2009, p. 5.12-20.) The Applicant also indicated that two to three deliveries of hazardous materials are expected per week during the operation of A2PP. These materials include anhydrous ammonia, cleaning chemicals, lubricating oil and filters, and water-treatment chemicals.

Those materials will be transported as hazardous materials or hazardous waste. And their transport will be arranged with Caltrans and conducted according to relevant transportation regulations. See the **Waste Management, Worker Safety and Fire Protection**, and **Hazard Materials** sections of this assessment for additional information.

## Airport Operations

As indicated in this staff analysis, the closest airport to the project site is the Modesto City-County Airport, which is located approximately 20,000 feet northeast of the site. Approximately 200 general aviation aircraft are based at this airport. SkyWest Airlines operates regularly scheduled flights between Modesto and San Francisco International Airport. An average of 235 aircraft operations per day occurred at the Modesto City-County Airport in 2007.

The airport's two runways—10/28R, oriented in a general northwest-southeast direction and is designed for aircraft to land in either direction, and 10/28, designed for aircraft to land at 100 degrees and 280 degrees—are approximately 97 feet above mean sea level (amsl). A2PP is located approximately 20,000 feet southwest of runway 10/28 at 80 feet above mean sea level.



As indicated, A2PP is located approximately 20,000 feet from the airport. In addition, the plant will not be located within any airport flight patterns, approach, or transitional surface zones. Neither is it located in congested airspace.

Federal Aviation Regulation Part 77 establishes requirements for determining the effect of proposed structures on air navigation. In general, the FAA must be notified if the height or outward or upward slope of the proposed structure exceeds certain restrictions or the structure proposed is more than 200 feet above ground level at the site, among other criteria.

Applicant has performed calculations as required by the FAA to determine requirements for exemption from FAA notification through FAA Form 7460-1. Staff has reviewed the requirements for filing with the Federal Aviation Administration (FAA) FAA Form 7460-1, Notice of Proposed Construction, and concludes with the Applicant that the filing of FAA Form 7460-1 is not necessary for the following reasons:

1. The three 80-foot stacks at an elevation of 81.6 feet do not exceed the FAA's 200-foot requirement.
2. The slope ratio as calculated by the FAA Notice of Criteria Tool indicates the Notice Criteria has not been exceeded.
3. A2PP does not require construction of a highway, railroad, waterway, and so forth, and neither will it be in an instrument approach area that might exceed FAA requirements or be located on an airport or heliport.

### **Ground-Level Water Vapor Plumes**

Water vapor plumes generally result from plants with a heat recovery steam generator (HRSG) or cooling tower. A2PP is designed to be a simple-cycle plant with a selective catalytic reactor (CTG). The CTG is designed to produce hot exhaust that will not condense as a plume. Consequently, ground-level water vapor plumes that could affect roadway traffic will not occur during the operation of A2PP.

### **Emergency Services Vehicle Access**

The Ceres Fire Department, Station Number 3, located at 420 East Service Road, in Ceres, would provide 24-hour fire protection and emergency medical services to the site. The station is approximately 0.3 mile from the project site. Access to the site would be through Crows Landing Road. Response time would be approximately two to three minutes in daylight hours and three to four minutes in nighttime hours. For a more detailed discussion of emergency services concerning adequate ingress/egress serving the facility, see the **Worker Safety and Fire Protection** section of this assessment.

## **CUMULATIVE IMPACTS**

A cumulative impact results from changes in the environment caused by the proposed project in combination with changes resulting from other closely related past, present, and reasonable foreseeable future projects. Information about cumulative impacts is organized into two sections, Past, Present, and Future Projects and Environmental Justice.

## Past, Present, and Future Projects

A number of projects are proposed for development within two miles of the A2PP site. Those projects could contribute to cumulative effects. These projects include industrial and residential projects. Those projects are in the planning stages at this time and a timeframe for development is not known at this time.

However, one project, the Whitmore Overpass and Utility Relocations, located approximately two miles from the project site, is currently in progress and is expected to be completed in 2011. The existing two-lane overpass will be replaced with a four-lane structure and the road will be widened to four lanes from Mitchell to Blaker. The Whitmore overpass will remain open as a two-lane road throughout construction. (Personal conversation with Marie McLean and Leisser Mazariegos, Assistant Engineer, City of Ceres, November 12, 2009). However, A2PP traffic and the Whitmore Overpass and Utility Relocations project will not result in a cumulative impact because the Whitmore overpass as well as connecting roads will remain open during construction.

## Environmental Justice

Staff has considered the minority populations (as identified in **Socioeconomics Figure 1**) and low income populations in its impact analysis. No significant direct or cumulative traffic and transportation impacts would occur. Therefore, the project will not result in any traffic and transportation-related environmental justice issues.

## **COMPLIANCE WITH LORS**

The Applicant has stated its intention to comply with all applicable LORS (A2PP AFC, May 2009, Section 5.12.84) Staff has concluded that the project as proposed would comply with relevant LORS. **Traffic and Transportation Table 9** includes a summary of the project's conformance with all applicable LORS.

**TRAFFIC AND TRANSPORTATION Table 9**  
**Project Compliance with Adopted Traffic and Transportation LORS**

Applicable LORS	Description
<b>Federal</b> Title 14, Code of Federal Regulations (CFR) Chapter 1, Part 77	Includes standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the Federal Aviation Administration of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.  <u>Consistent:</u> The nearest airport facility is the Modesto City-County Airport, located approximately 20,000 feet northeast of the site. The existing flight pattern does not bring aircraft at low altitude over the project site and none of the project's structures would penetrate any navigable airspace.
Title 49, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.  <u>Consistent:</u> Enforcement is conducted by state and local law enforcement agencies and through state agency licensing and ministerial permitting (e.g., California Department of Motor Vehicles licensing, Caltrans permits), and/or local agency permitting (e.g., Stanislaus County Department of Public Works).

<b>State</b> California Vehicle Code, Division 2, Chapter 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14.1, Chap. 1 & 2; Div. 14.8; Div. 15	Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.
	<u>Consistent:</u> Enforcement is provided by state and local law enforcement agencies and through ministerial state agency licensing and permitting and/or local agency permitting.
California Streets and Highway Code, Division 1 & 2, Chapter 3 & Chapter 5.5	Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits.
	<u>Consistent:</u> Enforcement is provided by state and local law enforcement and through ministerial state agency licensing and permitting and/or local agency permitting.
California Department of Transportation (Caltrans) LOS Policy	<u>Consistent:</u> With the implementation of proposed condition of certification <b>TRANS-2</b> , LOS D will be maintained for highways and intersections located within Caltrans jurisdiction.
<b>Local</b> City of Ceres Circulation Element	Requires LOS D or better operating conditions for primary collectors, arterials, expressways, freeways, and intersections. LOS C is required for secondary collectors and local streets.
	<u>Consistent:</u> As reflected in Traffic and Transportation Table 2, existing conditions for roadway segments level of service (LOS) operates at or above acceptable levels.
County of Stanislaus Circulation Element	Requires LOS C or better operating conditions for city intersections and roadways.
	<u>Consistent:</u> As reflected in Traffic and Transportation Table 8, the LOS along certain identified roadway intersections along the construction designated roadways would remain above the LOS D threshold requirement, The Applicant will be required to construction traffic control plan to include methods of reducing construction project impacts on local roadways that exceed LOS on various roadways that are proposed roadways designated for construction routes. Therefore will be in compliance with the county's congestion management plan.

## CONCLUSIONS

1. As discussed in this analysis, the project with staff's proposed conditions of certifications would comply with all applicable LORS related to traffic and transportation.
2. Modesto City-County Airport is located approximately 20,000 feet northeast of the site. A2PP will consist of three 80-foot stacks at an elevation of 81.6 feet. The height of these three stacks combined with the elevation at which they are located do not exceed the FAA's 200-foot requirement. Consequently, the project would not impact aviation safety.
3. Staff is proposing Condition of Certification **TRANS-1** to require the Applicant to coordinate with the Ceres Unified School District to ensure construction traffic does not interfere with school bus routes.
4. Staff is proposing Condition of Certification **TRANS-2** to require a construction traffic control plan to ensure that all construction traffic does not significantly affect traffic on any local roads, intersections, or access to adjoining and neighboring sites.

5. Staff is proposing Condition of Certification **TRANS-3** which would require a mitigation plan to repair portions of Mitchell Road, East Hatch Road, and Crows Landing Road if they are damaged by project-related traffic.
6. With staff's proposed conditions of certification, no significant direct or cumulative traffic and transportation impacts would occur.

## PROPOSED CONDITIONS OF CERTIFICATION

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### School Bus Stops

**TRANS-1** The Applicant shall in with coordination with the Ceres Unified School District shall prepare and implement a traffic control plan designed to ensure school bus routes are not negatively affected by construction traffic. Mitigation measures may include travel times for workers as well as equipment and materials outside of school bus travel times, as well as a program to train construction workers about bus stop and student safety.

**Verification:** At least 60 days before the start of site mobilization, the project owner shall submit the traffic control plan to the Ceres Unified School District ~~city of Ceres and the San Joaquin County Public Works Division~~ for review and comment and to the CPM for review and approval. This Traffic Control Plan may be included in the Traffic Control Plan required pursuant to TRANS-2.

### Traffic Control Plan

**TRANS-2** The project owner shall prepare a construction traffic control and implementation plan for the project and its associated facilities. The project owner shall consult with the ~~affected local jurisdiction(s),~~ City of Ceres, Lodi, Caltrans, the California Highway Patrol and San Joaquin Stanislaus County Public Works Department (for the gas pipeline), in the preparation of the traffic control and implementation plan.

The traffic control and implementation plan shall include and describe the following minimum requirements:

- Timing of heavy equipment and building materials deliveries and related hauling routes
- Redirecting construction traffic with a flag person;
- Signing, lighting, and traffic control device placement;
- Timing of construction work hours and arrival/departure intervals outside of peak traffic periods
- Ensuring safe access to the main entrance
- Ensuring access for emergency vehicles to the project site
- Closing of travel lanes on a temporary basis
- Ensuring access to adjacent commercial and industrial properties during the construction of all linears

- Closing of travel lanes on a temporary basis
- Devising a construction workforce ride-sharing plan
- Providing a shuttle service from the most distant off-street parking areas

The project owner shall submit the proposed traffic control and implementation plan to the affected local jurisdiction City of Ceres, ~~San Joaquin~~ Stanislaus County and Caltrans for review and comment. The project owner shall provide to the CPM a copy of the transmittal letter submitted to the City of Ceres ~~affected local jurisdiction~~, and Caltrans requesting their review of the traffic control and implementation plan. The project owner shall provide any comment letters to the CPM for review and approval.

**Verification:** At least 60 days prior to start of site mobilization, the project owner shall provide to the city of Ceres; ~~San Joaquin County~~; Caltrans; and the California Highway Patrol for review and comment and to the CPM for review and approval, a copy of the construction traffic control plan. The plan must document consultation with these agencies. If no comments are received from the City of Ceres, Stanislaus County, Caltrans, or the California Highway Patrol within 30 days of submittal, the project owner may proceed with preparation of the final plan.

### Road Mitigation Plan

**TRANS-3** Prior to site mobilization activities, the project owner shall prepare a mitigation plan for ~~State Route 99; State Route 132;~~ Crows Landing Road; Service Road; Whitmore Avenue; Hatch Road; and Mitchell Road . The intent of this plan is to ensure that if these roadways are damaged by project construction, they will be repaired and reconstructed to original or as near original condition as possible. This plan shall include:

- Documentation of the pre-construction condition ~~State Route 99; State Route 132;~~ Crows Landing Road; Service Road; Whitmore Avenue; Hatch Road, and Mitchell Road. Prior to the start of site mobilization, the project owner shall provide to the CPM photographs or videotape of these roadways.
- Documentation of any portions of ~~State Route 99; State Route 132;~~ Crows Landing Road; Service Road; Whitmore Avenue; Hatch Road; and Mitchell Road that may be inadequate to accommodate oversize or large construction vehicles and identification of necessary remediation measures; and
- Reconstruction of portions of ~~State Route 99; State Route 132;~~ Crows Landing Road; Service Road; Whitmore Avenue; Hatch Road; and Mitchell Road that are damaged by project construction due to oversize or overweight construction vehicles.

**Verification:** At least 90 days prior to the start of site mobilization, the project owner shall submit a mitigation plan focused on restoring ~~State Route 99; State Route 132;~~ Crows Landing Road; Service Road; Whitmore Avenue; Hatch Road; and Mitchell Road to its pre-project condition to Caltrans; County of Stanislaus ~~San Joaquin~~ Public Works

Department; and the city of Ceres Public Works Department for review and comment and to the CPM for review and approval.

If a roadway(s) has been damaged as a result of project construction, wWithin 90 days following the completion of construction, the project owner shall provide photo/videotape documentation to the city of Ceres Public Works Planning Department, Caltrans, County of Stanislaus San Joaquin Public Works Department and the CPM that the identified damaged sections of roadways have been restored to their pre-project condition.

## REFERENCES

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*Application for Certification, TID Almond 2 Power Plant, Turlock Irrigation District, May 2009.*

California Department of Transportation, Traffic and Vehicle Data Systems Unit, 2007 All-Traffic Volumes on CSHS;  
<http://www.dot.ca.gov/hq/trafficops/saferesr/trafdata/2007all.htm>.

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E-mail from Nancy Krigbaum, Ceres Unified School District, to Marie McLean, July 7, 2009, regarding school bus traffic routes.

Transportation Research Board. 2000. *Highway Capacity Manual 2000*.

## APPENDIX A

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### HIGHWAY CAPACITY MANUAL

The *Highway Capacity Manual* is prepared by the Transportation Research Board, Committee on Highway Capacity and Quality of Service. It represents a concentrated, multi-agency effort by the Transportation Research Board, the Federal Highway Administration, the American Association of Highway and Transportation Officials, and other traffic/transportation related agencies. It is the most widely used resource for traffic analysis. Several versions of the *Highway Capacity Manual (HCM)* have been published. The current edition was published in 2000. It contains concepts, guidelines, and procedures for computing the capacity and quality of service of various highway facilities, including freeways, signalized and unsignalized intersections, and rural highways, and the effects of transit, pedestrians, and bicycles on the performance of these systems.

#### Level of Service

The description and procedures for calculating capacity and level of service are found in the *Highway Capacity Manual 2000*. The *Highway Capacity Manual 2000* represents the latest research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with level of service A representing the best operating conditions and level of service F, the worst. Each level of service represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish service levels. A general description of service levels for various types of facilities is shown in **Table A**.

**Table A  
Level of Service Description**

Facility Type	Uninterrupted Flow	Interrupted Flow
	Freeways Multi-Lane Highways Two-Lane Highways Urban Streets	Signalized Intersections  Unsignalized Intersections - Two-Way Stop Control - All-Way Stop Control
Level of Service		
A	Free-flow.	Very low delay
B	Stable flow. Presence of other users noticeable.	Low delay
C	Stable flow. Comfort and convenience starts to decline.	Acceptable delay
D	High density stable flow.	Tolerable delay
E	Unstable flow.	Limit of acceptable delay
F	Forced or breakdown flow.	Unacceptable delay

Source: *Highway Capacity Manual 2000*

### Interrupted Flow

One of the more important elements limiting, and often interrupting, the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals and stop and yield signs. These all operate quite differently and have differing impacts on overall flow.

### Signalized Intersections

The capacity of a highway is related primarily to the geometric characteristics of the facility, as well as to the composition of the traffic stream on the facility. Geometrics are a fixed, or non-varying, characteristic of a facility.

At the signalized intersection, an additional element is introduced into the concept of capacity: time allocation. A traffic signal essentially allocates time among conflicting traffic movements seeking use of the same physical space. The way in which time is allocated has a significant impact on the operation of the intersection and on the capacity of the intersection and its approaches.

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, driver frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions (that is, in the absence of traffic control, geometric delay, any incidents, and any other vehicles). Specifically, level of service criteria for traffic signals is stated in terms of average control delay per vehicle, typically for a 15-minute analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the ratio of green time to cycle length, and the volume to capacity ratio for the lane group.



For each intersection analyzed, the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. A level of service designation is given to the control delay to better describe the level of operation. Descriptions of levels of service for signalized intersections can be found in **Table B**.

**Table B**  
**Description of Level of Service for Signalized Intersections**

Level of Service	Description
A	Very low control delay, up to 10 seconds per vehicle. Movement forward (progression) is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop, causing higher levels of delay.
C	Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve a waiting line of vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Control delay greater than 55 and up to 80 seconds per vehicle, the limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent.
F	Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation and arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.

Source: *Highway Capacity Manual 2000*

The use of control delay, often referred to as signal delay, was introduced in the 1997 update to the *Highway Capacity Manual*. It represents a departure from previous updates. In the third edition of the *Highway Capacity Manual*, published in 1985 and the 1994 update to the third edition, delay only included stop delay. Thus, the level of service criteria listed in Table B differs from earlier criteria.

### Unsignalized Intersections

The current procedures on unsignalized intersections were first introduced in the 1997 update to the *Highway Capacity Manual* and represent a revision of the methodology published in the 1994 update to the 1985 Highway Capacity Manual. The revised procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, driver frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions (that is, in the absence of traffic control, geometric delay,

any incidents, and any other vehicles). Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

### Two-Way Stop Controlled Intersections

Two-way stop controlled intersections, in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At two-way stop-controlled intersections, the stop-controlled approaches are referred to as the *minor street approaches* and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the *major street approaches*.

The capacity of movements subject to delay is determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A level of service designation is given to the expected control delay for each minor movement. Level of service is not defined for the intersection as a whole. Control delay is the increased time of travel for a vehicle approaching and passing through an all-way stop-controlled intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection. A description of levels of service for two-way stop-controlled intersections is found in **Table C**.

**Table C**  
**Description of Level of Service for Two-Way Stop Controlled Intersections**

Level of Service	Description
A	Very low control delay: less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay: greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay: greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay: greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of acceptable control delay: greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay: in excess of 50 seconds per vehicle for each movement subject to delay.

Source: *Highway Capacity Manual 2000*

## REFERENCE

Transportation Research Board. *Highway Capacity Manual 2000*. Washington, D.C.

# VISUAL RESOURCES

Testimony of Marie McLean

## SUMMARY OF CONCLUSIONS

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Staff found that with recommended conditions of certification, the construction and operation of the Almond 2 Power Plant (A2PP), a natural-gas fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts (MW) to be constructed in Ceres, California, and operated by the Turlock Irrigation District (TID), would not result in a significant adverse aesthetic impact according to the California Environmental Quality Act (CEQA) Guidelines.

In addition, as proposed, the A2PP would comply with applicable city and county laws, ordinances, regulations, and standards (LORS) as they pertain to aesthetics and protection of sensitive visual resources

## INTRODUCTION

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Visual resources consist of the viewable natural and man-made features of the environment. In this section staff evaluates the impacts on visual resources resulting from the construction and operation of the A2PP. Staff bases its evaluation on information contained in the California Environmental Quality Act (CEQA) Guidelines, Aesthetics, to determine if the project would:

1. Introduce a significant impact under CEQA.
2. Comply with applicable federal, state, and local LORS pertaining to aesthetics and preservation and protection of sensitive visual resources.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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**VISUAL RESOURCES Table 1** includes a listing of applicable federal, state, and local LORS pertaining to this project. Refer to the **VISUAL RESOURCES Table 2** within this analysis for staff's determination of LOR compliance.

**VISUAL RESOURCES Table 2**  
**Laws, Ordinances, Regulations, and Standards (LORS)**

Source	Descriptions
<b>Federal</b>	
Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (PL 109-59;2005). Expires 2009	A2PP is not located within or in the vicinity of federally-managed lands or in the vicinity of a recognized National Scenic Byway or All-American Road.
<b>State</b>	
<i>California Streets and Highways Code</i> , Section 260 through 263 – Scenic Highways	Ensures the protection of highway corridors that reflect the state's natural scenic beauty. The state of California has not formally designated as scenic any of the roads or highways within or adjacent to the project area.

Local	
<p>City of Ceres 2015 General Plan</p> <p>Section: Major Corridors Policy 1.J.6</p> <p>Section: Industrial Development Policy 1.G.4</p> <p>Policy 1.G.5</p>	<p>A long term vision of Ceres which outlines policies, standards, and programs to guide day to day decisions concerning development through 2015.</p> <p>To enhance the visual quality of its major corridors by requiring new and expanding development to conceal unsightly uses and equipment, (i.e., screening of rooftop equipment and outdoor storage and undergrounding of utilities).</p> <p>City shall seek to minimize the adverse visual impacts of industrial development from State Route 99, primarily through landscaping and fences.</p> <p>City shall encourage industrial developments that include the following features:</p> <ul style="list-style-type: none"> <li>-Attractive building frontages that are readily visible for the public street (brick, wood façade).</li> <li>-Variation in the roofline (multi-planed, pitched roofs)</li> <li>-Articulation in the walls (insets, projections, canopies, wing walls, trellis)</li> <li>-Large parking areas with tree coverage separated into a series of smaller parking areas with the use of landscaping and the location of buildings.</li> <li>-Outdoor service areas, loading bays and outdoor storage areas that are not readily visible to the public.</li> <li>-Attractive landscaping to enhance the business by softening buildings and parking areas</li> </ul>
<p>City of Ceres Municipal Code</p> <p>Land Use and Development Standards: J2: Landscaping</p> <p>G: Building Height Requirements</p>	<p>Provides conceptual framework for the installation of public facilities, provision of public services, and future development.</p> <p>All uses shall provide landscaping that shall be maintained.</p> <p>Height of all main and accessory buildings erected in M-2 zone shall be as approved by Planning Commission.</p>
<p>Stanislaus County 2020 General Plan, Land Use</p> <p>Conservation/Open Space Element: Goal 1</p>	<p>To ensure the continued success of the area's leading agricultural industry.</p> <p>Encourage the protection and preservation of natural and scenic areas throughout the county.</p>

## SETTING

The Almond 2 Power Plant (A2PP) is located on Crows Landing Road, approximately three miles south of State Route (SR) 99, in Ceres, California, County of Stanislaus, on a 4.6-acre parcel (approximate), next to the existing 48-MW Almond Power Plant (APP). Both the A2PP and the existing APP are owned and operated by the Turlock Irrigation District (TID). The TID is the first publicly-owned irrigation district in California and one of only four districts that retails electric energy to its customers.

Access to the site from the north is from SR 99 through Crows Landing Road. From the south, access is via Keyes Road, which intersects with Crows Landing Road approximately two miles west of SR 99. See **Visual Resources Figure 1**.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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This section includes information about the following:

1. Method and threshold for determining significance;
2. Direct/indirect/induced impacts and mitigation;
3. Cumulative impacts and mitigation.

### **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE**

To determine a project's potentially significant impacts on visual resources, Energy Commission staff reviews the project according to "Guidelines for the Implementation of the *California Environmental Quality Act*: Appendix G, "Environmental Checklist Form, Aesthetics."

*Aesthetics* is concerned with the quality of the visual experience. In that context, *quality* can be said to depend on the viewers' sensibilities as well as their number, location, activities, and values. Specifically, staff assesses the visual impacts resulting from the construction and operation of power plants by evaluating the project's visual or aesthetic effects on its surroundings. That assessment process involves (1) establishing the project's visual environment, primarily through Key Observation Points (KOPs); (2) assessing the visual resources of those KOPs; and (3) analyzing viewers' responses to those KOPs.<sup>1</sup>

As required by the guidelines, staff determines a project's impact on visual resources by evaluating whether the project would substantially:

1. Adversely affect a scenic vista.
2. Damage scenic resources, including, but not limited to, trees, rock outcroppings; historic buildings within a state scenic highway; or part of a river, stream, or estuary.
3. Degrade the existing visual character or quality of the site and its surroundings.
4. Create a new source of light or glare that would adversely affect day or night views in the area.

The following two locations were selected as KOPs:

- KOP1, Transmission Communications Lines Corridor, Looking South from Crows Landing Road
- KOP 2, View from Golf Course, Looking Southwest to Almond 2 Power Plant

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<sup>1</sup> Key Observation Points (KOPs) are commonly used in visual analysis. In addition to the Energy Commission, other federal, state, and local agencies use KOPs when analyzing the effects of projects on visual resources. These agencies include the U.S. Department of Interior's Bureau of Land Management; the U.S. Forest Service; and the U.S. Department of Transportation; California Department of Parks and Recreation; and many California city and county planning departments.

In preparing its assessment, staff reviewed federal, state, and local laws, ordinances, regulations, and standards. Staff also evaluated the proposed project’s visual impact on the existing environmental setting based on key observation points (KOPs). KOPs were selected to represent the most critical locations from which the project would be seen.

## DIRECT/INDIRECT IMPACTS AND MITIGATION

Information about direct and indirect impacts and proposed mitigation is included in this section and grouped according to the questions found in the following CEQA Environmental Checklist Form.

**VISUAL RESOURCES Table 2  
CEQA Environmental Checklist Form—Aesthetics**

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
AESTHETICS —Would the project:				
A. Have a substantial adverse effect on a scenic vista?				X
B. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, historic buildings within a state scenic highway, or part of a river, stream, or estuary ?				X
C. Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
D. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?			X	

### **A. Scenic Vista**

“Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?”

For the purposes of this analysis, a *scenic vista* is defined as a distant view of high pictorial quality perceived through and along a corridor or opening. No scenic vistas exist in the KOP 1 and KOP 2 view sheds.

### **B. Scenic Resources**

“Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, historic buildings within a state scenic highway, or part of a river, stream, or estuary?”

For the purpose of this analysis, *scenic resources* include a unique water feature such as a waterfall; transitional water such as river mouth ecosystems, lagoons, coastal lakes, and brackish wetlands; or part of a stream, river, or estuary.

Staff has not identified and the city of Ceres 2015 General Plan does not identify any scenic resources in the project or the areas associated with its lineal facilities.

### **C. Visual Character or Quality**

“Would the project substantially degrade the existing visual character or quality of the site and its surroundings?”

The visual aspects evaluated according to this criterion are organized into two categories, construction impacts and operational impacts.

#### **Construction Impacts**

The project aspects evaluated according to this criterion were project construction, power plant and transmission structures, pipelines and visible water vapor plumes.

Visually, the primary features to be introduced to the site and affected areas by the A2PP include:

1. Three 80-foot tall combustion turbine generator stacks
2. ~~Three~~ One 47-foot tall VBV (variable bypass value) air outlets
3. ~~Three~~ One 34-foot tall CTG (combustion turbine generator) inlet air housings
4. ~~Three~~ One 31-foot tall SCR<sub>s</sub> (selective catalytic reduction)
5. ~~Three~~ One 15-foot tall combustion turbines
6. New building expansion continuing a structure height of 18-foot tall
7. A 71-foot tall transmission lines and switchyard facilities

#### **Project Site**

The A2PP facility is proposed to be on 4.6-acres site in the city of Ceres. Surrounding land uses include the Almond Power Plant facility to the south, a WinCo Foods distribution warehouse to the west, a farm supply facility to the north, and modular building and drilling equipment storage laydown area to the east.

The project site is composed of three parcels of land: the first parcel, a vacant disturbed parcel of land approximately 3.2-acres previously used by WinCo as a construction borrow pit which now filled and graded to the current site elevation; the second, a portion of the 1.4-acre existing APP currently in use as a facility proposed to be used as a shared storm water retention pond for the APP and A2PP facility, which will be filled to accommodate portions of the A2PP; and the third, portions of the existing WinCo distribution center site to be used for transmission lines and the proposed A2PP switchyard.

Construction of the power plant is expected to begin in the third quarter of 2010 and would last approximately 12 months. Construction will be scheduled to occur between 7 a.m. and 3:30 p.m. on weekdays with weekends and later hours, as needed.

### ***Construction Laydown and Parking Area***

The construction laydown and parking area—located on approximately ~~6.4~~ 4.85 acres of adjacent WinCo property—would be situated directly ~~west north~~ of the existing APP and the proposed A2PP facility. During the construction phase of the project, construction materials and equipment, trucks, and parked vehicles will be visible in the laydown area. See **Visual Resources Figure 1**.

During the construction period (including the laydown area), views of tall cranes and other heavy equipment, building materials, piles of debris, and parked cars are expected. Those views would be obstructed by existing industrial structures, sound walls bordering the nearby residential development, surrounding agriculture fields and the existing APP facilities.

### ***Linears***

The electrical transmission routes for the project would include two 115-kV transmission line corridors proposed to leave the A2PP switchyard and connecting to the proposed Grayson Substation located approximately 3300 feet southwest of the A2PP project site on East Grayson Road.

The natural gas pipeline, approximately 11.6 miles long ~~and consisting of six segments~~ would begin at PG&E Line 215 located in Bradbury Road and end at a new PG&E metering set for the A2PP located along the south fence line of the existing Almond Power Plant and end on the northwest side of the A2PP. ~~In all alignments, the gas line would go from the meter set to the gas compressors at~~ See **Visual Resources Figure 1**.

### ***Conclusion***

Overall, staff concludes that the construction activities would create a temporary visual disturbance but no long-term impacts would occur as a result of the transmission line and gas pipeline construction.

### ***Operational Impacts***

Staff evaluated all five KOPs submitted by the Applicant and chose and evaluated two of the five KOPs submitted as the two most representatives of public views of the project. Staff's decision was based on its visit to the A2PP site and surrounding area. See **Visual Resources Figure 1** for the locations of those KOPs.

As a result of that visit, staff concluded that A2PP would be visible to only a few motorists on nearby roadways and obstructed from view by adjacent structures, sound walls bordering the nearby residential development and agricultural orchards and fields within the project area.

### ***KOP 1 – Transmission Communications Line Corridor, Looking South from Crows Landing Road***

This KOP represents the primarily utilitarian view motorists traveling south on Crows Landing Road would see from directly west of the project site—primarily industrial buildings and transmission poles and lines.



The most prominent building—the WinCo warehouse distribution facility—is to the left, enclosed by a chain link fence.

However, the area is dominated by transmission lines. Wooden poles and transmission lines flank the right side of Crows Landing Road; and a 230 kV transmission line supported by steel poles crosses the road.

#### Visual Sensitivity

KOP1 (**Visual Resources Figure 2**) represents the existing view, a view of moderately low visual quality. This view, which already includes telephone poles and lines and transmission poles and lines with orchards, row crops, and pastures, on both sides of Crows Landing Road, will be seen primarily by daily commuters and local residents traveling south on Crows Landing Road.

In this KOP the Almond I plant is nearly imperceptible and the horizontal and vertical lines of the ~~telephone poles and 12-kV distribution transmission~~ poles dominate and are the most visible objects in this KOP. ~~The transmission lines have lined the highway since 1995, when Almond I power plant began operating, and the telephone poles have existed even longer.~~ Consequently, viewer concern is moderately low and visibility is low.

According to the California Department of Transportation, 1,200 motorists use this road during peak traffic hours. Consequently, the number of viewers seeing this site during peak travel times is moderately low. However, the duration of their view of the transmission line corridor is moderately high, and of the existing Almond I power plant, low. As a result, the level of viewer exposure at this KOP is moderately low.

#### Visual Change

**VISUAL RESOURCES Figure 3** is a visual simulation of the proposed Almond II project as well as the telephone poles and lines; previously existing transmission poles and lines; and added transmission poles and lines along the east side of Crows Landing Road.

The most visible components of the new Almond II project are the nine new transmission poles and lines lining the east side of Crows Landing Road and then veering further east in the Figure 3's foreground.

The contrast resulting from the introduction of the new transmission poles to Crows Landing Road is low. View blockage is low. And visual change resulting from the introduction of these nine new transmission poles and lines is low.

From this KOP visual sensitivity is moderately low; visual change is low. Those two ratings result in an impact of not significant.

#### ***KOP 2 - St. Stanislaus Golf Course Looking Northeast to Almond 2 Power Plant***

**Visual Resources Figure 4** represents a view seen in late fall through early spring months.

Both figures represent the same view: looking northeast from the parking lot of the St. Stanislaus Golf Course. This par-3, public, nine-hole course is located at the intersection of Crows Landing Road and West Grayson Road, approximately three-quarters of a mile southwest of the project site.

In **Visual Resources Figure 4** the agricultural field in the foreground is fallow and golfers can see the existing Almond I Power Plant in the middleground and the top of the WinCo warehouse to the left.

#### Visual Sensitivity

KOP 2 represents a view of moderately low visual quality as seen by recreational golfers from the golf course parking lot. Golfers are generally sensitive to their surroundings. And depending on their location on the course and the activity in which they are engaged, their concern could range from low to moderate.

From this KOP visibility is moderately low depending on the golfer's position on the course and the time of year. For example, from late fall through early spring, visibility is moderately low due to the golfer's distance from the plant and the row of trees that provides a buffer between the viewer and the plant.

Because of the size of the golf course, the number of viewers would be moderately low. The duration of view from the golf course could range low to moderate to low, depending on the golfers' place on the course to the time of year.

From this KOP viewer exposure is low and viewer sensitivity, low.

#### Visual Change

**Visual Resources Figure 5** is a visual simulation of the proposed project's new structures, including three 80-foot exhaust stacks and the 115 230-kV transmission poles and lines as part of two new transmission corridors. In addition, Figure 5 includes elements existing in the viewshed before Almond II was added to the site: Almond I and the WinCo distribution warehouse.

Figure 5 represents the view seen from late fall through early spring. In late spring through early fall, corn stalks block the view of Almond I, Almond II, the WinCo warehouse, and much of the 115 230kV transmission poles.

From this KOP approximately ten 115 230kV transmission poles and lines are introduced into the viewshed as well as three 80 foot exhaust stacks. Those elements introduce new forms, lines, and colors into the viewshed. Those new forms, lines, and colors will be noticeable during the period of time the field is fallow.

The degree of contrast is moderate. The new vertical transmission poles contrast with the horizontal lines of the WinCo distribution warehouse. And because of the foreground position of the poles in this KOP as well as their line and color, they contrast with and help minimize other elements on the horizon, including the stacks of both Almond I and Almond II.

View blockage from this KOP is low. From this KOP the Almond II blends into this highly industrial view with telephone poles and transmission towers as well as the existing Almond I. In addition, Almond II does not add sufficient mass and form to block views. From this KOP visual change is low; visual sensitivity is low. Those two ratings result in a visual impact of not significant.

Considering the moderately low visual sensitivity for recreationists, and the moderately low visual change that would be perceived at KOP 2, the project would cause a less than significant adverse visual impact.

### ***Linears***

The electrical transmission routes for the project would include two 115-kV transmission line corridors proposed to leave the A2PP switchyard and connecting to the proposed Grayson Substation located approximately 3,300 feet southwest of the A2PP project site on East Grayson Road. **See Visual Resources Figure 1.**<sup>2</sup>

The two 115-kV transmission lines will be carried by tubular steel angle structures and ~~or~~ wood or steel tangent structures approximately 70 to 80 feet tall. The steel structures will be made of weathering steel, which ~~will eventually~~ appear brown in color similar to wood poles.

Other linears include an 11.6-mile underground natural gas pipeline, consisting of six segments, between 8 and 16 inches in diameter. The pipeline, which would be buried underground, would begin at a new PG&E metering set for the A2PP located along the south fence line of the existing Almond Power Plant ~~and be installed on the northwest side of the A2PP.~~

The construction activities would create a temporary visual disturbance but no long-term impacts would occur as a result of the transmission line and gas pipeline.

### ***Visible Water Vapor Plumes***

The A2PP would use simple-cycle LM6000PG turbines with SPRINT (spray intercooling) natural gas-fired combustion turbine that would produce hot exhaust gas (790 to 850 degrees Fahrenheit). Given the high exhaust temperature vapor water plumes are expected to occur infrequently, well below 20% of seasonal daylight hours. Therefore, the visual impact analysis of the expected plume sizes would not be significant.

## **D. Light or Glare**

“Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?”

The site of the proposed A2PP already contains the existing Almond Power Plant. Staff has observed that the existing Almond Power Plant has bright nighttime illumination.

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<sup>2</sup> Staff notes that in *the Hughson-Grayson Transmission Line and Substation Project Newsletter*, Issue 3, April 2010, that the Turlock Irrigation District is now proposing a new route that would locate the majority of the 115-kV transmission line route on TID canals. See <http://www.tid.org/Power/CurrentProjects/Hughson-GraysonProject/index.htm>

However, additional lighting will be required during construction of the A2PP as well as for normal operation, emergency conditions, and for manual operations during power outages.

To minimize to the greatest extent possible the impacts of construction and operational lighting on the surrounding areas, staff proposes two conditions of certification: Condition of Certification **VIS-1** for construction lighting and Condition of Certification **VIS-2** for permanent exterior lighting.

Staff notes that the Applicant indicates that to the extent feasible and consistent with worker safety codes during construction (1) task-lighting will be used to the extent practical; and (2) any lighting required for night construction activities will be directed toward the center of the construction site and shielded to prevent light from straying offsite. Those elements have been incorporated to Condition of Certification **VIS-1** and Condition of Certification **VIS-2**.

To minimize both daytime and nighttime glare, staff is proposing Condition of Certification **VIS-3**, which is designed to help minimize both daytime and nighttime glare by requiring that: (1) project structures be treated with nonreflective finishes; and (2) transmission line conductors be nonspecular and nonreflective. The Applicant proposes to paint the project structures a grey color (PSX 700 Pearl Grey). This color is acceptable to the Staff.

## **Conclusion**

In this visual analysis, staff focused on two primary questions: (1) Would construction and operation of A2PP result in an aesthetic impact according to CEQA; and (2) Would the project comply with applicable laws, ordinances, regulations, and statues pertaining to aesthetics or preservation and protection of sensitive visual resources.

Staff concludes that with all three proposed conditions of certification, potential project-specific visual impacts of the A2PP could be mitigated to acceptable, less-than-significant levels. With the implementation of Conditions of Certification **VIS-1**, **VIS-2**, and **VIS-3**, the A2PP would not:

1. Degrade the existing visual character or quality of the resource or the site and its surroundings.
2. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

## **CUMULATIVE IMPACTS AND MITIGATION**

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Cumulative impacts occur when more than one project exists or is planned to be completed or constructed in the same area at the same time. That is, any one project may not create a significant visual impact; but the combination of the new project with all existing or planned projects in the area may result in a significant cumulative impact. See Title 13, California Code of Regulations, Section 15355, California Environmental Quality Act.

When conducting a visual analysis, staff must assess cumulative impacts. A finding of a significant cumulative impact would depend on the degree to which (1) the view shed is altered; (2) view of a scenic resource is impaired; or (3) visual quality is diminished.

The Turlock Irrigation District (TID), the special district that proposes to construct the A2PP, has also proposed to construct Hughson-Grayson 115-kV Transmission Line and Substation Project. The Final EIR for that project was released on November 5, 2009. This project is identified in the Turlock Irrigation District's Application for Certification for the A2PP as an essential element of the proposed A2PP.

Staff has analyzed the visual impacts of the proposed 115-kV transmission line as part of its visual analysis and has determined that this project would not result in a cumulative visual impacts requiring mitigation.

## COMPLIANCE WITH LORS

As a California special district, the Turlock Irrigation District (TID) may override local land use controls. However, in its Application for Certification to the California Energy Commission, the district indicated its desire to comply with applicable local laws, ordinances, regulations, and standards (LORS).

Information about applicable LORS and the Applicant's compliance with those laws may be found in Visual Resources Table 2, which follows.

**VISUAL RESOURCES Table 2**  
**Laws, Ordinances, Regulations, and Standards (LORS)**

Source	Descriptions
<b>Federal</b>	
Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (PL 109-59;2005). Expires 2009	A2PP is not located within or in the vicinity of federally-managed lands or in the vicinity of a recognized National Scenic Byway or All-American Road.
<b>State</b>	
<i>California Streets and Highways Code</i> , Section 260 through 263 – Scenic Highways	Ensures the protection of highway corridors that reflect the state's natural scenic beauty. The state of California has not formally designated as scenic any of the roads or highways within or adjacent to the project area.

Local	
<p>City of Ceres 2015 General Plan</p> <p>Section: Major Corridors Policy 1.J.6</p> <p>Section: Industrial Development Policy 1.G.4</p> <p>Policy 1.G.5</p>	<p>A long term vision of Ceres which outlines policies, standards, and programs to guide day to day decisions concerning development through 2015.</p> <p>To enhance the visual quality of its major corridors by requiring new and expanding development to conceal unsightly uses and equipment, (i.e., screening of rooftop equipment and outdoor storage and undergrounding of utilities).</p> <p><b>Complies.</b> <i>Project is not readily visible from the closest major corridor within city limits.</i></p> <p>City shall seek to minimize the adverse visual impacts of industrial development from State Route 99, primarily through landscaping and fences.</p> <p><b>Complies:</b> <i>Project will not be visible from Highway 99.</i></p> <p>City shall encourage industrial developments that include the following features:</p> <ul style="list-style-type: none"> <li>-Attractive building frontages that are readily visible for the public street (brick, wood façade).</li> <li>-Variation in the roofline (multi-planed, pitched roofs)</li> <li>-Articulation in the walls (insets, projections, canopies, wing walls, trellis)</li> <li>-Large parking areas with tree coverage separated into a series of smaller parking areas with the use of landscaping and the location of buildings.</li> <li>-Outdoor service areas, loading bays and outdoor storage areas that are not readily visible to the public.</li> <li>-Attractive landscaping to enhance the business by softening buildings and parking areas</li> </ul> <p><b>Complies:</b> <i>Project is landscaped at entrance and most project features are not in public view.</i></p>
<p>City of Ceres Municipal Code</p> <p>Land Use and Development Standards: J2: Landscaping</p> <p>G: Building Height Requirements</p>	<p>Provides conceptual framework for the installation of public facilities, provision of public services, and future development.</p> <p>All uses shall provide landscaping that shall be maintained.</p> <p><b>Complies.</b> No new landscaping proposed for A2PP. However, A2PP to share entrance with Almond Power Plant and entrance is landscaped.</p> <p>Height of all main and accessory buildings erected in M-2 zone shall be as approved by Planning Commission.</p> <p><b>Complies:</b> Height of A2PP stacks is 80 feet; existing Almond Power Plant stack is 92 feet. Project is located in area zoned industrial.</p>
<p>Stanislaus County 2020 General Plan, Land Use</p> <p>Conservation/Open Space Element: Goal 1</p>	<p>To ensure the continued success of the area's leading agricultural industry.</p> <p>Encourage the protection and preservation of natural and scenic areas throughout the county.</p> <p><b>Complies.</b> Project not located in area considered natural or scenic.</p>

## PROPOSED CONDITIONS OF CERTIFICATION

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### CONSTRUCTION LIGHTING

- VIS-1** The project owner shall ensure that lighting for construction of the power plant is used in a manner that minimizes potential night lighting impacts, as follows:
- A. All lighting shall be of minimum necessary brightness consistent with worker safety and security
  - B. All fixed position lighting shall be shielded/hooded, to the extent feasible given safety and security concerns, and directed downward and toward the area to be illuminated to prevent direct illumination of the night sky and direct light trespass (direct light extending outside the boundaries of the power plant site or the site of construction of ancillary facilities, including any security related boundaries)
  - ~~C. Low pressure sodium vapor lighting or overhead high pressure sodium vapor lighting with shields or cutoff luminaires shall be utilized~~
  - D. Wherever feasible, safe and not needed for security, lighting shall be kept off when not in use
  - ~~E. If the project owner receives a complaint concerning adverse lighting impacts, the project owner shall notify CPM by providing a copy of the Compliance Plan General Conditions Complaint Resolution Form to document the complaint and resolution. All records of lighting complaints shall be kept in the on-site compliance file.~~

**Verification:** Within seven days after the first use of construction lighting, the project owner shall notify and the CPM that the lighting is ready for inspection. If the CPM requires modifications to the lighting, within 15 days of receiving that notification the project owner shall implement the necessary modifications and notify the CPM that the modifications have been completed.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the General Conditions section including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be included in the subsequent Monthly Compliance Report following complaint resolution.

### PERMANENT EXTERIOR LIGHTING

- VIS-2** To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting such that (a) ~~lamps and reflectors are not visible from beyond the project site, including any offsite security buffer areas;~~ (b) lighting does not cause excess reflected glare; (b, ~~e~~) direct lighting does not illuminate the nighttime sky; (c, ~~d~~) illumination

of the project and its immediate vicinity is minimized; and (d) the plan complies with local policies and ordinances.

The project owner shall submit to the CPM for review and approval and ~~simultaneously to the city of Ceres and county of Stanislaus community dDevelopment Services dDepartments~~ for review and comment a lighting mitigation plan that includes the following:

- a. Location and direction of light fixtures shall take the lighting mitigation requirements into account
- b. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting obligation requirements
- c. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated.
- ~~d. Low pressure~~
- e. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security.
- f. All lighting shall be of minimum necessary brightness consistent with operational safety and security.
- g. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have in addition to hoods, switches, t\; timer switches; or motion detectors so that the lights operate only when the area is occupied.

**Verification:** At least 90 days prior to ordering any permanent exterior lighting, the project owner shall contact the CPM to discuss the documentation required in the lighting mitigation plan.

At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for review and approval and ~~simultaneously to the city of Ceres and county of Stanislaus community dDevelopment Services dDepartments~~ for review and comment a lighting mitigation plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been completed and is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving that notification, the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions, including a proposal to resolve the complaint and a schedule for implementation



## **SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS**

**VIS-3** The project owner shall treat the surfaces of all project structures and buildings visible to the public such that a) their color(s) minimize(s) visual intrusion and contrast by blending with the landscape; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

The project owner shall submit to the city of Ceres Planning Development Services Department ~~Planning Department and Stanislaus County Planning Department~~ for review and comment and to the CPM for review and approval, a specific surface treatment plan that will satisfy these requirements. The treatment plan shall include:

- a. Description of the overall rationale for the proposed surface treatment, including the selection of the proposed colors and finishes
- b. List of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the colors and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system
- c. One set of color brochures or color chips showing each proposed color and finish
- d. One set of 11" x 17" color photo simulations at life size scale, of the treatment proposed for use on project structures, including structures treated during manufacture, from Key Observation Points 1 and 2 (locations indicated on Visual Resources Figure 1),
- e. Specific schedule for completion of the treatment
- f. Procedure to ensure proper treatment maintenance for life of the project

~~The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives comment from the city of Ceres Planning Department and notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.~~

**Verification:** At least 90 days prior to the start of commercial operation, the project owner shall submit the specific surface treatment plan to the city of Ceres Development Services ~~Planning Department and Stanislaus County~~ for review and comment and to the CPM for review and approval. The project owner shall allow the city ~~and county~~ 30~~45~~ days to respond to their submittal. The project owner shall provide a copy of city ~~and county~~ submittal and city comments to the CPM within 60 days of the start of construction. If the CPM notifies the project owner that any revisions of the surface restoration plan are needed, the project owner shall submit to the CPM a plan with the specified revisions within 30 days of receiving that notification.

The project owner shall complete surface restoration within 60 days after the start of commercial operation. The project owner shall notify the CPM within seven days after completion of surface restoration that the restoration is ready for inspection.

Within 90 days after the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection, and shall submit one set of electronic color photographs from the same KOP location identified in above.

The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a) the condition of the surfaces of all structures and buildings at the end of the reporting year; and b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.

## REFERENCES

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AFC 2009 - *TID Almond 2 Power Plant Application for Certification* Volume I & II, Submitted to CEC/Docket Unit Dated May 11, 2009

AFC 2009 - TID A2PP Data Response Set 1D; November 2009

AFC 2009 – TID A2PP Query Set 2 D; October 22, 2009

AFC 2009 - TID A2PP Supplemental A; June 9, 2009

CH2MHill Data Responses. Submitted to CEC/Docket Unit; date

California *Fire Code*, 2007, Title 24, Part 9

City of Ceres *2015 General Plan*

City of Ceres *Municipal Zoning Code*; Title 18

County of Stanislaus *2020 General Plan*

County of Stanislaus *Municipal Zoning Code*, Title 21

Hughson-Grayson 115-kV Transmission Line and Substation Project, Draft Environmental Impact Report dated August 10, 2009

Hughson-Grayson Newsletter, Issue 3; April 2010

Service Road Industrial Master Plan, January 1996; Amended June 28, 1999

*Special Districts: Relics of the Past or Resources for the Future*; California Little Hoover Commission; May 3, 2000

*What's So Special About Special Districts? A Citizens' Guide To Special Districts in California, Third Edition; Kimia Mizany and April Manatt, February 2002*

## **APPENDIX VR-1: STAFF'S VISUAL RESOURCES EVALUATION METHODOLOGY**

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Staff evaluates the visual characteristics of the existing physical setting, the proposed project, the circumstances affecting the viewer, and the degree of visual change that a proposed project may introduce using the identified elements, and generally accepted criteria for determining substantial environmental impact significance identified below.

### **ELEMENTS OF THE METHODOLOGY**

#### **Key Observation Points**

Staff evaluates the existing visible physical environmental setting from a fixed vantage point (called a "Key Observation Point" [KOP]), and the visual change introduced by the proposed project to the view from that KOP. The view as seen from the KOP is referred to as the viewshed. Staff uses a KOP<sup>3</sup> to represent a location(s) from which to conduct detailed analyses of the proposed project and to obtain existing condition photographs and prepare photo simulations. KOPs are selected to be representative of the most critical viewshed locations from which the project would be seen. Because it is not feasible to analyze all the views in which a proposed project would be seen, it is necessary to select a KOP that would most clearly display the visual effects of the proposed project. A KOP may also represent a primary viewer groups that would potentially be affected by the project. In addition to KOP photo(s), staff reviews landscape character photos that help provide a visual overview of a project site, its vicinity, and the selected KOP area, as appropriate. Prior to application submittal, staff participates in the selection of appropriate KOP(s) for the analysis.

#### **LORS Consistency**

Energy Commission staff consider federal, state, and local laws, ordinances, regulations, and standards (LORS) relevant to aesthetics, or protection and preservation of visual sensitive resources. Conflicts with such LORS can constitute significant visual impacts. For example visual staff examines land use planning documents, such as a local government's General Plan, Specific Plan, and zoning ordinances applicable to the project site and surrounding area to gain insight as to the type of land uses intended for the area, and the guidelines given for aesthetics, or protection and preservation of visual sensitive resources.

#### **Distance Zones**

Distance zones are divisions of a particular landscape being viewed. There are three distance zones: foreground, middleground, and background.

Foreground view is based upon distances at which details can be perceived. It is usually limited to an area within  $\frac{1}{4}$  to  $\frac{1}{2}$  mile of the observer;

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<sup>3</sup>The use of KOPs or similar view locations is common in visual resource analysis. The U.S. Bureau of Land Management (USDI BLM 1986a, 1986b, 1984) and the U.S. Forest Service (USDA Forest Service 1995) use such an approach.

Middleground view is based upon distances where texture normally is characterized by the masses of trees in stands of uniform tree cover. This zone usually extends to 3 to 5 miles from the observer;

Background view is based on distances where texture in stands of uniform tree cover is generally very weak or non-existent.

## APPENDIX VR-2

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### ENERGY COMMISSION STAFF - VISUAL ANALYSIS TERMS

For the purpose of this visual analysis, Energy Commission staff has defined the following visual related terms:

**Duration of View** - ranges from high (extended) a view of the project site that is reached across a stretched out distance, or amount of time; to, low (brief) a view of the project site that is reached in a short amount of distance or time. The range of view duration generally differs depending on the type of activity in which the viewers is engaged.

**Scenic Resource** - a unique water feature (waterfall, transitional water, part of a stream or river, estuary); a unique physical geological terrain feature (rock masses, outcroppings, layers or spires); a tree having a unique visual/historical importance to a community (a tree linked to a famous event or person, an ancient old growth tree); historic building; or a designated federal scenic byway or state scenic highway corridor.

**Scenic Vista** - a distant view through and along a corridor or opening that exhibits a high degree of pictorial quality.

**Viewer Concern** - estimated level of a viewer's anticipated interest in preserving and protecting the existing physical environment. Viewer attitudes and expectations is often correlated with viewer activity type (e.g., viewers engaged in certain activities, such as recreation, are considered to have high levels of concern for scenic quality, while those engaged in other activities, such as work, are generally considered to have lower levels of concern). Residences are generally considered to have high viewer concern.

Existing landscape character may temper viewer concern on some State and locally designated scenic highways and corridors. Similarly, travelers on other highways and roads, including those in agricultural areas, may have moderate viewer concern depending on viewer expectations as conditioned by regional and local landscape features. Commercial uses, including business parks, typically have low-to-moderate viewer concern, though some commercial developments have specific requirements related to visual quality, with respect to landscaping, building height limitations, building design, and prohibition of above-ground utility lines, indicate a higher level of viewer concern. Industrial uses typically have the lowest viewer concern because workers are focused on their work, and generally are working in surroundings with relatively low visual value.

**Viewer Exposure** – visibility of a landscape feature, the number of viewers, distance, and the duration of the view are primary factors affecting viewer susceptibility to impacts.

**Viewshed** – an area visible to an observer from a fixed vantage point (Key Observation Point [KOP]). Staff uses a 35mm camera with a focal length of 50mm which encompasses an approximate image angle of 46° similar to the field-of-view of the human eye. The staff uses a viewshed that is not to be confused with a panoramic (180°) or cycloramic (360°). These are broad horizontal composition with no apparent limits to the view.

**Visibility** - the level the proposed project site is visually obstructed by natural and/or man-made surface features (development, vegetation, hills) from the Key Observation Point.

**Visual Contrast** - The conspicuousness or prominence of a project, and its compatibility with its setting. Contrast is described in terms of formal attributes of form, line, color, and texture of the project in comparison to those of the setting. Consider the proposed project's introduction of **form** (shape and mass), **line** (changes in edge types and interruption or introduction of edges, bands and silhouette lines), **color** (surface color, reflectivity, and glare), and **texture** (noticeable differences in the grain, or irregularity and directional patterns) to the existing physical environment to determine the degree of contrast. Degree of contrast: None – the element contrast is not visible or perceived; Weak – the element contrast can be seen but does not attract attention; Moderate – the element contrast begins to attract attention and begins to dominate the characteristic landscape; Strong – the element contrast demands attention, will not be overlooked, and is dominant in the landscape.

**Visual Disruption** - the extent to which a previously visible scenic resource or scenic vista in the existing physical environment is blocked from view by the proposed project. The view disruption is assigned greater weight according to the quality and importance of the block view.

**Visual Quality** – the estimated visual impression and appeal of the existing physical environmental setting and the associated public value attributed to it. An outstanding visual quality is a rating reserved for landscapes that would be what a viewer might think of as “picture postcard” landscapes. Low visual quality describes landscapes that are often dominated by visually discordant human alterations, and do not provide views that people would find inviting or interesting (Buhyoff et al., 1994).

**Visual Scale** - the proposed project's apparent size relationship with other components in the existing physical environment relative to the total field-of-view as viewed by the human eye, or the lens of a 35mm camera with a focal length of 50mm.

**Visual Sensitivity** - the overall level of sensitivity of a viewshed due to visual change is a function of visual quality, viewer concern, and viewer exposure.

# WASTE MANAGEMENT

Testimony of Ellie Townsend-Hough

## SUMMARY OF CONCLUSIONS

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Management of the waste generated during construction and operation of the Turlock Irrigation District (TID) Almond 2 Power Plant (A2PP) would not result in any significant adverse impacts, and would comply with applicable waste management laws, ordinances, regulations, and standards, if the measures proposed in the Application for Certification (AFC) and staff's proposed conditions of certification are implemented.

## INTRODUCTION

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This Staff Assessment (SA) presents an analysis of issues associated with wastes generated from the proposed construction and operation of the A2PP. The technical scope of this analysis encompasses solid wastes existing onsite and those to be generated during facility construction and operation. Management and discharge of wastewater is addressed in the **Soil and Water Resources** section of this document. Additional information related to waste management may also be covered in the **Worker Safety** and **Hazardous Materials Management** sections of this document.

The Energy Commission staff's objectives in conducting this waste management analysis are to ensure that:

- The management of project wastes would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Compliance with LORS ensures that wastes generated during the construction and operation of the proposed project would be managed in an environmentally safe manner.
- The disposal of project wastes would not result in significant adverse impacts to existing waste disposal facilities.
- Upon project completion, the site is managed in such a way that project wastes and waste constituents would not pose a significant risk to humans or the environment.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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The following federal, state, and local environmental laws, ordinances, regulations and standards (LORS) have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment. Project compliance with the various LORS is a major component of staff's determination regarding the significance and acceptability of the A2PP with respect to management of waste.

**WASTE MANAGEMENT Table 1**  
**Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable Law	Description
<b>Federal</b>	
<p>Title 42, United States Code (U.S.C.), §§6901, et seq.</p> <p>Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al).</p>	<p>The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al, establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions and responsibilities, as well as research, training, and grant funding provisions.</p> <p>RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing:</p> <ul style="list-style-type: none"> <li>• Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition;</li> <li>• Waste labeling practices and use of appropriate containers;</li> <li>• Use of a manifest when transporting wastes;</li> <li>• Submission of periodic reports to the United States Environmental Protection Agency (USEPA) or other authorized agency; and</li> <li>• Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities.</li> </ul> <p>RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills.</p> <p>RCRA is administered at the federal level by USEPA and its ten regional offices. The Pacific Southwest regional office (Region 9) implements USEPA programs in California, Nevada, Arizona, and Hawaii.</p>
<p>Title 42, U.S.C., §§ 9601, et seq.</p> <p>Comprehensive Environmental Response, Compensation and Liability Act</p>	<p>The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses:</p> <ul style="list-style-type: none"> <li>• Reporting requirements for releases of hazardous substances;</li> <li>• Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields;</li> <li>• Liability of persons responsible for releases of hazardous substances or waste; and</li> <li>• Requirements for property owners/potential buyers to conduct “all appropriate inquiries” into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA “all appropriate inquiries” requirements.</li> </ul>
<p>Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes.</p>	<p>These regulations were established by USEPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes.</p> <ul style="list-style-type: none"> <li>• Part 246 addresses source separation for materials recovery guidelines.</li> <li>• Part 257 addresses the criteria for classification of solid waste disposal facilities and practices.</li> <li>• Part 258 addresses the criteria for municipal solid waste landfills.</li> <li>• Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps).</li> </ul>



	USEPA implements the regulations at the federal level. However, California is an authorized state so the regulations are implemented by state agencies and authorized local agencies in lieu of USEPA.
Title 49, CFR, Parts 172 and 173.  Hazardous Materials Regulations	U.S. Department of Transportation established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, section 262.20.
<b>State</b>	
California Health and Safety Code (HSC), Chapter 6.5, §25100, et seq.  Hazardous Waste Control Act of 1972, as amended.	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements.  The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.
Title 22, California Code of Regulations (CCR), Division 4.5.  Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers, prepare manifests before transporting the waste off-site, and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters.  The standards addressed by Title 22, CFR include: <ul style="list-style-type: none"> <li>• Identification and Listing of Hazardous Waste (Chapter 11, §§66261.1, et seq.)</li> <li>• Standards Applicable to Generators of Hazardous Waste (Chapter 12, §§66262.10, et seq.)</li> <li>• Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §§66263.10, et seq.)</li> <li>• Standards for Universal Waste Management (Chapter 23, §§66273.1, et seq.)</li> <li>• Standards for the Management of Used Oil (Chapter 29, §§66279.1, et seq.)</li> <li>• Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §§67450.1, et seq.)</li> </ul> The Title 22 regulations are established and enforced at the state level by DTSC. Some generator standards are also enforced at the local level by CUPAs.
HSC, Chapter 6.11 §§25404 – 25404.9  Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. <ul style="list-style-type: none"> <li>• Aboveground Storage Tank Program</li> <li>• Business Plan Program</li> <li>• California Accidental Release Prevention (CalARP) Program</li> <li>• Hazardous Material Management Plan / Hazardous Material Inventory Statement Program</li> <li>• Hazardous Waste Generator / Tiered Permitting Program</li> <li>• Underground Storage Tank Program</li> </ul> The state agencies responsible for these programs set the standards for their

	<p>programs while local governments implement the standards. The local agencies implementing the Unified Program are known as Certified Unified Program Agencies (CUPAs). San Diego County Department of Environmental Health is the area CUPA.</p> <p>Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program. Other elements of the Unified Program may be addressed in the Hazardous Materials and/or Worker Health and Safety analysis sections.</p>
<p>Title 27, CCR, Division 1, Subdivision 4, Chapter 1, §15100, et seq.</p> <p>Unified Hazardous Waste and Hazardous Materials Management Regulatory Program</p>	<p>While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses.</p> <ul style="list-style-type: none"> <li>• Article 9 – Unified Program Standardized Forms and Formats (§§ 15400-15410).</li> <li>• Article 10 – Business Reporting to CUPAs (§§15600 – 15620).</li> </ul>
<p>Public Resources Code, Division 30, §40000, et seq.</p> <p>California Integrated Waste Management Act of 1989.</p>	<p>The California Integrated Waste Management Act of 1989 (as amended) establishes mandates and standards for management of solid waste. Among other things, the law includes provisions addressing solid waste source reduction and recycling, standards for design and construction of municipal landfills, and programs for county waste management plans and local implementation of solid waste requirements.</p>
<p>Title 14, CCR, Division 7, §17200, et seq.</p> <p>California Integrated Waste Management Board</p>	<p>These regulations further implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions.</p> <ul style="list-style-type: none"> <li>• Chapter 3 -- Minimum Standards for Solid Waste Handling and Disposal.</li> <li>• Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste.</li> <li>• Chapter 7 – Special Waste Standards.</li> <li>• Chapter 8 – Used Oil Recycling Program.</li> <li>• Chapter 8.2 – Electronic Waste Recovery and Recycling</li> </ul>
<p>HSC, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq.</p> <p>Hazardous Waste Source Reduction and Management Review Act of 1989 (also known as SB 14).</p>	<p>This law was enacted to expand the State’s hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (~ 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a 4 year cycle, with a summary progress report due to DTSC every 4<sup>th</sup> year.</p>
<p>Title 22, CCR, §67100.1 et seq.</p> <p>Hazardous Waste Source Reduction and Management Review.</p>	<p>These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the Act.</p>
<b>Local</b>	
<p>Stanislaus County Code Title 9 – Health &amp; Safety Code</p>	<p>Stanislaus County Environmental Resources Department administers a comprehensive environmental protection program. Provides guidance for remediation of contaminated sites and for siting and management of facilities that store, collect, treat, dispose or transfer of solid and hazardous waste.</p>

## SETTING

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### PROPOSED PROJECT

The proposed A2PP is a 174 Megawatt (MW) natural gas-fired, simple cycle peaking generating facility. The simple cycle equipment will consist of three General Electric LM6000 combustion turbine generators, and associated support equipment. The facility will be located on a 4.6-acre parcel at 4500 Crows Landing Road, Modesto, California in Stanislaus County California. The Stanislaus County Assessor's Parcel Number is 041-060-039(TID2009a, page 5.14).

An 11.6-mile underground gas pipeline will be constructed, owned and operated by the Pacific Gas & Electric Company (PG&E) to convey natural gas to A2PP from the existing gas transmission Line #215 . Also, PG&E will reinforce a 1.8-mile long segment of Line #215. The 11.6-mile long gas line runs south of the project along paved roads and unpaved farm roads. The reinforced segment is located along the western side of the San Joaquin River (CH2MHILL2009k, Data Response 77).

The proposed A2PP would be a peaking power plant and would operate during times of very high electrical load, when baseload plants are not operating, or during emergency conditions. The construction associated with A2PP will produce a variety of mixed nonhazardous wastes, such as scrap wood, metal, plastics, etc. Operation and maintenance of the plant and associated facilities will generate a variety of wastes, including hazardous wastes. Wastes will be recycled where practical and nonrecyclable wastes will be deposited in a Class III landfill. The hazardous wastes generated will consist of electrical equipment, used oils, universal wastes, solvents, and empty hazardous waste materials (TID2009a, Section 5.14). Universal wastes are hazardous wastes that contain mercury, lead, cadmium, copper and other substances hazardous to human and environmental health. Examples of universal wastes are batteries, fluorescent tubes, and some electronic devices.

## ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

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### METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

This Waste Management analysis addresses: a) existing project site conditions and the potential for contamination associated with prior activities on or near the project site, and b) the impacts from the generation and management of wastes during project construction and operation.

- a) For any site in California proposed for the construction of a power plant, the Applicant must provide documentation about the nature of any potential or existing releases of hazardous substances or contamination at the site. If potential or existing releases or contamination at the site are identified, the significance of the release or contamination would be determined by site-specific factors, including, but not limited to: the amount and concentration of contaminants or contamination; the proposed use of the area where the contaminants/contamination is found; and any potential pathways for workers, the public, or sensitive species or environmental areas to be exposed to the contaminants. Any unmitigated contamination or releases of

hazardous substances that pose a risk to human health or environmental receptors would be considered significant by Energy Commission staff.

As a first step in documenting existing site conditions, the Energy Commission's power plant site certification regulations require that a Phase I Environmental Site Assessment (ESA) be prepared<sup>1</sup> and submitted as part of an application for certification. The Phase I ESA is conducted to identify any conditions indicative of releases and threatened releases of hazardous substances at the site and to identify any areas known to be contaminated (or a source of contamination) or near the site.

In general, the Phase I ESA uses a qualified Environmental Professional (EP) to conduct inquiries into past uses and ownership of the property, research hazardous substance releases and hazardous waste disposal at the site and within a certain distance of the site, and visually inspect the property, making observations about the potential for contamination and possible areas of concern. After conducting all necessary file reviews, interviews, and site observations, the EP then provides findings about the environmental conditions at the site. In addition, since the Phase I ESA does not include sampling or testing, the EP may also give an opinion about the potential need for any additional investigation. Additional investigation may be needed, for example, if there were significant gaps in the information available about the site, an ongoing release is suspected, or to confirm an existing environmental condition.

If additional investigation is needed to identify the extent of possible contamination, a Phase II ESA may be required. The Phase II ESA usually includes sampling and testing of potentially contaminated media to verify the level of contamination and the potential for remediation at the site.

In conducting its assessment of a proposed project, Energy Commission staff will review the project's Phase I ESA and work with the appropriate oversight agencies as necessary to determine if additional site characterization work is needed and if any mitigation is necessary at the site to ensure protection of human health and the environment from any hazardous substance releases or contamination identified.

- b) Regarding the management of project-related wastes generated during construction and operation of the proposed project, staff reviews the Applicant's proposed solid and hazardous waste management methods and determines if the methods proposed are consistent with the LORS identified for waste disposal and recycling. The federal, state, and local LORS represent a comprehensive regulatory system designed to protect human health and the environment from impacts associated with management of both non-hazardous and hazardous wastes. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management.

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<sup>1</sup> Title 20, California Code of Regulations, Section 1704(c) and Appendix B, section (g) (12) (A). Note that the Phase I ESA must be prepared according to American Society for Testing and Materials protocol or an equivalent method agreed upon by the Applicant and the Energy Commission staff.

Staff then reviews the capacity available at off-site treatment and disposal sites and determines whether or not the proposed power plant's waste would have a significant impact on the volume of waste a facility is permitted to accept. Staff uses a waste volume threshold equal to 10% of a disposal facility's remaining permitted capacity to determine if the impact from disposal of project wastes at a particular facility would be significant.

## **DIRECT/INDIRECT IMPACTS AND MITIGATION**

### **Existing Site Conditions**

The Applicant provided Phase I Environmental Site Assessments (ESAs) for the project site, the proposed 11.6 natural gas line, and the 1.8-mile long reinforcement segment of PG&E gas line #215. A Phase I ESA for the proposed project site, dated February 9, 2009, was prepared by Wallace Kuhl & Associates (WKA) in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs (TID2009a, Appendix 5.14). The Phase I ESA for the pipeline was completed by CH2MHill November 2009 (CH2MHILL2009k Data Response 77).

The proposed project site is located on 4.6 undeveloped acres of land. Photographs, maps, and other historic records indicate the site has been historically part of a larger agriculture property that was used for farming from 1950 to 2004. The parcel is currently undeveloped and was used for a borrowing pit for the WinCo Food Distribution Company warehouse. The acreage consists mainly of fill. The site was excavated to 6.5 feet below grade and filled with 30,000 cubic yards of soil from agricultural land. The area is bounded to the west by a WinCo distribution facility, to the north by a Stanislaus Farm Supply, to the east by the Union Pacific Railroad line, and to the south by TID's existing ~~Almond 1 evaporation ponds~~ Lateral Line #2.

The Phase I ESA conducted for the proposed A2PP site did not identify recognized environmental conditions (REC) associated with the proposed project site. A REC is the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicated an existing release, past release, or a material threat of a release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property. The Phase I ESA identified that the groundwater in the area to the north of the site is impacted with Nitrates (TID2009a, Appendix 5.14). The ESA recommended that domestic well water be tested for nitrates and that the fill material be tested for persistent pesticide residues. Soil samples were collected and analyzed for Organochlorine Pesticides using Environmental Protection Agency (EPA) method 8081A. The samples were also analyzed for California Title 22 Heavy Metals Test CAM 17 metals, using EPA method 6010. The environmental assessment identified no organochlorine pesticide residuals in the soil samples. The CAM 17 metals analysis indicated that most of the levels of metal concentrations are low or non-detectable. Arsenic was detected in two samples at 1.4 milligrams per kilogram (mg/Kg) and 1.6 mg/Kg. Although arsenic exceeds the California Human Health Screening Level (CHHSL) value for residential and commercial exposure scenarios, the regulatory trigger level for sensitive sites of 11 mg/Kg was not exceeded (TID2009a, Appendix

5.14).<sup>2</sup> WKA also performed a preliminary screening for potential vapor intrusion conditions (pVIC)<sup>3</sup> beneath the site using a pVIC matrix. The screening concluded that there are no pVICs beneath the site.

In order to exercise due diligence to ensure there are no contaminants on the project site that would pose a health and safety risk, the California Energy Commission staff requested that TID conduct a Phase I ESA for the natural gas pipeline route. The Applicant provided staff with a modified Phase II ESA for the natural gas pipeline route. The ESA included an Environmental Data Resources (EDR) database search (CH2MHill, Appendix H), historical aerial photographs and field surveys along the pipeline route. The Applicant also provided a list of pesticides used and crops grown along the proposed pipeline corridor study (CH2MHILL2009k, Data Responses 77-79). In the event that construction excavation, grading or trenching activities for the gas pipeline encounter potentially contaminated soils, special handling, disposal, and other mitigation measures would be required similar those proposed for A2PP and would be adequate to address identification and investigation of soil or groundwater contamination.

In the event that contamination is identified during any phase of construction, staff proposes Condition of Certification **WASTE-1**, which would require that an experienced and qualified Professional Engineer or Professional Geologist be available for consultation in the event contaminated soil is encountered. If contaminated soil is identified, **WASTE-2** would require that the Professional Engineer or Professional Geologist inspect the site, determine what is required to characterize the nature and extent of contamination, and provide a report to the Energy Commission Compliance Project Manager (CPM) and DTSC with findings and recommended actions.

### **Construction Impacts and Mitigation**

Site preparation and construction of the proposed power plant and associated facilities would generate both nonhazardous and hazardous wastes in solid and liquid forms (TID2009a, Section 5.14.1.2.1). Before construction can begin, the project owner would be required to develop and implement a Construction Waste Management Plan, per proposed condition of certification **WASTE-3**.

#### **Non-hazardous Wastes**

Non-hazardous solid wastes generated during construction would include approximately 120 tons of scrap wood, concrete, steel/metal, paper, glass, and plastic waste (TID2009a, Section 5.14.2.1.1). All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a solid waste disposal facility, in accordance with Title 14, California Code of Regulations, §17200 et seq.

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<sup>2</sup> The CHHSLs were developed by the Office of Environmental Health Hazard Assessment (OEHHA) on behalf of Cal/EPA, and contained in their report entitled "Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil". The thresholds of concern used to develop the CHHSLs are an excess lifetime cancer risk of one-in-a-million ( $10^{-6}$ ) and a hazard quotient of 1.0 for noncancerous health effects. The CHHSLs were developed using standard exposure assumptions and chemical toxicity values published by the USEPA and Cal/EPA.

<sup>3</sup> Vapor Intrusion Studies, as specified in the ASTM E2600-08 "Standard Practice for the Assessment of Vapor Intrusion into Structures on Property Involved in Real Estate Transaction". This assessment determines if sources of contamination are located close enough to on-site buildings to create a pVIC. If a pVIC is found to exist, or cannot be ruled out, further assessment will be warranted. ( TID2009a, Appendix 5.14)

Non-hazardous liquid wastes would also be generated during construction, including sanitary wastes, dust suppression drainage, and equipment wash water. Sanitary wastes would be collected in portable, self-contained toilets and pumped periodically for disposal at an appropriate facility. Potentially contaminated equipment wash water will be contained at designated wash areas and transported to a sanitary wastewater treatment facility. Please see the **Soil and Water Resources** section of this document for more information on the management of project wastewater.

### **Hazardous Wastes**

Hazardous wastes anticipated to be generated during construction include empty hazardous material containers, solvents, waste paint, oil absorbents, used oil, oily rags, batteries, and cleaning wastes. The amount of waste generated would be minor if handled in the manner identified in the AFC (TID2009a, Section 5.14.1.2.1).

The project owner would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction pursuant to proposed condition of certification **WASTE-4**. Although the hazardous waste generator number is determined based on site location, both the construction contractor and the project owner/operator could be considered the generator of hazardous wastes at the site. Wastes would be accumulated onsite for less than 90 days and then properly manifested, transported and disposed at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. Staff reviewed the disposal methods described in AFC Section 5.14.1.2.1 and in the responses to data requests, and concluded that all wastes would be disposed in accordance with all applicable LORS. Should any construction waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed condition of certification **WASTE-5** to notify the Energy Commission's Compliance Project Manager (CPM) whenever the owner becomes aware of any such action.

In the event that construction excavation, grading or trenching activities for the proposed project encounter potentially contaminated soils, specific handling, disposal, and other precautions may be necessary pursuant to hazardous waste management LORS, staff finds that proposed conditions of certification **WASTE-1** and **WASTE-2** would be adequate to address any soil contamination contingency that may be encountered during construction of the project and would ensure compliance with LORS. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management activities.

### **Operation Impacts and Mitigation**

The proposed A2PP would generate non-hazardous and hazardous wastes in both solid and liquid forms under normal operating conditions. (Table 5.14-2 of the project AFC gives a summary of the operation waste streams, expected waste volumes and generation frequency, and management methods proposed.) Before operations can begin, the project owner would be required to develop and implement an Operation Waste Management Plan pursuant to proposed condition of certification **WASTE-6**.

## **Non-hazardous Solid Wastes**

Non-hazardous solid wastes expected to be generated during project operation include routine maintenance wastes (such as used air filters, spent deionization resins, sand and filter media) as well as domestic and office wastes (such as office paper, newsprint, aluminum cans, plastic, and glass). All non-hazardous wastes will be recycled to the extent possible, and non-recyclable wastes would be regularly transported offsite to a local solid waste disposal facility (TID2009a, section 5.14.1.2.2). The Applicant estimates the project will generate 40 tons of non-hazardous waste per year (TID2009a, page 5.14-5).

## **Non-hazardous Liquid Wastes**

Non-hazardous liquid wastes would be generated during facility operation, and are discussed in the **Soil and Water Resources** section of this document.

## **Hazardous Wastes**

The project owner/operator would be considered the generator of hazardous wastes at the site during facility operations. Therefore, the project owner's unique hazardous waste generator identification number, obtained prior to construction in accordance with proposed condition of certification **WASTE-4**, would be retained and used for one ton per year of hazardous waste generated during facility operation (TID2009a, page 5.14-11).

Hazardous wastes expected to be generated during routine project operation include used hydraulic fluids, oils, greases, oily filters and rags, spent SCR catalyst, cleaning solutions and solvents, and batteries. In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or materials that may require corrective action and management as hazardous waste. Proper hazardous material handling and good housekeeping practices will help keep spill wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, staff proposes condition of certification **WASTE-7** requiring the project owner/operator to report, clean-up, and remediate as necessary, any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on hazardous material management, spill reporting, containment, and spill control and countermeasures plan provisions for the project are provided in the **Hazardous Material Management** section of the PSA.

The amounts of hazardous wastes generated during the operation of A2PP would be minor, with source reduction and recycling of wastes implemented whenever possible. The hazardous wastes would be temporarily stored on-site, transported offsite by licensed hazardous waste haulers, and recycled or disposed at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste (Title 22, CCR, §66262.10 et seq.). Should any operations waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed condition of certification **WASTE-5** to notify the CPM whenever the owner becomes aware of any such action.



## **Impact on Existing Waste Disposal Facilities**

### **Non-hazardous Solid Wastes**

Construction and operation of the proposed project would respectively generate approximately 600 cubic yards<sup>4</sup> (120 tons) and 200 cubic yards per year of nonhazardous solid waste (TID2009a, Section 5.14.2.4). The waste would be stored onsite for less than 30 days, and then recycled or disposed of in a Class III landfill.

Table 5.14-3 of the project AFC identifies four non-hazardous (Class III) waste disposal facilities that could potentially take the non-hazardous construction and operation wastes generated by the A2PP. These Class III landfills are all located in central California in Stanislaus County. The remaining capacity for the four landfills combined is over 10 million cubic yards. The total amount of nonhazardous waste generated from project construction and operation will contribute less than 1% of the available landfill capacity. Staff finds that disposal of the solid wastes generated by the A2PP can occur without significantly impacting the capacity or remaining life of any of these facilities.

### **Hazardous Wastes**

Section 5.14.2.3.2 of the project AFC discusses the two Class I landfills in California: The Clean Harbor Landfill (Buttonwillow) in Kern County, and the Chemical Waste Management Landfill (Kettleman Hills) in Kings County. The Kettleman Hills facility also accepts Class I, II and Class III wastes. In total, there is in excess of 10 million cubic yards of remaining hazardous waste disposal capacity at these landfills, with approximately 30 years of remaining operating lifetimes.

Hazardous wastes generated during construction and operation would be recycled to the extent possible and practical. Approximately seven cubic yards of construction waste and five cubic yards per year of operation waste that cannot be recycled will be transported offsite to a permitted treatment, storage, or Class I disposal facility. The volume of hazardous waste from the A2PP requiring offsite disposal would be far less than staff's threshold of significance and would therefore not significantly impact the capacity or remaining life of the Class I waste facilities.

## **CUMULATIVE IMPACTS AND MITIGATION**

There are several known projects within one mile radius of the project area in the city of Ceres and Stanislaus County which could contribute to the cumulative effects. These include the following projects:

- Martella Farms' four agricultural storage facilities and canopy structures,
- a commercial project for Stanislaus County Animal Shelter,
- completion of the Crows Landing Flea Market
- Ceres Lions Park wells,
- long range planning for West Ceres Specific Plan, Copper Trail Master Plan and Annexation, and Maple Glen Master Plan and Annexation,

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<sup>4</sup> Cubic yards calculated using CalRecycle (California Integrated Waste Management Board construction/demolition and inert debris tools and resources – 400 pounds per cubic yard <http://www.ciwmb.ca.gov/leatrainig/Resources/CDI/Tools/Calculations.htm>)

- TID Hughson-Grayson 115-kV Transmission Line, and
- a Substation Project (refer to Hughson-Grayson 115-kV Transmission Line and Substation Project (TID2009a, Section 5.6.4).

The construction schedules are not published as of the writing of this staff assessment, and it is unlikely this would occur considering the current economic setting. Given the short 12-month A2PP construction schedule, cumulative impacts are not anticipated; therefore, Staff considers that there would be less than significant cumulative impact(s) to waste management during construction. The project area is consistent with the city and county long range planning policies for industrial development in this area; therefore cumulative impacts during project operations is not considered significant.

Staff has considered the minority populations (as identified in the **Socioeconomics Figure 1**) and low income populations in its cumulative impact analysis. There are no significant adverse direct or cumulative land use impact(s); therefore, there are no environmental justice issues.

As proposed, the amount of non-hazardous and hazardous wastes generated during construction and operation of the A2PP would add to the total quantity of waste generated in the State of California. However, project wastes would be generated in modest quantities, waste recycling would be employed wherever practical, and sufficient capacity is available at several treatment and disposal facilities to handle the volumes of wastes generated by the project. Therefore, staff concludes that the waste generated by the A2PP would not result in significant cumulative waste management impacts.

## COMPLIANCE WITH LORS

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Energy Commission staff concludes that the proposed A2PP would comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during both facility construction and operation. The Applicant is required to recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes would be produced during both project construction and operation, the A2PP would be required to obtain a hazardous waste generator identification number from USEPA. The A2PP would also be required to properly store, package and label all hazardous waste, use only approved transporters, prepare hazardous waste manifests, keep detailed records, and appropriately train employees, in accordance with state and federal hazardous waste management requirements.

In the **Socioeconomics** section of this staff assessment, staff presents census information that shows that there are minority populations within one mile and six miles of the project site. Since staff has added conditions of certification that would reduce the risk associated with hazardous waste to a less than significant level, staff concludes that there will be no significant impact from construction or operation of the power plant on minority populations. Therefore, there are no environmental justice issues for Waste Management.

## RESPONSE TO AGENCY AND PUBLIC COMMENTS

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No comments provided.

## CONCLUSIONS

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Consistent with the main objectives for staff's waste management analysis (as noted in the Introduction section of this analysis), staff provides the following conclusions:

1. After review of the Applicant's proposed waste management procedures, staff concludes that project wastes would be managed in compliance with all applicable waste management LORS. Staff notes that both construction and operation wastes would be characterized and managed as either hazardous or non-hazardous waste. All non-hazardous wastes would be recycled to the extent feasible, and non-recyclable wastes would be collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be accumulated onsite in accordance with accumulation time limits (90, 180, 270, or 365 days depending on waste type and volumes generated), and then properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies.

However, to help ensure and facilitate ongoing project compliance with LORS, staff proposes Conditions of Certification **WASTE-1** through **7**. These conditions would require the project owner to do all of the following:

- Ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight (**WASTE- 1, 2, and 3**).
  - Obtain a hazardous waste generator identification number (**WASTE-4**).
  - Prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation (**WASTE-3 and 6**).
  - Report any waste management-related LORS enforcement actions and how violations will be corrected (**WASTE-5**).
  - Ensure that all spills or releases of hazardous substances are reported and cleaned-up in accordance with all applicable federal, state, and local requirements (**WASTE-7**).
2. Regarding impacts of project wastes on existing waste disposal facilities, the existing available capacity of the four Class III landfills that may be used to manage nonhazardous project wastes exceeds 10 million cubic yards ( TID2009a, page 5.14-3).The total amount of nonhazardous wastes generated from construction and operation of A2PP would be minimal compared to the remaining landfill capacity Therefore, disposal of project generated non-hazardous wastes would have a less than significant impact on Class III landfill capacity.

In addition, the two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of A2PP have a combined

remaining capacity in excess of 10 million cubic yards. The total amount of hazardous wastes generated by the A2PP project would contribute less than 1% of the remaining permitted capacity. Impacts from disposal of A2PP generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

Staff concludes that management of the waste generated during construction, and operation of the A2PP would not result in any significant adverse environmental impacts, and would comply with applicable LORS, if the waste management practices and mitigation measures proposed in the project AFC and staff's proposed conditions of certification are implemented.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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**WASTE-1** The project owner shall provide the resume of an experienced and qualified Professional Engineer or Professional Geologist, who shall be available for consultation during site characterization (if needed), excavation and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The Professional Engineer or Professional Geologist shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

**WASTE-2** If potentially contaminated soil is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Professional Engineer or Professional Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control, and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the Professional Engineer or Professional Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the Professional Engineer or Professional Geologist, significant remediation may be required, the project owner shall contact the CPM and representatives of the Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the Professional Engineer or Professional Geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

**WASTE-3** The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency prior to generating any hazardous waste during construction and operations.

Verification: The project owner shall keep a copy of the identification number on file at the project site and provide the number to the CPM in the next Monthly Compliance Report.

**WASTE-4** Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the way project-related wastes are managed.

**WASTE-5** The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility, and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A description of all construction waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Management methods to be used for each waste stream, including temporary onsite storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

**WASTE-6** The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility, and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- Management methods to be used for each waste stream, including temporary onsite storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;

- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- A detailed description of how facility wastes will be managed, and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed upon closure of the facility.

**Verification:** The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

**WASTE-7** The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleaned-up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

**Verification:** The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned-up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. Copies of the unauthorized spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

## REFERENCES

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CEC2009d – California Energy Commission/ F. Miller (tn: 52867). Data Requests Set 1 (#'s 1-84). Dated 8/13/09. Submitted to CEC/Docket Unit on 8/13/09.

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CH2MHILL2009f – CH2MHILL/ S. Madams (tn: 53225). Data Response Set 1A, Response to CEC Staff Request 1-84 & Staff Query 1. Dated 9/14/09. Submitted to CEC/Docket Unit on 9/14/09.

CH2MHILL2009k – CH2MHILL/S. Madams (tn: 54257). Data Responses Set 1D, Responses to CEC Staff Data Requests 18 & 77-79. Dated 11/25/09. Submitted to CEC/Docket Unit on 11/25/09.

ESH2009c – Ellison, Schneider & Harris, LLP/ J. Harris (tn: 53120). Data Request 1-84. Dated on 9/2/09. Submitted to CEC/ Docket Unit on 9/2/09.

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# FACILITY DESIGN

Testimony of Erin Bright

## SUMMARY OF CONCLUSIONS

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The California Energy Commission staff concludes that the design, construction, and eventual closure of the Almond 2 Power Plant (A2PP) and its linear facilities would likely comply with applicable engineering laws, ordinances, regulations, and standards. The proposed conditions of certification, below, would ensure compliance with these laws, ordinances, regulations, and standards.

## INTRODUCTION

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Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the A2PP. The purpose of this analysis is to:

- verify that the laws, ordinances, regulations, and standards (LORS) that apply to the engineering design and construction of the project have been identified;
- verify that both the project and its ancillary facilities are sufficiently described, including proposed design criteria and analysis methods, in order to provide reasonable assurance that the project will be designed and constructed in accordance with all applicable engineering LORS, in a manner that also ensures the public health and safety;
- determine whether special design features should be considered during final design to address conditions unique to the site which could influence public health and safety; and
- describe the design review and construction inspection process and establish the conditions of certification used to monitor and ensure compliance with the engineering LORS, in addition to any special design requirements.

Subjects discussed in this analysis include:

- identification of the engineering LORS that apply to facility design;
- evaluation of the Applicant's proposed design criteria, including identification of criteria essential to public health and safety;
- proposed modifications and additions to the application for certification (AFC) necessary for compliance with applicable engineering LORS; and
- conditions of certification proposed by staff to ensure that the project will be designed and constructed to ensure public health and safety and comply with all applicable engineering LORS.



## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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Lists of LORS applicable to each engineering discipline (civil, structural, mechanical, and electrical) are described in the AFC (TID 2009a). Key LORS are listed in **FACILITY DESIGN Table 1** below.

**FACILITY DESIGN Table 1**  
**Key Engineering Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable LORS	Description
<b>Federal</b>	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
<b>State</b>	2007 California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
<b>Local</b>	Stanislaus County regulations and ordinances
<b>General</b>	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

## SETTING

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A2PP will be located on approximately 4.6 acres adjacent to the existing 48 MW Almond Power Plant within the city limits of Ceres in Stanislaus County (TID 2009a, AFC §§ 1.1, 2.0, 2.1). The site lies in Seismic Risk Zone D (TID 2009a, AFC § 2.2.1.1.1). For more information on the site and related project description, please see the **Project Description** section of this document. Additional engineering design details are contained in the AFC (TID 2009a, AFC Appendix 2B).

## ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

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The purpose of this analysis is to ensure that the project would be built to applicable engineering codes and ensure public health and life safety. This analysis further verifies that applicable engineering LORS have been identified and that the project and its ancillary facilities have been described in adequate detail. It also evaluates the Applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. These conditions allow both the California Energy Commission (Energy Commission) compliance project manager (CPM) and the Applicant to adopt a compliance monitoring scheme that will verify compliance with these LORS.

## SITE PREPARATION AND DEVELOPMENT

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access, in addition to the criteria for designing and constructing linear support facilities such as natural gas and electric transmission interconnections. The Applicant proposes the use of accepted industry standards (see

the AFC, §§ 2.2.1 and 2.2.1.1.1 and Appendix 2B) for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that this project, including its linear facilities, would most likely comply with all applicable site preparation LORS and proposes conditions of certification (see below and the **Geology and Paleontology** section of this document) to ensure that compliance.

## **MAJOR STRUCTURES, SYSTEMS, AND EQUIPMENT**

Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. See condition of certification (**GEN-2**), below.

A2PP shall be designed and constructed to the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and other applicable codes and standards in effect when the design and construction of the project actually begin. If the initial designs are submitted to the chief building official (CBO) for review and approval after the update to the 2007 CBSC takes effect, the 2007 CBSC provisions shall be replaced with the updated provisions.

Certain structures in a power plant may be required, under the CBC, to undergo dynamic lateral force (structural) analysis; others may be designed using the simpler static analysis procedure. In order to ensure that structures are analyzed according to their appropriate lateral force procedure, staff has included Condition of Certification **STRUC-1**, below, which, in part, requires the project CBO's review and approval of the owner's proposed lateral force procedures before construction begins.

## **PROJECT QUALITY PROCEDURES**

The project would be designed and built in conformance with a quality program intended to ensure that its systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with all appropriate power plant technical codes and standards. Compliance with design requirements will be verified through specific inspections and audits. Implementation of this quality assurance/quality control (QA/QC) program will ensure that A2PP is actually designed, procured, fabricated, and installed as described in this analysis (TID 2009a, AFC § 2.2.2.5).

## **COMPLIANCE MONITORING**

Under Section 104.1 in Appendix Chapter 1 of the CBC, the CBO is authorized and directed to enforce all provisions of the CBC. The Energy Commission itself serves as the building official and has the responsibility to enforce the code for all of the energy

facilities it certifies. In addition, the Energy Commission has the power to interpret the CBC and adopt and enforce both rules and supplemental regulations that clarify application of the CBC's provisions.

The Energy Commission's design review and construction inspection process conforms to CBC requirements and ensures that all facility design conditions of certification are met. As provided by section 103.3 in Appendix Chapter 1 of the CBC, the Energy Commission appoints experts to perform design review and construction inspections and act as delegate CBOs on behalf of the Energy Commission. These delegates typically include the local building official and/or independent consultants hired to provide technical expertise that is not provided by the local official alone. The Applicant, through permit fees provided by the CBC, section 108 in Appendix Chapter 1, pays the cost of these reviews and inspections. While building permits in addition to Energy Commission certification are not required for this project, the Applicant, consistent with CBC section 108, pays in lieu of CBC permit fees to cover the costs of these reviews and inspections.

Engineering and compliance staff will invite Stanislaus County, the City of Ceres or a third-party engineering consultant to act as delegate CBO for this project. When an entity has been assigned CBO duties, Energy Commission staff will complete a memorandum of understanding (MOU) with that entity to outline both its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed conditions of certification to ensure public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities, and qualifications of the engineers who will design and build the proposed project (Conditions of Certification **GEN-1** through **GEN-8**). These engineers must be registered in California and sign and stamp every submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that every element of the project's construction (subject to CBO review and approval) be approved by the CBO before it is performed. They also require that qualified special inspectors perform or oversee special inspections required by all applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities, these conditions are written so that no element of construction (of permanent facilities subject to CBO review and approval) that could be difficult to reverse or correct can proceed without prior CBO approval. Elements of construction that are not difficult to reverse may proceed without approval of the plans. The Applicant bears the responsibility to fully modify construction elements in order to comply with all design changes resulting from the CBO's subsequent plan review and approval process.

## **FACILITY CLOSURE**

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The removal of a facility from service (decommissioning) when it reaches the end of its useful life ranges from "mothballing" to the removal of all equipment and appurtenant facilities and subsequent restoration of the site. Future conditions that could affect decommissioning are largely unknown at this time.

In order to ensure that decommissioning will be completed in a manner that is environmentally sound, safe, and protects the public health and safety, the Applicant shall submit a decommissioning plan to the Energy Commission for review and approval before the project's decommissioning begins. The plan shall include a discussion of:

- proposed decommissioning activities for the project and all appurtenant facilities that were constructed as part of the project;
- all applicable LORS and local/regional plans and proof of adherence to those applicable LORS and local/regional plans;
- the activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities; and
- decommissioning alternatives other than complete site restoration.

Satisfying the above requirements should serve as adequate protection, even in the unlikely event that the project is abandoned. Staff has proposed general conditions (see **General Conditions**) to ensure that these measures are included in the Facility Closure Plan.

## CONCLUSIONS AND RECOMMENDATIONS

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1. The laws, ordinances, regulations, and standards (LORS) identified in the AFC and supporting documents directly apply to the project.
2. Staff has evaluated the proposed engineering LORS, design criteria, and design methods in the record, and concludes that the design, construction, and eventual closure of the project will likely comply with applicable engineering LORS.
3. The proposed conditions of certification will ensure that A2PP is designed and constructed in accordance with applicable engineering LORS. This will be accomplished through design review, plan checking, and field inspections that will be performed by the CBO or other Energy Commission delegate. Staff will audit the CBO to ensure satisfactory performance.
4. Though future conditions that could affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan as required in the **General Conditions** section of this document prior to decommissioning, decommissioning procedures will comply with all applicable engineering LORS.

Energy Commission staff recommends that:

1. The proposed conditions of certification be adopted to ensure that the project is designed and constructed in a manner that protects the public health and safety and complies with all applicable engineering LORS;
2. The project be designed and built to the 2007 CBSC (or successor standards, if in effect when initial project engineering designs are submitted for review); and

3. The CBO reviews the final designs, checks plans, and performs field inspections during construction. Energy Commission staff shall audit and monitor the CBO to ensure satisfactory performance.

## CONDITIONS OF CERTIFICATION

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**GEN-1** The project owner shall design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering laws, ordinances, regulations and standards (LORS) in effect at the time initial design plans are submitted to the chief building official (CBO) for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility (2007 CBC, Appendix Chapter 1, § 101.2, Scope). All transmission facilities (lines, switchyards, switching stations, and substations) are covered in the conditions of certification in the **Transmission System Engineering** section of this document.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

**Verification:** Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to the compliance project manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the Energy Commission's decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO (2007 CBC, Appendix Chapter 1, § 110, Certificate of Occupancy).

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, or demolition, ~~repair, or maintenance~~ to be performed on any portion(s) of the completed

facility that requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.

**GEN-2** Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, and master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures, systems, and equipment. Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. The schedule shall contain the date of each submittal to the CBO. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM upon request.

**Verification:** At least 60 days (or a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, and the master drawings and master specifications list of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures, systems, and equipment defined above in Condition of Certification **GEN-2**. Major structures and equipment shall be added to or deleted from the list only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report.

**GEN-3** The project owner shall make payments to the CBO for design review, plan checks, and construction inspections, based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be consistent with the fees listed in the 2007 CBC (2007 CBC, Appendix Chapter 1, § 108, Fees; Chapter 1, Section 108.4, Permits, Fees, Applications and Inspections), adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the CBO.

**Verification:** The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. ~~The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next monthly compliance report indicating that applicable fees have been paid.~~

**GEN-4** Prior to the start of rough grading, the project owner shall assign a California-registered architect, structural engineer, or civil engineer, as the resident engineer in charge of the project (2007 California Administrative Code, § 4-209, Designation of Responsibilities). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the conditions of certification in the **Transmission System Engineering** section of this document.

The resident engineer may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project, respectively. A project may be divided into parts, provided that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The resident engineer shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;
2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these conditions of certification, approved plans, and specifications;
3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;
4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The resident engineer shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the resident engineer or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

**Verification:** At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the resume and registration number of the resident engineer and any other delegated engineers assigned to the project. ~~The project owner shall notify the CPM of the CBO's approvals of the resident engineer and other delegated engineer(s) within five days of the approval.~~

If the resident engineer or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. ~~The project owner~~

~~shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.~~

**GEN-5** Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California.) All transmission facilities (lines, switchyards, switching stations, and substations) are handled in the conditions of certification in the **Transmission System Engineering** section of this document.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (for example, proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit, to the CBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project (2007 CBC, Appendix Chapter 1, § 104, Duties and Powers of Building Official).

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;
2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading; site preparation; excavation; compaction; and construction of secondary containment, foundations,



erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and

3. Provide consultation to the resident engineer during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.
- B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:
1. Review all the engineering geology reports;
  2. Prepare the foundation investigations, geotechnical or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load (2007 CBC, Appendix J, § J104.3, Soils Report; Chapter 18, § 1802.2, Foundation and Soils Investigations);
  3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2007 CBC, Appendix J, section J105, Inspections, and the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and
  4. Recommend field changes to the civil engineer and resident engineer.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations (2007 CBC, Appendix Chapter 1, § 114, Stop Orders).

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and
2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;

2. Provide consultation to the resident engineer during design and construction of the project;
  3. Monitor construction progress to ensure compliance with engineering LORS;
  4. Evaluate and recommend necessary changes in design; and
  5. Prepare and sign all major building plans, specifications, and calculations.
- E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the Energy Commission's decision.
- F. The electrical engineer shall:
1. Be responsible for the electrical design of the project; and
  2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

**Verification:** At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

~~The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approval.~~

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. ~~The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.~~

**GEN-6** Prior to the start of an activity requiring special inspection, the project owner shall assign to the project qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2007 CBC, Chapter 17, Section 1704, Special Inspections; Chapter 17A, Section 1704A, Special Inspections; and Appendix Chapter 1, Section 109, Inspections. All transmission facilities (lines, switchyards, switching stations, and substations)

are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on site requiring special inspection (including structural, piping, tanks, and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Observe the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the CBO and resident engineer. All discrepancies shall be brought to the immediate attention of the resident engineer for correction, then, if uncorrected, to the CBO and the CPM for corrective action (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements); and
4. Submit a final signed report to the resident engineer, and CBO, ~~and CPM~~, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

**Verification:** At least 15 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s) or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. ~~The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next monthly compliance report.~~

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. ~~The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.~~

**GEN-7** If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; Chapter 17, § 1704.1.2, Report Requirements). The discrepancy documentation shall be submitted to the CBO for review and approval. ~~The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS.~~

**Verification:** ~~The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS. The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next monthly compliance report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain CBO's approval.~~

**GEN-8** The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. ~~The project owner shall notify the CPM after obtaining the CBO's final approval.~~ The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at an alternative site approved by the CPM during the operating life of the project (2007 CBC, Appendix Chapter 1, § 106.3.1, Approval of Construction Documents). Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

**Verification:** ~~Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next monthly compliance report, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.~~

Within 90 days of the completion of construction, the project owner shall provide to the CBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" files (Adobe .pdf 6.0), with restricted (password-protected) printing privileges, on archive quality compact discs.

**CIVIL-1** The project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. Soils, geotechnical, or foundation investigation reports required by the 2007 CBC, Appendix J, section J104.3, Soils Report, and Chapter 18, section 1802.2, Foundation and Soils Investigation.

**Verification:** ~~At least 15 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next~~

~~monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.~~

**CIVIL-2** The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area (2007 CBC, Appendix Chapter 1, § 114, Stop Work Orders).

**Verification:** The project owner shall notify the CPM within 24 hours when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. ~~Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.~~

**CIVIL-3** The project owner shall perform inspections in accordance with the 2007 CBC, Appendix Chapter 1, section 109, Inspections, and Chapter 17, section 1704, Special Inspections. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

**Verification:** Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following monthly compliance report.

**CIVIL-4** After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans (2007 CBC, Chapter 17, § 1703.2, Written Approval).

**Verification:** Within 30 days (or within a project owner- and CBO-approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans and that

the facilities are adequate for their intended purposes, ~~along with a copy of the transmittal letter to the CPM. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.~~

**STRUC-1** Prior to the start of any increment of construction, the project owner shall submit plans, calculations and other supporting documentation to the CBO for design review and acceptance for all project structures and equipment identified in the CBO-approved master drawing and master specifications lists. The design plans and calculations shall include the lateral force procedures and details as well as vertical calculations.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;
2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required);
3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation (2007 California Administrative Code, § 4-210, Plans, Specifications, Computations and Other Data);
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge); and
5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge).

**Verification:** At least 60 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of construction of any structure or component listed in the CBO-approved master drawing and master specifications list, the project

owner shall submit to the CBO the above final design plans, specifications and calculations, ~~with a copy of the transmittal letter to the CPM.~~

~~The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.~~

**STRUC-2** The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2007 CBC, Chapter 17, section 1704, Special Inspections, and section 1709.1, Structural Observations.

**Verification:** If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the CBO, with a copy of the transmittal letter to the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

~~The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action necessary to obtain the CBO's approval.~~

**STRUC-3** The project owner shall submit to the CBO design changes to the final plans required by the 2007 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; §

106.4, Amended Construction Documents; 2007 California Administrative Code, § 4-215, Changes in Approved Drawings and Specifications).

**Verification:** On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, ~~with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the monthly compliance report, when the CBO has approved the revised plans.~~

**STRUC-4** Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2007 CBC, Chapter 3, Table 307.1(2), shall, at a minimum, be designed to comply with the requirements of that chapter.

**Verification:** At least 30 days (or within a project owner- and CBO-approved alternate time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

~~The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.~~

**MECH-1** The project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations for each plant major piping and plumbing system listed in the CBO-approved master drawing and master specifications list. Physical layout drawings and drawings not related to code compliance and life safety need not be submitted. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations, and industry standards (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge), which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI/NFPA Z223.1 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);



- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code);
- Stanislaus County codes; and
- City of Ceres codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency (2007 CBC, Appendix Chapter 1, § 103.3, Deputies).

**Verification:** At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in the CBO-approved master drawing and master specifications list, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, ~~and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.~~

~~The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.~~

**MECH-2** For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal/OSHA), prior to operation, the code certification papers and other documents required by applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal/OSHA inspection of that installation (2007 CBC, Appendix Chapter 1, § 109.5, Inspection Requests).

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and
2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

**Verification:** At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval, the above-listed documents, including a copy of the signed and stamped engineer's certification, ~~with a copy of the transmittal letter to the CPM.~~

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal/OSHA inspection approvals.

**MECH-3** The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC), or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that construction. The final plans, specifications, and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings, and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications, and calculations conform with the applicable LORS (2007 CBC, Appendix Chapter 1, § 109.3.7, Energy Efficiency Inspections; § 106.3.4, Design Professionals in Responsible Charge).

**Verification:** At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, ~~with a copy of the transmittal letter to the CPM.~~

**ELEC-1** Prior to the start of any increment of electrical construction for all electrical equipment and systems 480 Volts or higher (see a representative list, below), with the exception of underground duct work and any physical layout drawings and drawings not related to code compliance and life safety, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents). Upon approval, the above-listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; § 109.5, Inspection Requests). All transmission facilities (lines, switchyards, switching

stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A. Final plant design plans shall include:

1. one-line diagrams for the 13.8 kV, 4.16 kV, and 480 V systems; and
2. system grounding drawings.

B. Final plant calculations must establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers, and protective relay settings for the 13.8 kV, 4.16 kV, and 480 V systems;
6. system grounding requirements; and
7. lighting energy calculations.

C. The following activities shall be reported to the CPM in the monthly compliance report:

1. Receipt or delay of major electrical equipment;
2. Testing or energization of major electrical equipment; and
3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission decision.

**Verification:** At least 30 days (or within a project owner- and CBO-approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above-listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, ~~and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.~~

## REFERENCES

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TID2009a –Turlock Irrigation District/ R. Baysinger (tn: 51502). Application for Certification, Volume 1& 2. Dated 5/11/09. Submitted to CEC/Docket Unit on 5/11/09.

# GEOLOGY AND PALEONTOLOGY

Testimony of Dal Hunter, Ph.D., C.E.G.

## SUMMARY OF CONCLUSIONS

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The proposed Turlock Irrigation District Almond 2 Power Plant (A2PP) site is located in the Great Valley physiographic province approximately 30 miles east of the boundary between the Coast Ranges and the Great Valley physiographic provinces. The project site would be located in Stanislaus County approximately 5 miles south of the City of Modesto and 2 miles east of the City of Ceres, California. Potential geologic hazards include strong earthquake-related ground shaking due to the site's geologic setting; liquefaction and associated lateral spreading of loose and submerged granular soils; excessive consolidation settlement of native fine grain soils; and expansive clay soils. The possible impact of these geologic hazards on the proposed facility would have to be mitigated, to the extent practical, through structural designs required by the 2007 California Building Code (CBC). In addition, the design-level geotechnical investigation, required for the project by proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5** and **CIVIL-1**, must present geotechnical engineering design recommendations that would also mitigate these potential geologic hazards to a less than significant level.

There are no known viable geologic or mineralogical resources at the proposed A2PP project site. Known paleontological sites are present within close proximity of the proposed project site and its linears. The artificial fill and Quaternary age sediments which make up the near-surface formation are unlikely to host scientifically significant fossils, but Pleistocene sediments which underlie the fill layer have yielded significant fossils. Potential impacts to paleontological resources due to construction activities would be mitigated through worker training and monitoring by qualified paleontologists, as required by Conditions of Certification **PAL-1** through **PAL-7**.

Based on its independent research and review, the California Energy Commission (Energy Commission) believes that the potential is low for significant adverse cumulative impacts to the project from geologic hazards during its design life, and to potential geologic, mineralogic, and paleontologic resources from the construction, operation, and closure of the proposed project. It is staff's opinion that the A2PP project will be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards (LORS) and in a manner that both protects environmental quality and assures public safety..

## INTRODUCTION

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In this section, Energy Commission staff discusses the potential impacts of geologic hazards on the proposed A2PP project as well as the project's impact on geologic, mineralogic, and paleontologic resources. Staff's objective is to ensure that there would be no consequential adverse impacts to significant geological and paleontological resources during the project construction, operation, and closure and that operation of the plant would not expose occupants to high-probability geologic hazards. A brief geological and paleontological overview is provided. The section concludes with staff's proposed monitoring and mitigation measures for geologic hazards and geologic,

mineralogic, and paleontologic resources, with the proposed conditions of certification. Conditions of certification are conditions with respect to design and/or construction, mandated of the Applicant by the Energy Commission as a part of its approval, which outline required procedures to mitigate impacts to potential resources and potential impacts to the facility from geologic hazards.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable laws, ordinances, regulations, and standards (LORS) are listed in the application for certification (AFC) (TID 2009). The following briefly describes the current LORS for both geologic hazards and resources and mineralogic and paleontologic resources.

**Geology and Paleontology Table 1  
Laws, Ordinances, Regulations, and Standards (LORS)**

<b><u>Applicable Law</u></b>	<b><u>Description</u></b>
<b><u>Federal</u></b>	The proposed A2PP project is not located on federal land. There are no federal LORS for geologic hazards and resources for this site.
<b><u>State</u></b>	
California Building Code (2007)	The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control). The CBC has adopted provisions in the International Building Code (ICC 2006).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), sections 2621–2630	The Act mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. The project site is not located within a designated Alquist-Priolo Fault Zone.
The Seismic Hazards Mapping Act, PRC sections 2690–2699	Areas are identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC sections 5097.5 and 30244	The code regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Warren-Alquist Act, PRC, section 25527	The Warren-Alquist Act requires the Energy Commission to “give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites.” With respect to paleontologic resources, the Energy Commission relies on guidelines from the Society for Vertebrate Paleontology (SVP), as indicated below.
California Environmental Quality Act (CEQA), PRC sections 21000 et seq.; CEQA Guidelines, Title 14, sections 15000 et seq., Appendix G	The Act and guidelines mandate that public and private entities identify the potential impacts on the environment during proposed activities. Appendix G outlines the requirements for compliance with CEQA and provides a definition of significant impacts on a fossil site.
Society for Vertebrate Paleontology (SVP), 1995	The “Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures” is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.

<b>Applicable Law</b>	<b>Description</b>
<b>Local</b>	
2007 California Building Code	These codes, which are adopted at the county level, address excavation, grading, and earthwork construction, and are not limited to construction relating to earthquake safety and seismic activity hazards.
County of Stanislaus General Plan (2008),	Requires compliance with the safety element of the county general plan with regard to geologic hazards.
City of Ceres (1997)	Requires compliance with the safety element of the county general plan with regard to geologic hazards.

## SETTING

The proposed A2PP project would involve construction of a 174-megawatt (MW) natural gas fired turbine generator power plant. The project would be located on approximately 4.6 acres adjacent to the existing 48 MW Turlock Irrigation District Almond Power Plant at 4500 Crows Landing Road in the City of Ceres, California. Construction would require installation of three natural gas fired turbine generators, a storm water retention basin, and a new natural gas pipeline. Three new above-ground transmission lines would transmit power to the grid via an existing substation. A 115kV line would be about 10 miles long and paralleled by a new 0.8-mile-long 69kV line near the existing proposed Grayson substation. The third new transmission line, also 69kV, would extend north from the substation to the existing TID Almond Power Plant (STRC 2009). The new natural gas supply line would be nearly 12 miles long extending south from the site. Currently, a number of alternate routes are under consideration. The Applicant has addressed these alignments in response to Energy Commission Data Requests 18, 77, 78, and 79 in what is, essentially, an addendum to the AFC (TID 2009; CH2M Hill 2009). Most ancillary facilities such as an anhydrous ammonia system, fire protection system, process water supply, and administration building already exist at the Almond Power Plant and would not be duplicated.

## REGIONAL SETTING

The proposed A2PP site is located in central Stanislaus County, California approximately 30 miles east of the boundary between the Coast Ranges and the Great Valley (Central Valley) physiographic provinces. The Great Valley is approximately 400 miles long and 60 miles wide, bounded on the north by low-lying hills; on the northeast by the volcanic plateau of the Cascade Range; on the west by the Coast Ranges; on the east by the Sierra Nevada; and on the south by the Coast Ranges and the Tehachapi Mountains. The northern third of the valley is known as the Sacramento Valley, while the southern two-thirds are known as the San Joaquin Valley. The Great Valley is characterized by dissected uplands and relatively undeformed low alluvial plains and fans, river flood plains and channels, and lake bottoms. In the late Cenozoic era, much of the San Joaquin Valley was occupied by shallow brackish and freshwater lakes which left behind fine grained lakebed deposits surrounded by coarser sediments of fluvial and alluvial origin derived from the surrounding highlands. Much of the valley fill alluvium is underlain by marine and non-marine sedimentary rocks and crystalline basement that have undergone anticlinal and synclinal folding and faulting related to regional tectonism (USGS 1985). This tectonism has been uplifting and tilting the coast ranges since the middle Jurassic period (USGS 1991).

## PROJECT SITE DESCRIPTION

The A2PP project would be located in Section 21, Township 4 South, Range 9 East of Mount Diablo Meridian at approximately 37.57 degrees north latitude by 120.99 degrees west longitude with a site elevation of approximately 80 feet above mean sea level (msl). The site slopes down to the west at an approximate grade of less than 1%.

The site surface is composed of 6 or more feet of engineered fill which was imported to replace native soil removed during construction of an adjacent commercial building (TID 2009). Native soil in the project area consists of an unknown thickness of arkosic alluvial sand with silt and gravel associated with terraces and fan deposits of the Tuolumne River, and has been tentatively designated the m2-1 unit of the Pleistocene Modesto Formation (USGS 1980).

Based on previous geotechnical studies in the proposed site area, the ground water level beneath the site is expected to be approximately 20 feet (Kleinfelder 1993).

Several active and potentially active faults related to regional strike-slip faulting and compressional tectonics are present within 62 miles (100 kilometers) of the proposed A2PP site, and EQFAULT™ Version 3.00 was used to model these potential seismic sources (Blake 2006). The various faults are listed in **Geology and Paleontology Table 2**, along with the type, orientation (strike), maximum earthquake magnitude, and distance from the project site. The peak acceleration, fault type, and fault class for each fault is also given. The fault locations can be found on the California Division of Mines and Geology Fault Activity Map of California (CDMG 1994) and United States Geological Survey Fault Maps (USGS 2008b). The sense of movement and fault class were derived from the California Department of Conservation Fault Parameters (CDC 2002).

**Geology and Paleontology Table 2  
Active Faults Relative to the Proposed Almond 2 Power Plant Site**

<u>Fault Name</u>	<u>Distance from Site (miles)</u>	<u>Maximum Earthquake Magnitude (Mw)</u>	<u>Estimated Peak Site Acceleration (g)</u>	<u>Fault Type and Strike<sup>1</sup></u>	<u>Fault Class</u>
Great Valley 7	12.3	6.7	0.232	Reverse	B
Great Valley 8	13.2	6.6	0.209	Reverse	B
Ortigalita	26.1	7.1	0.134	Right lateral – Strike slip	B
Foothill Fault System 1	30.0	6.5	0.107	Normal - Right lateral – Oblique slip	C
Greenville (GS + GN)	30.5	6.9	0.109	Right lateral – Strike slip	B
Great Valley 9	32.3	6.6	0.106	Reverse	B
Greenville (GN)	37.7	6.7	0.080	Right lateral – Strike slip	B
Foothill Fault System 2	39.6	6.5	0.086	Normal - Right lateral – Oblique slip	C
Calaveras (CS + CC + CN)	42.3	6.9	0.085	Right lateral – Strike slip	B
Mount Diablo	44.3	6.7	0.086	Reverse	B
Calaveras (CN)	45.5	6.8	0.074	Right lateral – Strike slip	B
Foothill Fault System 3	46.2	6.5	0.077	Normal - Right lateral – Oblique slip	C
Hayward (HS + HN + RC)	47.7	7.3	0.092	Right lateral – Strike slip	A
Calaveras (CS)	47.9	5.8	0.042	Right lateral – Strike slip	B
Quien Sabe	49.0	6.4	0.057	Right lateral – Strike slip	B
Monte Vista – Shannon	52.6	6.7	0.077	Reverse - North	B
Great Valley 5	54.4	6.5	0.067	Reverse	B
Great Valley 10	54.8	6.4	0.064	Reverse	B
San Andreas (SAS + SAP + SAN + SAO)	57.2	7.9	0.112	Right lateral – Strike slip	A
Concord/GV (CON + GVS + GVN)	59.2	6.7	0.058	Right lateral – Strike slip	B
San Andreas (CREEPING)	59.3	6.2	0.044	Right lateral – Strike slip	A
Zayante – Vergeles	59.7	7.0	0.067	Right lateral – Strike slip - Reverse	B
San Andreas (SAP + SAN + SAO)	61.8	7.8	0.101	Right lateral – Strike slip	A

<sup>1</sup>All faults strike northwest unless otherwise noted.

## MITIGATION

This section considers two types of impacts. The first is geologic hazards, which could impact the proper functioning of the proposed facility and create life/safety concerns. The second is the potential impacts the proposed facility could have on existing geologic, mineralogic, and paleontologic resources in the area.

## METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

No federal LORS concerning geologic hazards and geologic and mineralogic resources apply to this project. The California Building Standards Code (CBSC) and CBC (2007) provide geotechnical and geological investigation and design guidelines, which engineers must follow when designing a facility. As a result, the criteria used to assess the significance of a geologic hazard include evaluating each hazard's potential impact on the design and construction of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, seiches, and others as may be dictated by site-specific conditions.



The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether the project would expose persons or structures to geologic hazards.
- Sections (X) (a) and (b) concern the project's effects on mineral resources.

Staff has reviewed geologic and mineral resource maps for the surrounding area, as well as site-specific information provided by the Applicant, to determine if geologic and mineralogic resources exist in the area and to determine if plant operations could adversely affect any such resources.

Staff reviewed existing paleontologic information and requested records searches from the University of California Museum of Paleontology (at Berkeley) for the area surrounding the site. Site-specific information generated by the Applicant for the proposed A2PP site was also reviewed. All research was conducted in accordance with accepted assessment protocol (SVP 1995) to determine whether any known paleontologic resources exist in the general area. If such resources are present or likely to be present, conditions of certification outline required procedures to mitigate impacts to potential resources and are proposed as part of the project's approval.

## **DIRECT/INDIRECT IMPACTS AND MITIGATION**

Ground shaking, foundation settlement and expansive clay soils represent the main geologic hazards for this project. These potential hazards can be effectively mitigated through facility design by incorporating recommendations contained in a project-specific geotechnical report, as required by the CBC (2007). The requirements of the proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **Facility Design** section should also aid in mitigating these impacts to a less than significant level.

Near-surface geologic units at the proposed project site reportedly consist of at least 6 feet of imported fill overlying native clean to silty sand. These sands, in turn, overlie fine grained silty and clayey soils interbedded with silty and clayey sands and clean sands. The geologic units at the proposed site are widespread throughout the northwestern part of the San Joaquin Valley and, as such, are not unique in terms of recreational, commercial, or scientific value. In addition, the project area is not within an area of significant geologic resources according to the Stanislaus County General Plan (2008). Finally, staff reviewed existing documentation that outlines aggregate, oil, geothermal, and natural gas production in the area (CDOGGR 2008). The information provided by the Applicant, and the independent documentation reviewed, indicate that the project should not impact, directly or indirectly, available geologic resources.

Paleontological collection sites including, one which yielded a fragment of mammoth tusk, are present in close proximity to the proposed A2PP site (UCMP 2009). Disturbed sediments and artificial fill, which form the surface at the site and are present along the

majority of the proposed linears, hold no potential to yield scientifically important fossils as they would be out of natural context from their environment of deposition.

Proposed Conditions of Certification **PAL-1** through **PAL-7** are designed to mitigate direct impacts to potential paleontological resources below the disturbed zone, as discussed above, to less-than-significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a paleontologic resource specialist, or PRS).

The proposed conditions of certification allow the Energy Commission's compliance project manager (CPM) and the Applicant to adopt a compliance monitoring scheme ensuring compliance with LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources.

Based on the information below, it is staff's opinion that the potential for significant adverse direct or indirect impacts to the project from geologic hazards and to potential geologic, mineralogic, and paleontologic resources from the proposed project is low, assuming the proposed conditions of certification are adopted and enforced.

## **GEOLOGICAL HAZARDS**

The AFC (TID 2009) provides documentation of potential geologic hazards at the proposed plant site. Review of the AFC, coupled with staff's independent research, indicates that the possibility of geologic hazards impacting the plant site during its practical design life is low. Geologic hazards, such as strong ground shaking, expansive clay soils, liquefaction, and settlement due to loading compressible soils must be addressed in the project geotechnical report per CBC (2007) requirements.

Staff's independent research included the review of available geologic maps, reports, and related data of the proposed A2PP plant site. Geological information was available from the California Geological Survey (CGS), the California Division of Mines and Geology (CDMG), the United States Geological Survey (USGS), and other government organizations. Since 2002, the CDMG has been known as the CGS.

### **Faulting and Seismicity**

Type A faults have slip-rates of  $\geq 5$  millimeters per year (mm/year) and are capable of producing an earthquake of magnitude 7.0 or greater. Type B faults have slip-rates of 2 to 5 mm per year and are capable of producing an earthquake of magnitude 6.5 to 7.0. Two Type A, 9 Type B faults, and 1 Type C faults and fault zones have been identified within 62 miles (100 kilometers) of the proposed A2PP Site. The fault type, potential magnitude, and distance from the site were summarized previously in **Geology and Paleontology Table 2**.

The Alquist-Priolo Act of 1973 and subsequent California state law (California Code of Regulations 2007) require that all occupied structures be set back 50 feet or more from the surface trace of an active fault. Since no active faults have been documented within or near the LEC site, setbacks from occupied structures would not be required.

Energy Commission staff reviewed the CDMG publication *Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions*

(1994) and Alquist-Priolo Special Studies Zone mapping and reports (CDMG 2003; CGS 2002; and Hart and Bryant 1999). No active faults are shown on published maps as crossing the boundary of new construction at the proposed A2PP site or its proposed transmission routes. The nearest major active fault is the Segment 7 of the Great Valley Fault system located approximately 12 miles west of the project site (**Geology and Paleontology Table 2**). None of the proposed linears required by the project cross the Great Valley fault or other known faults.

Segment 7 of the Great Valley Fault has been mapped approximately 12 miles west of the proposed site and represents the highest potential for seismic impact to the site (**Geology and Paleontology Table 2**). This fault has been identified as a Type B reverse fault with 15 degree west dip and a slip rate of approximately 1.5 mm/year. The closest Type A fault from the site, the Hayward Fault, is mapped as being more than 47 miles west of the site and as having a slip rate of as much as 9.0 mm/year (CDC 2002).

Based on the geotechnical investigation performed for the adjacent Almond Power Plant project (Kleinfelder 1993), the site soil class is Class C. The estimated peak horizontal ground acceleration for the proposed A2PP site is 0.39 times the acceleration of gravity (0.39g) for a bedrock acceleration based on 2% probability of exceedence in 50 years and 2007 CBC criteria (USGS 2008a).

### **Liquefaction**

Liquefaction is a condition in which a cohesionless soil may lose shear strength due to a sudden increase in pore water pressure. The surficial fill layer at the proposed A2PP site is anticipated to be underlain by unsaturated clean sand which overlies bedded stiff to hard clay and silt soils interbedded with sand-dominated layers (Kleinfelder 1993). Standard penetration testing (SPT) conducted at the site indicate the subsurface formation is generally medium dense to very dense such that seismic shaking would be unlikely to cause widespread loss of shear strength (Kleinfelder 1993). However, loose sand layers are present which coupled with a shallow ground water table, could liquefy when subjected to strong earthquake shaking.

Based on the above information, the site and proposed linear alignments can be characterized as having some potential for liquefaction during a large earthquake; however, this potential impact can be mitigated to less than significant through facility design as required by the CBC (2007) proposed Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **Facility Design** section.

### **Lateral Spreading**

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope, such as a nearby steep hillside or deeply eroded stream bank, but can also occur on gentle slopes. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. Although the proposed A2PP site and proposed linears may be subject to liquefaction, the potential for lateral spreading during seismic events is considered negligible since the proposed area is essentially flat.

## **Dynamic Compaction**

Dynamic compaction of soils can occur when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase in soil density). The decrease in volume can result in settlement of overlying structural improvements. Loose sand layers which may underlie the proposed site could be subject to dynamic compaction during a large earthquake. The project-specific geotechnical report required by the CBC (2007) and proposed Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **Facility Design** section will evaluate the dynamic compaction potential for the project, and provide recommendations to mitigate the effects of such conditions, if determined to be present, to a less than significant level.

## **Hydrocompaction**

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flash flood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation dissolves the weak cementation that is preventing the immediate collapse of the soil structure. Based on the density of the silt soils present beneath the proposed A2PP site, the site's agriculture history, and historic ground water elevations, the potential for hydrocompaction is considered to be negligible. The hydrocompaction potential along proposed project linears is not known but is expected to be minimal for the planned types of improvements.

## **Subsidence**

Local subsidence or settlement may occur when areas containing compressible soils are subjected to foundation loads. Regional subsidence could occur due to future changes in ground water pumping or development of hydrocarbon reserves. No known subsidence problems exist in the proposed project area per the Stanislaus County General Plan (Stanislaus County 2008), and localized subsidence would likely only result from foundation loading during construction due to the presence of potentially compressible fine grain soils at depth across the site. Recommendations for mitigating the effects of subsidence due to foundation loads (settlement) must be provided in the project-specific geotechnical report as required by the CBC (2007) and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1**. When necessary, mitigation is normally accomplished by over-excavation and replacement of the compressible soils for lightly loaded foundations. For heavily loaded foundations, deep foundations are commonly used to support the loads.

## **Expansive Soils**

Expansive soils contain specific clay minerals with an affinity for water. When these soils are at a water content below their plastic limit, the addition of moisture from irrigation, precipitation, capillary tension, water line breaks, etc. causes the clay to absorb water molecules into their structure. This, in turn, causes an increase in the overall volume of the soil. This increase in volume can correspond to excessive movement (heave) of overlying structural improvements or settlement if the clay then

dries out. Plasticity index tests, which are an indicator of the expansive potential and clay content in soils, have not been performed on representative samples of the surficial clay soils at this site. Therefore, recommendations for mitigating the effects of expansive clays soils, if they are exposed during construction, must be provided in the project-specific geotechnical report as required by CBC (2007) requirements and proposed **Facility Design** Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1**. When necessary, mitigation is normally accomplished by over-excavation and replacement of the expansive soils beneath structural improvements, although deep foundations are commonly used where clays are thick and highly expansive. Lime treatment of the expansive soils is standard practice beneath pavements.

### **Landslides**

The proposed A2PP site and surrounding area is relatively flat, exhibiting an approximate slope of 1% to the west. The flat-lying nature and the absence of topographically high ground within or immediately upgradient from the site suggest it is not susceptible to landslide activity.

### **Flooding**

The Federal Emergency Management Agency (FEMA) has identified the proposed A2PP site as lying in an unshaded Zone X, or an area outside the 0.2% annual chance flood plain (FEMA 2008).

### **Tsunamis and Seiches**

Tsunamis are large-scale, seismic sea waves caused by offshore earthquakes, landslides, and/or volcanic activity. Since the proposed A2PP site lies inland more than 100 miles from the Pacific Ocean, potential impacts to the site due to tsunamis are negligible. No large inland surface water bodies capable of producing seiches are located near the proposed plant site. Therefore, the potential for impacts to the proposed A2PP project due to seiche activity is negligible.

## **GEOLOGIC, MINERALOGIC, AND PALEONTOLOGIC RESOURCES**

Based on mapping information developed by the CDC, the proposed A2PP site and associated linears lies within designated Mineral Resource Zone (MRZ) MRZ-3a<sup>sg(C)</sup> defined as “areas which may prove suitable for future sources of construction aggregate” (CDC 1993). Energy Commission staff has also reviewed applicable geologic maps and reports for this area (CDC 2006; CDC 1993; Stanislaus County 2008).

Exploration on the adjacent Almond Power Plant site did not indicate significant potential for aggregate or other economic mineral deposits (Kleinfelder 1993). Given the widespread availability of construction aggregate in Stanislaus County, there is little chance that construction of the proposed A2PP project would make important aggregate deposits unavailable for development. No natural gas, petroleum, or geothermal wells are reported within 5 miles of the proposed A2PP site (CDOGGR 2008).

Energy Commission staff has reviewed the paleontological resources assessment contained in the AFC (TID 2009). Staff has also conducted an independent search within the on-line records database maintained by the UCMP (2009). Paleontological collection sites have been recorded within close proximity of the proposed power plant. The 6 feet or more of fill, which forms the site surface, holds very little promise for production of scientifically significant fossil remains. Pleistocene sediments which underlie the fill have produced numerous fossils in the site vicinity. As a result, the potential to encounter paleontological resources during construction of the proposed project is high if excavations penetrate the full thickness of the fill. Potential impacts to such resources can be effectively mitigated through the Conditions of Certification **PAL-1** through **PAL-7**.

### **Construction Impacts and Mitigation**

The design-level geotechnical investigation required for the proposed project by the CBC (2007) and proposed **Facility Design** Condition of Certification **GEN-1** will evaluate and provide standard engineering design recommendations for mitigation of liquefaction, dynamic compaction, excessive settlement due to compressible soils, and expansive clay soils, where appropriate.

No viable geologic or mineralogic resources are known to be present at the proposed plant site and are not expected to be present along the proposed transmission line or natural gas supply line routes. Fill materials have a negligible paleontological sensitivity. Construction of the proposed project will include grading, excavation, and utility trenching. Staff considers the probability of encountering paleontological resources to be high in excavations which penetrate through the surficial fill materials and encounter native Quaternary sediments. The potential for encountering fossils will increase with the depth of excavation/trenching.

Proposed Conditions of Certification **PAL-1** through **PAL-7** are designed to mitigate any paleontological resource impacts, as discussed above, to a less-than-significant level. Essentially, these conditions require a worker education program in conjunction with monitoring of earthwork activities by qualified professional paleontologists (paleontologic resource specialists, or PRS). Earthwork is halted any time potential fossils are recognized by either the paleontologist or the worker. When properly implemented, the conditions of certification yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. The project owner retains a paleontological resource specialist to produce a monitoring and mitigation plan, conduct the worker training, and provide the on-site monitoring. During the monitoring, the PRS can and often does petition the Energy Commission for a change in the monitoring protocol. Most commonly, this is a request for reduced monitoring frequency after sufficient monitoring has been performed to ascertain that there is little chance of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.

Based upon the literature and archives search, and field surveys performed for the proposed A2PP project, the Applicant has proposed monitoring and mitigation

measures to be followed during the construction of the project. Energy Commission staff believes that the facility, including the necessary linears, can be designed and constructed to minimize the effect of geologic hazards at the site during the project life and that impacts to any significant fossils encountered during construction of the power plant and associated linears would be mitigated to an acceptable level.

### **Operation Impacts and Mitigation**

Operation of the proposed plant facilities should not have any adverse impact on geologic, mineralogic, or paleontologic resources. Potential geologic hazards, including strong ground shaking, dynamic compaction, expansive soils, and foundation settlement due to compressible soils can be effectively mitigated through facility design (see proposed Conditions of Certification GEN-1, GEN-5, and CIVIL-1 in the **Facility Design** section) to the degree that these potential hazards should not affect operation of the facility.

### **CUMULATIVE IMPACTS AND MITIGATION**

Cumulative impacts correspond to a proposed project's potential incremental effect, together with other closely related past, present, and reasonably foreseeable future projects whose impacts on geologic, mineralogic, and paleontologic resources may compound or increase the incremental effect of the proposed project on such resources.

Potential cumulative effects, as they pertain to geologic hazards, are essentially limited to regional subsidence due to ground water withdrawal. As this project would not involve pumping of large volumes of ground water, it would not contribute to any increase of this potential hazard.

No viable geologic resources have been identified in the vicinity of the project site (TID 2009).

Significant paleontological resources have been identified within close proximity to the proposed project site and its linears (UCMP 2009). Because the value of paleontological resources is associated with their discovery within a specific geologic host unit, the existing 6± feet of fill holds little prospect for production of scientifically significant fossil remains. Similarly, soils disturbed by plowing (the top 18 inches±), existing utility trenches or fills along proposed linears, would not yield significant fossils. The potential impacts to paleontological resources due to construction activities would be mitigated, as required by proposed Conditions of Certification **PAL-1** through **PAL-7**.

Implementation of these conditions should result in a net gain to the science of paleontology by allowing fossils to be recovered, identified, studied, and preserved that would otherwise not have been discovered.

Based on the above discussion, staff believes that the potential for significant adverse cumulative impacts to the proposed project from geologic hazards during the project's design life is low and that the potential for impacts to geologic, mineralogic, and paleontologic resources is also low.

Based upon the literature and archives search, and field surveys performed for the proposed project, the Applicant proposes monitoring and mitigation measures for

construction of the project. Energy Commission staff agrees with the Applicant that the project can be designed and constructed to minimize the effects of geologic hazards at the site and that impacts to scientifically significant vertebrate and invertebrate fossils encountered during construction would be mitigated to acceptable levels.

The proposed conditions of certification allow the Energy Commission Compliance Project Manager (CPM) and the Applicant to adopt a compliance monitoring scheme ensuring compliance with applicable LORS for geologic hazards and geologic, mineralogic, and paleontologic resources.

## **FACILITY CLOSURE**

Facility closure activities are not expected to impact geologic or mineralogic resources since no such resources are known to exist at either the project location or along its proposed linears. In addition, the decommissioning and closure of the project should not negatively affect geologic, mineralogic, or paleontologic resources since the majority of the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of the facility.

## **RESPONSE TO AGENCY AND PUBLIC COMMENTS**

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Staff has not received any agency or public comments regarding geologic hazards, mineral resources, or paleontology at this time.

## **CONCLUSIONS**

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The project will comply with applicable LORS, provided that the proposed conditions of certification are adopted and enforced. The design and construction of the project should have no adverse impact with respect to geologic, mineralogic, and paleontologic resources. Staff proposes to ensure compliance with applicable LORS through the adoption of the proposed conditions of certification listed below.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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General conditions of certification with respect to engineering geology are proposed under Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **Facility Design** section. Proposed paleontological conditions of certification follow in **PAL-1** through **PAL-7**. It is staff's opinion that the likelihood of encountering paleontologic resources during plant and project linear construction is low. The upper 6 feet or more of the plant site is, reportedly, overlain by fill with almost no potential to bear significant fossils. Depending on finished pad grade, it is possible that most on-site structures will not penetrate the fill. The underlying native soils become increasingly more sensitive with depth. Native soils will likely be excavated for project linears and may be encountered in deeper plant site excavations or in areas of the plant site where fill may be thinner than 6 feet. Staff will consider reducing monitoring intensity, at the recommendation of the project PRS, following examination of the project grading plan or sufficient, representative, excavations to fully understand site stratigraphy.



**PAL-1** The project owner shall provide the Compliance Project Manager (CPM) with the resume and qualifications of its Paleontological Resource Specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified Paleontological Resource Monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. institutional affiliations, appropriate credentials, and college degree;
2. ability to recognize and collect fossils in the field;
3. local geological and biostratigraphic expertise;
4. proficiency in identifying vertebrate and invertebrate fossils; and
5. at least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. Paleontologic Resource Monitors (PRMs) shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and ~~two years of monitoring experience in California.~~

**Verification:** (1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

(2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project, stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the

project, the PRS shall provide additional letters and resumes to the CPM. ~~The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.~~

(3) Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

**PAL-2** The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction laydown areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS ~~and CPM~~. The site grading plan and plan and profile drawings for the utility lines are appropriate for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS ~~and CPM~~.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

**Verification:** (1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

(2) If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

(3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of ~~identifying~~ implementing the changes.

**PAL-3** The project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a paleontological resources monitoring and mitigation plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities, and may be modified with CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside

with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP 1995) and shall include, but not be limited to, the following:

1. assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;
2. identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the conditions of certification;
3. a thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;
4. an explanation of why, how, and how much sampling is expected to take place and in what units, including descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;
5. a discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;
6. a discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;
7. a discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
8. procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;
9. identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation, and how they will be met, and the name and phone number of the contact person at the institution; and
10. a copy of the paleontological conditions of certification.

**Verification:** At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

**PAL-4** Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for the following workers: project managers, construction supervisors, forepersons and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of a CPM-approved video or in-person presentation. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontologic sensitivity;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and
7. A sticker that shall be placed on each worker's hard hat indicating that environmental training has been completed.

Verification: (1) At least ~~30~~ 60 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.

(2) At least ~~30~~ 60 days prior to ground disturbance, the project owner shall submit the script ~~and final video~~ to the CPM for approval if the project owner is planning to use a video for ~~interim~~ training.

(3) If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

(4) In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

**PAL-5** The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.
2. The project owner shall ensure that the PRM(s) keeps a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.
3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the conditions of certification.
4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or on the morning of the following business day in the case of a weekend or holiday event where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities placed in the monthly compliance reports. The summary will include the name(s) of PRS or PRM(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of

identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

**Verification:** The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

**PAL-6** The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

**Verification:** The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of the CPM-approved paleontological resource report (see **PAL-7**). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

**PAL-7** The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submit it to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

**Verification:** Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

## Certification of Completion Worker Environmental Awareness Program Almond 2 Power Plant (09-AFC-2)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (such as construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

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Cultural Trainer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

PaleoTrainer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Biological Trainer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

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# POWER PLANT EFFICIENCY

Testimony of Shahab Khoshmashrab

## SUMMARY OF CONCLUSIONS

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The TID Almond 2 Power Plant (A2PP), if constructed and operated as proposed, would generate a nominal 174 MW of peak electric power. While the project would consume substantial amounts of energy, with an overall project fuel efficiency of approximately 39% lower heating value (LHV) at nominal design load, it would do so in the most efficient manner practicable. The project would not require additional sources of energy supply, would not consume energy in a wasteful or inefficient manner, and would not create significant adverse impacts on energy supplies or resources.

## INTRODUCTION

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The Energy Commission makes findings as to whether energy use by A2PP would result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that A2PP's consumption of energy would create a significant adverse impact, it must determine whether there are any feasible mitigation measures that could eliminate or minimize the impacts. In this analysis, staff addresses the issue of inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis will:

- examine whether the facility will likely present any adverse impacts upon energy resources;
- examine whether these adverse impacts are significant; and if so,
- examine whether feasible mitigation measures exist that would eliminate the adverse impacts or reduce them to a level of insignificance.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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No federal, state or local/county laws, ordinances, regulations, and standards apply to the efficiency of this project.

## SETTING

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The Turlock Irrigation District (TID) proposes to construct a 174 MW (nominal net output) natural gas fired simple cycle electrical generating facility in Ceres, California. A2PP would provide electricity within the TID service territory.

The Applicant intends to operate the plant's three GE LM6000PG SPRINT combustion turbine generators approximately 5,000 engine hours per year (~~total for all three combustion turbine generators~~) per turbine generator, or an average of approximately ~~49%~~ 57% of the year per combustion turbine generator (TID 2009a, AFC § 2.1.7). Each

combustion turbine generator would utilize an inlet air evaporative cooler to maintain maximum output and efficiency at escalated temperatures. Natural gas would be transmitted to the plant via a new 11.6-mile long natural gas supply pipeline constructed and owned by PG&E to be connected to Pacific Gas & Electric Company (PG&E) Line #215 (TID 2009a, AFC §§ 1.1.1, 2.1, 2.1.4, 2.1.6)

## **ASSESSMENT OF IMPACTS**

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### **METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE OF ENERGY RESOURCES**

CEQA Guidelines state that the environmental analysis "...shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4[a][1]). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient, and unnecessary consumption of energy (Cal. Code Regs., tit. 14, § 15000 et seq., Appendix F).

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient, and unnecessary consumption of fuel or energy.

### **PROJECT ENERGY REQUIREMENTS AND ENERGY USE EFFICIENCY**

The natural gas requirement during base load operation at the annual average ambient temperature would be approximately 1,405 million British thermal units per hour (MMBtu/hr) LHV (TID 2009a, AFC § 2.1.6). This is a substantial rate of energy consumption and could potentially impact energy supplies (see below in **Additional Energy Supply Requirements**). Under expected project conditions, electricity would be generated at a thermal efficiency of approximately 39% LHV at full load operation (TID 2009a, AFC § Figure 2.1-3).

### **ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES**

The Applicant has described its sources of supply of natural gas for the project in the AFC (TID 2009a, AFC §§ 1.1.1, 2.1, 2.1.6). Natural gas for the A2PP would be supplied by a new 8- to 16-inch diameter natural gas transmission pipeline to be constructed, owned, operated and maintained by PG&E. The PG&E natural gas supply represents an adequate source for a project of this size; it is highly unlikely that the project could pose a significant adverse impact on natural gas supplies in California.

## **ADDITIONAL ENERGY SUPPLY REQUIREMENTS**

Natural gas fuel would be supplied to the project by a new PG&E 8-in diameter high pressure pipeline (TID 2009a, AFC §§ 1.1.1, 2.1, 2.1.6). PG&E is a resource with adequate delivery capacity for a project of this size. There is no real likelihood that the A2PP would require the development of additional energy supply capacity.

## **COMPLIANCE WITH ENERGY STANDARDS**

No standards apply to the efficiency of the A2PP or other non-cogeneration projects.

## **ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT, AND UNNECESSARY ENERGY CONSUMPTION**

The A2PP could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient, or unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

### **Project Configuration**

The project objective is to provide additional peak electricity generation to the TID service territory to meet projected summer load. The Applicant expects that the A2PP would mostly operate to meet peak demand and provide local reliability service. A simple cycle configuration is consistent with and supports this expectation due to its operating flexibility.

The A2PP would be configured as three simple cycle power trains in parallel, in which electricity is generated by one natural gas-fired turbine generator per train. This configuration, with its short start-up time and fast ramping<sup>1</sup> capability, is well suited to providing peaking power. Further, when reduced output is required, one or more of the turbine generators can be shut down, allowing the remaining machines to produce a percentage of the full power at optimum efficiency, rather than operating a single, larger machine at an inefficient part load output.

The Applicant intends for this facility to operate in peaking duty up to a total of approximately 5000 engine hours for the three per combustion turbine generators (an average of approximately 1,670 hours per turbine operating at full load). This is equivalent to each of the three turbines operating approximately ~~49%~~ 57% of the year (TID 2009a, AFC § 2.1.7).

### **Equipment Selection**

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The Applicant would employ three General Electric LM6000PG SPRINT (spray inter-cooling) gas turbine generators (TID 2009a, AFC § 1.1.1, 2.1). The LM6000PG SPRINT gas turbine to be employed in the A2PP represents one of the

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<sup>1</sup> "Ramping" is increasing and decreasing electrical output to meet fluctuating load requirements.

most modern and efficient such machines now available. The SPRINT version of this machine is nominally rated at 53.5 MW and 39.8% efficiency LHV at ISO<sup>2</sup> conditions (GTW 2009). This rating slightly differs from the projected efficiency for the A2PP of 39% LHV because of efficiency losses from parasitic loads and increased flow losses due to the selective catalytic reduction units.

## **Efficiency of Alternatives to the Project**

### **Alternative Generating Technologies**

Alternative generating technologies for the A2PP are considered in the AFC (TID 2009a, AFC § 6.6). Fossil fuels (oil and coal), biomass, geothermal, hydroelectric, solar, and wind technologies are all considered. Biomass and fossil fuels other than natural gas cannot meet air quality limitations. Renewable technologies require larger physical areas and are not always available when peaking power is needed (see the **Project Alternatives** section of this document). Given the project objectives, location, and air pollution control requirements, staff agrees with the Applicant that only natural gas-burning technologies are feasible.

### **Natural Gas-Burning Technologies**

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel-efficient machinery.

Capital cost is also important in selecting generating machinery. Recent progress in the development of gas turbines, incorporating technological advances made in the development of aircraft (jet) engines, combined with the cost advantages of assembly-line manufacturing, has made available machines that not only offer the lowest available fuel costs, but at the same time sell for the lowest per-kilowatt capital cost.

The Applicant plans to employ three General Electric LM6000PG SPRINT gas turbine generators (TID 2009a, AFC § 1.1, 2.1). The SPRINT version of this machine is nominally rated at 53.5 MW and 39.8% efficiency LHV at ISO<sup>3</sup> conditions (GTW 2009). (Staff compares alternative machines' ISO ratings as a common baseline, since project-specific ratings are not available for the alternative machines.) Alternative machines that can meet the project's objectives are the SGT-800 and FT8 TwinPac adapted from Siemens Power Generation and Pratt & Whitney aircraft engines, respectively.

The Siemens SGT-800 gas turbine generator in a simple cycle configuration is nominally rated at 47 MW and 37.5% LHV at ISO conditions (GTW 2009).

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<sup>2</sup> International Standards Organization (ISO) standard conditions are 15°C (59°F), 60% relative humidity, and one atmosphere of pressure (equivalent to sea level).

<sup>3</sup> International Standards Organization (ISO) standard conditions are 15°C (59°F), 60% relative humidity, and one atmosphere of pressure (equivalent to sea level).

The Pratt & Whitney FT8 TwinPac gas turbine generator in a simple cycle configuration is nominally rated at 51.4 MW and 38.4% LHV at ISO conditions (GTW 2009).

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
<b>GE LM6000PG SPRINT</b>	<b>53.5</b>	<b>39.8 %</b>
Siemens SGT-800	47	37.5 %
P & W FT8 TwinPac	51.4	38.4 %

Source: GTW 2009

The LM6000PG SPRINT is further enhanced by the incorporation of spray intercooling (thus the name, SPRay INTERcooling, or SPRINT). This takes advantage of the aeroderivative machine's two-stage compressor.<sup>4</sup> By spraying water into the airstream between the two compressor stages, the partially compressed air is cooled, reducing the amount of work that must be performed by the second stage compressor. This reduces the power consumed by the compressor, yielding greater net power output and higher fuel efficiency. The benefits in generating capacity and fuel efficiency increase with rising ambient air temperatures (GTW 2000).

While the LM6000 enjoys a slight advantage in fuel efficiency over the alternative machines, any differences among the three in actual operating efficiency would be relatively insignificant. Other factors such as generating capacity and ability to meet air pollution limitations are some of the factors considered in selecting the turbine model.

### **Inlet Air Cooling**

A further choice of alternatives involves the selection of gas turbine inlet air-cooling methods.<sup>5</sup> The two commonly used techniques are the evaporative cooler, or fogger, and the chiller (mechanical or absorption); both techniques increase power output by cooling the gas turbine inlet air. In general terms, a mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but necessitates the use of a substantial inventory of ammonia. An evaporative cooler or a fogger boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding slightly higher operating efficiency. The difference in efficiency among these techniques is relatively insignificant.

The Applicant proposes to employ an evaporative cooler (TID 2009a, AFC §§ 1.1.1, 2.1, 2.1.4). Given the relative lack of clear superiority of one system over the other, staff agrees that the Applicant's approach would yield no significant adverse energy impacts.

In conclusion, the project configuration (simple cycle) and generating equipment chosen appear to represent the most efficient feasible combination to satisfy the project objectives. There are no alternatives that could significantly reduce energy consumption.

<sup>4</sup> The larger industrial type gas turbines typically are single-shaft machines, with single-stage compressor and turbine. Aeroderivatives are two-shaft (or, in some cases, three-shaft) machines, with two-stage (or three-stage) compressors and turbines.

<sup>5</sup> A gas turbine's power output decreases as ambient air temperatures rise. The LM6000 SPRINT produces peak power at 50°F; this peak output can be maintained in much hotter weather by cooling the inlet air.

## **CUMULATIVE IMPACTS**

No nearby projects have been identified that could potentially combine with the A2PP project to create cumulative impacts on natural gas resources. The PG&E natural gas supply system draws from extensive supplies originating in the Rocky Mountains, in the southwest, and in Canada, and is capable of delivering the required amount of gas to both of these projects. Therefore, staff believes the PG&E system is adequate to supply the A2PP without adversely impacting its other customers.

## **NOTEWORTHY PROJECT BENEFITS**

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The Applicant expects the A2PP to help meet local electricity generation resource adequacy requirements in the TID service territory. By doing so in a fuel-efficient manner with GE LM6000 SPRINT gas turbines, one of the most modern and efficient such machines now available, the project would benefit electric consumers in California.

## **CONCLUSIONS**

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The project, if constructed and operated as proposed, would generate a nominal 174 MW of peaking electric power, at an overall project fuel efficiency of approximately 39% LHV at nominal design load. While it would consume substantial amounts of energy, it would do so in the most efficient manner practicable. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the project would present no significant adverse impacts upon energy resources. No cumulative impacts on energy resources are likely.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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No conditions of certification are proposed.

## **REFERENCES**

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GTW (Gas Turbine World). 2009. *Gas Turbine World*, 26<sup>th</sup> Edition (the 2008 GTW Performance Specs), pp. 15-24.

GTW (Gas Turbine World). 2000. "LM6000 SPRINT design enhanced to increase power and efficiency", *Gas Turbine World*, July-August 2000, pp. 16-19.

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# POWER PLANT RELIABILITY

Testimony of Shahab Khoshmashrab

## SUMMARY OF CONCLUSIONS

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The Applicant predicts an equivalent availability factor of 92-98%, which staff believes is achievable. Based on a review of the proposal, staff concludes that the TID Almond 2 Power Plant (Almond 2) would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

## INTRODUCTION

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In this analysis, Energy Commission staff addresses the reliability issues of the proposed Almond 2 to determine if the power plant is likely to be built in accordance with applicable laws, ordinances, regulations, and standards (LORS) and with typical industry norms for reliability of power generation. Staff uses this level of reliability as a benchmark because it ensures that the resulting project would likely not degrade the overall reliability of the electric system it serves (see the “Setting” subsection below).

The scope of this power plant reliability analysis covers:

- equipment availability;
- plant maintainability;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with applicable LORS and with typical industry norms for reliability of power generation. While Turlock Irrigation District (TID) has predicted an equivalent availability factor of 92-98% for Almond 2 (see below), staff uses typical industry norms as a benchmark, rather than TID’s projection, to evaluate the project’s reliability.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

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Although no federal, state, or local/county LORS apply to the reliability of this project, recently adopted laws and regulations influence the project’s operational requirements (see “Setting,” below).

## SETTING

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In the restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the state’s control area operators, such as the California Independent System Operator (California ISO), that purchase, dispatch, and sell electric power throughout the state. Determining how the California ISO and other control area operators would ensure system reliability has been an ongoing process; protocols have been developed and put in place that allow sufficient reliability to be maintained under



the competitive market system. “Must-run” power purchase agreements and “participating generator” agreements, for example, are two mechanisms that have been employed to ensure an adequate supply of reliable power.

In September 2005, California AB 380 (Núñez, Chapter 367, Statutes of 2005) became law. This modification to the Public Utilities Code requires the California Public Utilities Commission to consult with the California ISO to establish resource adequacy requirements for all load-serving entities (basically, public and privately owned utility companies). These requirements include maintaining a minimum reserve margin (extra generating capacity to serve in times of equipment failure or unexpected demand) and maintaining sufficient local generating resources to satisfy the load-serving entity’s peak demand and operating reserve requirements.

In order to fulfill this mandate, the California ISO has begun to establish specific criteria for each load-serving entity under its jurisdiction. These criteria guide each load-serving entity in deciding how much generating capacity and ancillary services to build or purchase, after which the load-serving entity issues power purchase agreements to satisfy these needs. TID, as a load-serving entity, is obligated to satisfy these criteria which include increasing local generation to reduce reliance on imported power (TID 2009a, AFC § 1.1.1).

The California ISO’s mechanisms to ensure adequate power plant reliability apparently were devised under the assumption that the individual power plants that compete to sell power into the system will each exhibit a level of reliability similar to that of power plants of past decades. However, there has been valid cause to believe that, under free market competition, financial pressures on power plant owners to minimize capital outlays and maintenance expenditures may act to reduce the reliability of many power plants, both existing and newly constructed (McGraw-Hill 1994). It is possible that, if significant numbers of power plants were to exhibit individual reliability sufficiently lower than this historical level, the assumptions used by California ISO to ensure system reliability would prove invalid, with potentially disappointing results. Accordingly, staff has recommended that power plant owners continue to build and operate their projects to the level of reliability to which all in the industry are accustomed.

As part of its plan to provide needed reliability, the Applicant proposes to operate a 174-MW (nominal output) simple cycle peaking load power plant, providing power to support local demand in the TID service territory (TID 2009a, AFC §§ 1.1.1, 1.4). Almond 2 is expected to achieve an equivalent availability factor of 92-98% (TID 2009a, AFC § 2.2.2.1). The project will be dispatched to serve peak loads at times of high demand, to provide local generation, and to achieve the TID’s required reserve margin.

## **ASSESSMENT OF IMPACTS**

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### **METHOD FOR DETERMINING RELIABILITY**

The Energy Commission must make findings as to the manner in which the project is to be designed, sited, and operated to ensure safe and reliable operation (Cal. Code Regs., tit. 20, § 1752[c]). Staff takes the approach that a project is acceptable if it does

not degrade the reliability of the utility system to which it is connected. This is likely the case if the project exhibits reliability at least equal to that of other power plants on that system.

The equivalent availability factor for a power plant is the percentage of the time that it is available to generate power; both planned and unplanned outages subtract from its availability. Measures of power plant reliability are based on its actual ability to generate power when it is considered available and are affected by starting failures and unplanned, or forced, outages. For practical purposes, reliability can be considered a combination of these two industry measures, making a reliable power plant one that is available when called upon to operate. Throughout its intended 30-year life (TID 2009a, AFC § 2.2.2.1), Almond 2 will be expected to perform reliably. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability is accomplished by ensuring adequate levels of equipment availability, plant maintainability with scheduled maintenance outages, fuel and water availability, and resistance to natural hazards. Staff examines these factors for the project and compares them to industry norms. If they compare favorably, staff can conclude that the power plant will be as reliable as other power plants on the electric system and will therefore not degrade system reliability.

## **EQUIPMENT AVAILABILITY**

Equipment availability will be ensured by use of appropriate quality assurance/quality control (QA/QC) programs during design, procurement, construction, and operation of the plant and by providing for adequate maintenance and repair of the equipment and systems (discussed below).

### **Quality Control Program**

The Applicant describes a quality assurance/quality control program (TID 2009a, AFC §§ 2.2.2.5, 2.1.12.3) typical of the power industry. Equipment will be purchased from qualified suppliers, based on technical and commercial evaluations. Suppliers' personnel, production capability, past performance, QA programs, and quality history will be evaluated. The project owner will perform receipt inspections, test components, and administer independent testing contracts. Staff expects implementation of this program to yield typical reliability of design and construction. To ensure such implementation, staff has proposed appropriate conditions of certification under the **Facility Design** section of this document.

## **PLANT MAINTAINABILITY**

### **Equipment Redundancy**

A peaking generating facility commonly offers adequate opportunity for maintenance work during its downtime; the Applicant expects to operate Almond 2 approximately 5,000 machine-hours per year, or ~~49%~~ 57% of the year per machine (TID 2009a, AFC § 2.1.7). During periods of extended dispatch, however, as could occur if other major generating or transmission assets were disabled, the facility may be required to operate for extended periods. A typical approach for achieving reliability in such circumstances is to provide redundant examples of those pieces of equipment most likely to require service or repair.

The Applicant plans to provide appropriate redundancy of function for the project. The fact that the project consists of three combustion turbine-generator sets operating in parallel as independent equipment trains provides inherent reliability. A single equipment failure cannot disable more than one train, thus allowing the plant to continue to generate (at reduced output). In addition, all plant ancillary systems are also designed with adequate redundancy to ensure continued operation in the face of equipment failure (TID 2009a, AFC § 2.2.2.2; Table 2.2-1). Staff believes that equipment redundancy will be sufficient for a project such as this.

### **Maintenance Program**

The Applicant proposes to establish a preventive plant maintenance program typical of the industry (TID 2009a, AFC §§ 2.2.2, 2.2.2.5.2). Equipment manufacturers provide maintenance recommendations with their products; the Applicant will base its maintenance program on these recommendations. The program will encompass preventive and predictive maintenance techniques. Maintenance outages will be planned for periods of low electricity demand. In light of these plans, staff expects that the project will be adequately maintained to ensure acceptable reliability.

### **FUEL AND WATER AVAILABILITY**

For any power plant, the long-term availability of fuel and of water for cooling or process use is necessary to ensure reliability. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant may be curtailed, threatening the supply of power as well as the economic viability of the plant.

#### **Fuel Availability**

Almond 2 will burn natural gas supplied by Pacific Gas & Electric Company (PG&E). Fuel will be delivered via a new 11.6-mile-long natural gas pipeline that will connect to PG&E's Line #215 south of the project site. PG&E has confirmed that its system has enough capacity to supply Almond 2 from this location (TID 2009a, AFC §§ 2.1.6, 2.2.2.3). A will serve letter from PG&E, confirming this, is included as Appendix 2C of the AFC. The PG&E natural gas system represents a resource of considerable capacity and offers access to adequate supplies of gas. Staff agrees with the Applicant's prediction (TID 2009a, AFC § 2.2.2.3) that there will be adequate natural gas supply and pipeline capacity to meet the project's needs.

#### **Water Supply Reliability**

Almond 2 would obtain water for plant use from the City of Ceres Waste Water Treatment Plant (WWTP) via an existing 6-inch diameter pipeline. Water would be pumped from an extraction well located beneath the WWTP percolation ponds approximately 35 to 65 feet below ground level. Potable water will be provided by a drinking water delivery service (TID 2009a, AFC §§ 2.1.7.1, 5.15.1.4.1). A will-serve letter from the City of Ceres WWTP is included in Appendix 2 A of the AFC. Staff believes this source yields sufficient likelihood of a reliable supply of water. (For further discussion of water supply, see the **Soil and Water Resources** section of this document.)

## POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. High winds, tsunamis (tidal waves), and seiches (waves in inland bodies of water) will not likely represent a hazard for this project, but seismic shaking (earthquake) and flooding may present credible threats to reliable operation.

### Seismic Shaking

There is potential for seismic ground shaking to affect the project site and linear facilities in the event of a large-magnitude earthquake occurring on fault segments near the project. The project site and linear facilities, however, are not located within an Alquist-Priolo Earthquake Fault Zone or within the trace of any known active fault. (For more information, see the **Geology and Paleontology** section of this document.) The project will be designed and constructed to the seismic requirements of the latest appropriate LORS (TID 2009a, AFC § 5.4.6).

Compliance with current LORS applicable to seismic design represents an upgrading of performance during seismic shaking compared to older facilities, due to the fact that these LORS have been periodically and continually upgraded. By virtue of being built to the latest seismic design LORS, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see the **Facility Design** section of this document. In light of the historical performance of California power plants and the electrical system in seismic events, staff believes there is no special concern with power plant functional reliability affecting the electric system's reliability due to seismic events.

### Flooding

The site lies within Zone X floodplain as defined by the Federal Emergency Management Agency, which is outside of the 100-year flood plain (TID 2009a, AFC § 5.15.1.3). With proper plant design (ensured by adherence to the proposed **Facility Design** conditions of certification), staff believes there should be no significant concerns with power plant functional reliability due to flooding. For further discussion, see the **Soil and Water Resources** and **Geology and Paleontology** sections of this document.

## COMPARISON WITH EXISTING FACILITIES

The North American Electric Reliability Corporation (NERC) keeps industry statistics for availability factors (as well as many other related reliability data). NERC continually polls utility companies throughout the North American continent on project reliability data through its Generating Availability Data System and periodically summarizes and publishes the statistics on the Internet (<http://www.nerc.com>). NERC reports the following summary generating unit statistics for the years 2002 through 2006 (NERC 2007):

- for Gas Turbine units (50 MW and larger):  
Equivalent Availability Factor = 91.82%

The gas turbines that will be employed in the project have been on the market for several years; General Electric has documented typical annual availability for this machine of 97.8%. The Applicant's prediction of an annual availability factor approaching 92-98% (TID 2009a, AFC § 2.2.2.1) appears reasonable compared to General Electric's experience. In fact, these new machines can well be expected to outperform the fleet of various (mostly older) gas turbines that make up the NERC statistics. Further, since the plant will consist of three parallel gas turbine generating trains, maintenance can be scheduled during those times of year when the full plant output is not required to meet market demand, typical of industry standard maintenance procedures. The Applicant's estimate of plant availability, therefore, appears realistic. The stated procedures for assuring design, procurement, and construction of a reliable power plant appear to follow industry norms, and staff believes they are likely to yield an adequately reliable plant.

## **NOTEWORTHY PROJECT BENEFITS**

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The Applicant would provide peaking power and intermediate duty generation to serve the needs of the TID, to provide additional local generating capacity and to offer ancillary services to the CAISO (TID 2009a, AFC § 2.1.15). The fact that the project consists of three combustion turbine generators configured as independent equipment trains provides inherent reliability. A single equipment failure cannot disable more than one train, thus allowing the plant to continue to generate (at reduced output). In light of this and the additional reliability-enhancing features of the project described above, the Applicant's prediction of an equivalent availability factor approaching 92-98% appears achievable. Staff believes this should provide an adequate level of reliability.

## **CONCLUSION**

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TID predicts an equivalent availability factor approaching 92-98%, which staff believes is achievable. Based on a review of the proposal, staff concludes that the plant would be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No conditions of certification are proposed.

## **PROPOSED CONDITIONS OF CERTIFICATION**

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No conditions of certification are proposed.

## **REFERENCES**

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TID 2009a –Turlock Irrigation District/ R. Baysinger (tn: 51502). Application for Certification, Volume 1 & 2. Dated 5/11/09. Submitted to CEC/Docket Unit on 5/11/09.

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# TRANSMISSION SYSTEM ENGINEERING

Testimony of Laiping Ng and Mark Hesters

## SUMMARY OF CONCLUSIONS

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The proposed Almond 2 Power Plant (A2PP) project outlet transmission lines and terminations are acceptable and would comply with all applicable laws, ordinances, regulations, and standards (LORS). The project interconnection to the grid would not require additional downstream transmission facilities (other than those proposed by the Applicant) that require California Environmental Quality Act (CEQA) review.

- The A2PP will not cause any new transmission line overloads under normal or contingency conditions. Pre-project transmission line overloads under contingency conditions would be mitigated by Turlock Irrigation District (TID) operation procedures. Therefore, there are no adverse impacts to the transmission system that require mitigation as a result of integrating the A2PP project into the TID system.
- Three 69 kV circuit breakers may need to be replaced to accommodate A2PP. The rest of the existing breakers are adequate to withstand the post project incremental fault currents described in the Short Circuit Study.
- The proposed interconnecting facilities between the new generator and the proposed TID Grayson Substation, including the step-up transformer, the 115 kV overhead transmission line, and terminations are adequate, and planned in accordance with good utility practices, and acceptable to staff in accordance with engineering LORS.

## INTRODUCTION

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### STAFF ANALYSIS

This Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conform to all applicable LORS required for safe and reliable electric power transmission. Additionally, under the CEQA, the Energy Commission must conduct an environmental review of the “whole of the action,” which may include facilities not licensed by the Energy Commission (Cal Code Regs, tit 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and that represent the “whole of the action.”

Energy Commission staff relies on the interconnecting authority, in this case the TID, for the analysis of impacts on the transmission grid from the proposed interconnection as well as the identification and approval of new or modified downstream facilities that may be required as mitigation measures. The proposed A2PP would connect to the TID transmission network and requires analysis and approval by TID.

Because TID is not part of the California Independent System Operator (California ISO) grid, the California ISO is not directly responsible for ensuring electric system reliability

for the generator interconnection and does not plan to provide analysis and testimony for this project. The staff therefore has increased responsibility to evaluate the system reliability impacts of the project and provide conclusions and recommendations to the Energy Commission.

Staff's analysis evaluates the power plant switchyard, outlet line, termination and downstream facilities identified by the Applicant.

## **ROLE OF TURLOCK IRRIGATION DISTRICT**

TID is responsible for ensuring electric system reliability in its system for addition of the proposed transmission modifications and determines both the standards necessary to achieve reliability and whether the proposed transmission modifications conform to those standards.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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California Public Utilities Commission General Order 95, *Rules for Overhead Electric Line Construction*, formulates uniform requirements for construction of overhead transmission lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance, and operation or use of overhead electric lines and to the public in general.

California Public Utilities Commission General Order 128, *Rules for Construction of Underground Electric Supply and Communications Systems*, formulates uniform requirements and minimum standards to be used for underground supply systems to ensure adequate service and safety to persons engaged in the construction, maintenance, and operation or use of underground electric lines and to the public in general.

The National Electric Safety Code, 1999, provides electrical, mechanical, civil, and structural requirements for overhead electric line construction and operation. The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Corporation (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority, and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage, and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on section I. A. of the standards, entitled *NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table*, and on section I. D., entitled *NERC and WECC Standards for Voltage Support and Reactive Power*. These standards require that the results of power flow and stability simulations verify defined

performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage, and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, its uncontrolled loss is not permitted (WECC 2002).

NERC Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles, and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. While these reliability standards are similar to NERC/WECC standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards with regard to power flow and stability simulations for transmission system contingency performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).

## **PROJECT DESCRIPTION AND INTERCONNECTION FACILITIES**

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The Almond 2 Power Plant is a simple-cycle power generating facility that would be located in City of Ceres, Stanislaus County, California. A total of three combustion turbine generators (CTG), expected to generate 174 MW, would be interconnected to the TID's new Grayson Substation. The proposed commercial operation date for the facility is the fourth quarter of 2011.

Each combustion turbine generator is rated at 68 MVA with a power factor of 0.85. The CTG would connect through a 4,000 Amps generator circuit breaker and 15 kV underground cable to the low side of its dedicated ~~50/67/83~~ 60/80/100 MVA generator step-up (13.8/~~44.5~~120 kV) transformer. The high side of the transformer would be connected through a ~~4200~~ 2,000 Amps disconnect switch to the project switchyard (TID2009a, section 1.3, section 2.0, Figure 3.1-3A).

## **SWITCHYARDS AND INTERCONNECTION FACILITIES**

In a ring bus configuration, the project switchyard consists of five ~~4,200~~ 2,000 A circuit breakers and ~~ten 4,200~~ twelve 2,000 A disconnect switches. Two 115 kV overhead generator tie-lines connecting from the project switchyard to the new TID Grayson Substation will be 0.9 mile and 1.2 miles in length, respectively. The proposed conductor size is 954 kcmil aluminum alloy. The proposed Grayson Substation consists of 12 kV, 69 kV, and 115 kV buses. The originally designed 115 kV bus would need to be expanded to accommodate A2PP's two generator tie-lines. Generator tie-line 1 would connect to the expanded 115 kV bus, and generator tie-line 2 would connect to the originally designed 115 kV bus. The generator tie-lines would be supported by single and double wood or steel pole structures. Power would be distributed to the grid via transmission lines from the Grayson Substation (TID2009a, section 3.2, Figure 3.1-



3B, Figure 3.1-4A). Conditions of Certification TSE-5 ensure these facilities comply with LORS.

## **ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION**

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For the interconnection of a proposed generating unit or transmission facility to the grid, the interconnecting utility and control area operator, TID in this case, is responsible for ensuring grid reliability. The entity determines the transmission system impacts of the proposed project, and any mitigation measures needed to ensure system conformance with performance levels required by utility reliability criteria, NERC planning standards, and WECC reliability criteria. The System Impact Study (SIS) is used to determine the impacts of the proposed project on the transmission grid. Staff relies on this study to determine the project's effect on the transmission grid and to identify any necessary downstream facilities or indirect project impacts required to bring the transmission network into compliance with applicable reliability standards.

The SIS analyzes the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The study must analyze the impact of the project for the first year of operation and thus are based on a forecast of loads, generation, and transmission. Load forecasts are developed by the interconnecting utility and the California ISO. Generation and transmission forecasts are established by an interconnection queue. The study is focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads, or cascading outages), and short circuit duties.

If the SIS shows that the interconnection of the project causes the grid to be out of compliance with reliability standards, then the studies will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. If the mitigation identified by the interconnecting utility includes transmission modifications or additions that require CEQA review as part of the "whole of the action," the Energy Commission must analyze the environmental impacts of these modifications or additions.

### **SYSTEM IMPACT STUDY**

The System Impact Study was performed to identify the transmission system impacts caused by the A2PP project on TID and the neighboring utilities including Modesto Irrigation District (MID), Merced Irrigation District (MeID), Sacramento Municipal Utility District (SMUD), Pacific Gas and Electric Company (PG&E), and Western Area Power Administration (WAPA) transmission systems. The SIS includes Power Flow analysis, Transient Stability analysis, Voltage Stability analysis, and Short Circuit analysis. The study modeled the A2PP for a maximum net output of 174 MW. The base cases included planned generating facilities in TID, PG&E, MID, and MeID, and SMUD service territories, whose on-line schedules are concurrent with or precede the A2PP project. The detailed study assumptions have been described in the SIS. The Power Flow analysis was conducted with and without the A2PP connected to the TID transmission system at the new Grayson Substation using full loop-base cases modeling projected

2012 summer peak, 2012 summer off-peak, and 2012 spring peak conditions in Central Valley area. The Power Flow analysis assessed the project's impact on thermal loading and voltage deviation of the transmission lines and equipment. Transient Stability analysis was conducted with the A2PP using the projected 2012 summer peak full loop base case to determine whether the A2PP would create instability in the system following certain selected outages. Voltage Stability analysis was conducted to determine the voltage drop caused by selected outages and how close the system is from collapse for selected contingencies based on reactive limit. Short Circuit analysis was conducted with and without the A2PP to determine if the A2PP would result in overstressing existing substation facilities (CH2MHILL2009i, System Impact Study).

## **Power Flow Study Results and Mitigation Measures**

### **Power Flow**

The SIS concluded that after the 2.9 mile-long Almond-Crows Landing 69 kV single circuit transmission line has been re-rated from the 2 feet per second wind speed to 4 feet per second wind speed, the Power Flow analysis identified no project overload criteria violations under 2012 summer peak, 2012 summer off-peak, and 2012 spring peak normal operation conditions. Marginal transmission line overloads under contingency conditions would be mitigated by operation procedures. No mitigation is required for the A2PP.

#### Under Normal (Category A) conditions:

- The Power Flow Study indicated the addition of the A2PP would not cause any new overloads or exacerbate any existing overloads under normal operating conditions. No mitigation is required for the A2PP.

#### Under N-1 (Category B) contingency conditions:

- Walnut – WEC 115 kV line #1: This line is loaded to 90% before the addition of the A2PP. Addition of the A2PP will increase the line loading to 100.68% under Category B contingency condition.

##### Mitigation:

- No mitigation is required for this line overload. This overload occurs only during summer off-peak conditions and with the Almond CT turned on. Once the Almond CT was modeled off line, as the unit is expected to operate during peak load condition only, this marginal line overload did not appear as shown in Table V-3 of the System Impact Study. No mitigation is required for the A2PP.

#### Under N-2 (Category C) contingency conditions:

- Walnut – WEC 115 kV line #1: This line is loaded to 90% before the addition of the A2PP. Addition of the A2PP will increase the line loading to ~~102.68%~~ 102.98% under Category C contingency conditions.

##### Mitigation:

- No mitigation is required for this line overload. This overload occurs only during summer off-peak conditions and with the Almond CT turned on. Once the Almond CT was modeled off line, this marginal line overload did not appear as

shown in Table V-3 of the System Impact Study. No mitigation is required for the A2PP.

- Grayson – Westport 69 kV line: This line is loaded to 90% before the addition of the A2PP. Addition of the A2PP will increase the line loading to 105.09% under Category C contingency conditions.

Mitigation:

- No mitigation is required for this line overload. This overload occurs only during summer off-peak conditions and with the Almond CT turned on. Once the Almond CT was modeled off line, this marginal line overload did not appear as shown in Table V-3 of the System Impact Study. No mitigation is required for the A2PP.

The System Impact Study also identified some pre-project transmission line overloads under N-2 contingency conditions in the 2012 summer peak case when ~~the~~ MID's McClure generation unit was units were modeled off. However, the McClure generation ~~unit is~~ units are normally on during summer peak. Once the McClure generation ~~unit is~~ units are on, no pre-project or post-project overloads occurred as shown in Table V-5.

Appendix 8 of the System Impact Study lists Power Flow thermal analysis output for all the study cases including 2012 Spring Peak, 2012 Summer Peak, 2012 Summer Off-Peak, and 2012 Summer Off-Peak Sensitivity. The Power Flow thermal analysis concluded that the addition of the A2PP to the TID grid would not cause adverse impacts to the transmission system.

### **Voltage Stability**

Voltage Stability analysis was performed using the 2012 Spring Peak, 2012 Summer Peak, and 2012 Summer Off-Peak cases. The study results indicated that the interconnection of the A2PP would not cause adverse impacts to the existing TID transmission system. Adding the A2PP to the TID system would improve the TID's reactive margin by 32 Mvar and would increase the load handling capability by 214 MW.

### **Transient Stability Analysis Results and Mitigation Measures**

Transient Stability analysis for A2PP was conducted using the projected 2012 summer peak full-loop base case to determine if the A2PP would create any adverse impacts on the stable operation of the transmission grid following selected N-1 and N-2 outages. The results indicate there are no adverse impacts on the stable operation of the transmission system following the selected disturbances, as outlined in the SIS for integration of the A2PP (CH2MHILL2009i, System Impact Study).

### **Short Circuit Analysis Results and Mitigation Measures**

Short Circuit analysis was conducted to determine the degree to which the addition of the A2PP project increases fault duties at TID's substations, adjacent utility substations, and other 500 kV, 230 kV, 115 kV, and 69 kV busses within the study area. The analysis simulated faults at selected busses. The maximum three phase and single line-to-ground fault currents, with and without the project, and breaker duty information for

each of these busses are summarized in Appendix 13 of the SIS (Short Circuit Analysis Output). The Short Circuit analysis indicated that with the A2PP, three circuit breakers CB 510, CB 530, and CB 550 at the Walnut 69 kV Substation exceeded the 27,000 Ampere interrupting capability in the single line-to-ground fault analysis. These three circuit breakers may require upgrade. The Applicant has provided the Short Circuit analysis to PG&E, MID and WAPA to review the study results. No comments have been received to date. Additional circuit breaker upgrades are not anticipated.

The existing breakers are adequate enough to withstand any post project incremental fault currents identified in the Short Circuit analysis (CH2MHILL2009i, System Impact Study, Appendix 13).

## **CUMULATIVE IMPACTS**

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The TSE analysis focuses on whether or not a proposed project will meet required codes and standards. At all times the transmission grid must remain in compliance with reliability standards, whether one project or many projects interconnect. Potential cumulative impacts on the transmission network are identified through the utility generator interconnection process. This process analyzes not only the impacts of the proposed project but also all other projects ahead of the studied project in the generation interconnection queue. In cases where a significant number of proposed generation projects could affect a particular portion of the transmission grid, the interconnecting utility can study the cluster of projects in order to identify the most efficient means to interconnect all the proposed projects. It is apparent from the System Impact Study results that impacts of other projects in the generation queue require mitigation and that the interconnection of the A2PP does not require significant mitigation beyond that needed for other projects.

## **COMPLIANCE WITH LORS**

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The System Impact Study indicates that the project interconnection would comply with NERC/WECC planning standards. The Applicant will design, build, and operate the proposed 115 kV overhead transmission line. The proposed modifications to the Grayson Substation would be done by TID. Staff concludes that with implementation of the proposed conditions of certification, the project will meet all applicable LORS.

## **CONCLUSIONS AND RECOMMENDATIONS**

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The proposed A2PP project outlet transmission lines and terminations are acceptable and would comply with all applicable LORS. The project interconnection to the grid would not require additional downstream transmission facilities (other than those proposed by the Applicant) that require CEQA review.

- The A2PP will not cause any new transmission line overloads under normal or contingency conditions. Pre-project transmission line overloads under contingency conditions would be mitigated by TID operation procedures. Therefore, there are no adverse impacts to the transmission system that require mitigation as a result of integrating the A2PP project into the TID system.

- Three 69 kV circuit breakers may need to be replaced to accommodate A2PP. The rest of the existing breakers are adequate to withstand the post project incremental fault currents described in the Short Circuit Study.
- The proposed interconnecting facilities between the new generator and the proposed TID Grayson Substation, including the step-up transformer, the 115 kV overhead transmission line, and terminations are adequate, and planned in accordance with good utility practices, and acceptable to staff in accordance with engineering LORS.

## PROPOSED CONDITIONS OF CERTIFICATION

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**TSE-1** The project owner shall furnish to the Compliance Project Manager (CPM) and to the Chief Building Official (CBO) a schedule of transmission facility design submittals, a master drawing list, a master specifications list, and a major equipment and structure list. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction, the project owner shall submit the schedule, a master drawing list, and a master specifications list to the CBO and the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **TRANSMISSION SYSTEM ENGINEERING Table 1** below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

**TRANSMISSION SYSTEM ENGINEERING Table 1  
Major Equipment List**

Breakers
Step-up Transformer
Switchyard
Busses
Surge Arrestors
Disconnects
Take off facilities
Electrical Control Building
Switchyard Control Building
Transmission Pole/Tower
Grounding System

**TSE-2** Prior to the start of construction the project owner shall assign an electrical engineer and at least one of each of the following to the project:

- a civil engineer;

- a geotechnical engineer, or a civil engineer experienced and knowledgeable in the practice of soils engineering;
- a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; and
- ~~a mechanical engineer.~~

Business and Professions Code, sections 6704 et seq. require state registration to practice as a civil engineer or structural engineer in California.

The tasks performed by ~~the civil, mechanical, an electrical, civil, geotechnical~~ or design engineers may be divided between two or more engineers, as long as ~~each a single~~ each a single engineer is responsible for ~~a particular~~ each segment of the project (e.g., ~~proposed earthwork, civil structures, power plant structures, equipment support~~ electrical, civil, geotechnical, and design). ~~No segment of the project shall have more than one responsible engineer.~~ The transmission line may be the responsibility of a separate California registered electrical engineer. The ~~civil, geotechnical, or civil and design~~ engineer assigned in conformance with **FACILITY DESIGN CONDITION of CERTIFICATION GEN-5**, may be responsible for design and review of the TSE (Transmission System Engineering) facilities.

The project owner shall submit to the CBO for review and approval, the names, qualifications, and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer. This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations.

The electrical engineer shall:

1. be responsible for the electrical design of the power plant switchyard, outlet, and termination facilities; and
2. sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. ~~The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.~~

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. ~~The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.~~

**TSE-3** If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action (pursuant to 2001 California Building Code, chapter 1, section 108.4; chapter 17, section 1701.3; appendix chapter 33, section 3317.7). ~~The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and shall reference this condition of certification.~~

Verification: ~~The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and shall reference this condition of certification. The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action required to obtain the CBO's approval.~~

**TSE-4** For the power plant switchyard, outlet line, and termination, the project owner shall not begin any increment of construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable laws, ordinances, regulations, and standards (LORS). The following activities shall be reported in the monthly compliance report:

- receipt or delay of major electrical equipment;
- testing or energizing of major electrical equipment; and
- the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications, and calculations for equipment and systems of the power plant switchyard, outlet line, and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, ~~and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.~~

**TSE-5** The project owner shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The project owner shall submit the

required number of copies of the design drawings and calculations as determined by the CBO.

1. The A2PP project will be interconnected to the new TID Grayson Substation via two new 115 kV overhead transmission lines, approximately 0.9 mile and 1.2 miles in length, respectively with 954 kcmil aluminum alloy, Magnolia conductor or conductors with higher ratings.
2. The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of California Public Utilities Commission General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code of Regulations; articles 35, 36 and 37 of the High-Voltage Electric Safety Orders; National Electric Code (NEC); and related industry standards.
3. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.
4. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.
5. The project conductors shall be sized to accommodate the full output from the project.
6. Termination facilities shall comply with applicable TID interconnection standards.
7. A request for minor changes to the facilities described in this condition may be allowed if the project owner informs the CBO and CPM and receives approval for the proposed change. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CBO and the CPM.

**Verification:** At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agreed to by the project owner and CBO), the project owner shall submit the following to the CBO for approval.

1. The project owner shall submit design drawings, specifications and calculations conforming with California Public Utilities Commission General Order 95 or National Electric Safety Code; Title 8 of the California Code of Regulations; articles 35, 36, and 37 of the High Voltage Electric Safety Orders; National Electric Code; and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment.
2. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on worst-case conditions,<sup>1</sup> and a statement signed and sealed by the registered engineer in charge, or other acceptable

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<sup>1</sup> Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.



alternative verification, that the transmission element(s) will conform with California Public Utilities Commission General Order 95 or National Electric Safety Code; Title 8 of the California Code of Regulations, articles 35, 36, and 37 of the High-Voltage Electric Safety Orders; National Electric Code and related industry standards.

3. The project owner shall submit electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, an engineering description of equipment, and the configurations covered by requirements 1 through 7 in **CONDITION OF CERTIFICATION TSE-5** above.
4. Any Letters received from PG&E, MID, and WAPA stating that the TID Short Circuit Study had been reviewed for existing interrupting capability with the integration of the A2PP.

At least 60 days prior to the construction of transmission facilities, the project owner shall inform the CBO and the CPM of any impending changes that may not conform to the facilities described in this condition, and shall request approval to implement such changes.

- TSE-6** The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM- and CBO-approved changes thereto, to ensure conformance with California Public Utilities Commission General Order 95 or National Electric Safety Code, Title 8 of the California Code of Regulations, articles 35, 36, and 37 of the High Voltage Electric Safety Orders, National Electric Code and related industry standards. In case of nonconformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such nonconformance, and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

1. "As built" engineering description(s) and one-line drawings of the electrical portion of the transmission facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with California Public Utilities Commission General Order 95 or National Electric Safety Code; Title 8 of the California Code of Regulations; articles 35, 36, and 37 of the High Voltage Electric Safety Orders; National Electric Code Standards; and related industry standards;
2. an "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portions of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the compliance monitoring plan"; and
3. a summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

## REFERENCES

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WECC (Western Electricity Coordinating Council). 2002. NERC/WECC Planning Standards, August 2002.

## DEFINITION OF TERMS

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AAC	All aluminum conductor.
ACSR	Aluminum conductor steel-reinforced.
ACSS	Aluminum conductor steel-supported.
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.
Ampere	The unit of current flowing in a conductor.
Bundled	Two wires, 18 inches apart.
Bus	Conductors that serve as a common connection for two or more circuits.
Conductor	The part of the transmission line (the wire) that carries the current.
Congestion management	A scheduling protocol, which provides that dispatched generation and transmission loading (imports) will not violate criteria.
Double–contingency condition	Also known as emergency or N-2 condition, a forced outage of two system elements usually (but not exclusively) caused by one single event. Examples of an N-2 contingency include loss of two transmission circuits on a single tower line or loss of two elements connected by a common circuit breaker due to the failure of that common breaker.
Emergency overload	See single–contingency condition. This is also called an N-1 condition.
kcmil	One-thousand circular mil. A unit of the conductor's cross-sectional area divided by 1,273 to obtain the area in square inches.
Kilovolt (kV)	

	A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground.
Loop	An electrical cul-de-sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection, and returns it back to the interrupted circuit, thus forming a loop or cul-de-sac.
Megavar	One megavolt ampere reactive.
Megavars	Mega-volt-ampere-reactive. One million volt-ampere-reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.
Megavolt ampere (MVA)	A unit of apparent power equal to the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.
Megawatt (MW)	A unit of power equivalent to 1,341 horsepower.
N-0 condition	See normal operation/normal overload.
Normal operation/normal overload (N-0)	When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.
N-1 condition	See single–contingency condition.
N-2 condition	See double–contingency condition.
Outlet	Transmission facilities (e.g., circuit, transformer, circuit breaker) linking generation facilities to the main grid.
Power flow analysis	A power flow analysis is a forward-looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers, and other equipment and system voltage levels.
Reactive power	Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.
Remedial action scheme (RAS)	A remedial action scheme is an automatic control provision, which, for instance, will trip a selected generating unit upon a circuit overload.
SF6	Sulfur hexafluoride is an insulating medium.
Single–contingency condition	

Also known as emergency or N-1 condition, occurs when one major transmission element (e.g., circuit, transformer, circuit breaker) or one generator is out of service.

**Solid dielectric cable**

Copper or aluminum conductors that are insulated by solid polyethylene-type insulation and covered by a metallic shield and outer polyethylene jacket.

**Special protection scheme/system (SPS)**

An SPS detects a transmission outage (either a single or credible multiple contingency) or an overloaded transmission facility and then trips or runs back generation output to avoid potential overloaded facilities or other criteria violations.

**Switchyard** A power plant switchyard is an integral part of a power plant and is used as an outlet for one or more electric generators.

**Thermal rating**

See ampacity.

**TSE** Transmission System Engineering.

**Tap** A transmission configuration creating an interconnection through a sort single circuit to a small- or medium-sized load or generator. The new single circuit line is inserted into an existing circuit by using breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.

**Undercrossing**

A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.

**Underbuild** A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA  
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**APPLICATION FOR CERTIFICATION  
FOR THE TID ALMOND 2  
POWER PLANT PROJECT**

**Docket No. 09-AFC-2**

**PROOF OF SERVICE  
(Revised 2/8/10)**

**APPLICANT**

Turlock Irrigation District  
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\*indicates change

**DECLARATION OF SERVICE**

I, Mary Finn, declare that on June 7, 2010, I served and filed copies of the attached, Comments on CEC Staff Assessment Turlock Irrigation District (09-AFC-02), dated, June 7, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[\[http://www.energy.ca.gov/sitingcases/almond\]](http://www.energy.ca.gov/sitingcases/almond).

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

**(Check all that Apply)**

**FOR SERVICE TO ALL OTHER PARTIES:**

sent electronically to all email addresses on the Proof of Service list;

by personal delivery or by depositing in the United States mail at Sacramento, CA with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

**AND**

**FOR FILING WITH THE ENERGY COMMISSION:**

sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

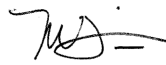
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Attn: Docket No. 09-AFC-2  
1516 Ninth Street, MS-4  
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I declare under penalty of perjury that the foregoing is true and correct.

  
Mary Finn

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