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October 7, 2013

Mr. John Heiser, Project Manager
California Energy Commission
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Mr. Fred Pozzuto
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
P.O. Box 880
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Re: Hydrogen Energy California Project (08-AFC-8A): Applicant's Comments on the Preliminary Staff Assessment / Draft Environmental Impact Statement

Dear Mr. Heiser and Mr. Pozzuto:

Hydrogen Energy California LLC (Applicant) appreciates the efforts of staff for the California Energy Commission (CEC) and U.S. Department of Energy (DOE) that went into preparing the Preliminary Staff Assessment / Draft Environmental Impact Statement (PSA/DEIS) for the Hydrogen Energy California Project (Project). Applicant submits the following enclosed comments on the PSA/DEIS:

- Applicant's comments on the text of the PSA/DEIS;
- Applicant's proposed changes to proposed Conditions of Certification; and
- Applicant's proposed changes to the Project Description as reflected in the PSA/DEIS.

Applicant incorporates by reference its Responses to Information Requests contained in the PSA/DEIS which were submitted on August 9, 2013, Set 1 (Docket No. 200144) and September 3, 2013, Set 2 (Docket No. 200387). Both submissions address specific informational requests in the PSA/DEIS and should be considered part of Applicant's comments on the PSA/DEIS. Applicant also incorporates the Traffic Study Report, Revision 2, July 2013 (Docket No. 200107).

Applicant anticipates that the following documents will be submitted shortly in support of Applicant's comments on the PSA/DEIS:

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- Applicant and Savage Industries are preparing a Supplemental Environmental Analysis concerning the Wasco Coal Terminal.

- Applicant is preparing a white paper regarding the Project's compliance with the Emission Performance Standard under Senate Bill 1368.

- Additional information from the Buena Vista Water Storage District and Applicant about the adaptive pumping plan associated with the Project's water use.

Applicant looks forward to working with staff to continue to resolve the outstanding issues identified in the PSA/DEIS.

Dale Shileikis
Vice President, Project Manager

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Applicant's comments on the text of the PSA/DEIS

Applicant's Comments on the Preliminary Staff Assessment/Draft Environmental Impact Statement
Hydrogen Energy California Project

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G-1	Global Edit		Various	Various references to the inclusion of the Occidental of Elk Hills (OEHI) enhanced oil recovery (EOR) activities in the scope of the review completed by the CEC and the DOE in the PSA/DEIS.	The introductory sections of the PSA/DEIS correctly state that the scope of the review undertaken by the CEC and DOE and reflected in the PSA/DEIS includes evaluation of the OEHI EOR activities utilizing CO_2 supplied by the HECA Project. For example, with respect to the scope of the CEQA analysis, the Project Description at page 3.1-5 correctly states: "The Energy Commission has exclusive permitting jurisdiction for the siting of thermal power plants of 50 MW or more and related facilities in California. The Energy Commission also has responsibility for ensuring compliance with the California Environmental Quality Act (CEQA) through the administration of its certified regulatory program and is the lead agency under CEQA. Additionally, under 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 (California Code of Regulations, title 14, §15378). As a result, the Energy Commission analysis includes an environmental analysis of the proposed Occidental Elk Hills, Incorporated (OEHI) enhanced oil recovery (EOR) project that would be located within the Elk Hills Oil Field (EHOF). This EOR project and the related infrastructure would be the responsibility of the Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) as Lead Agency. This PSA/DEIS analyzes the proposed EOR as a part of the

[1] References the section in the PSA.
[2] Page number from the PDF of the PSA.
[3] Text from PSA/DEIS that is the subject of the applicant's comment.
[4] Applicant's comment.

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					project, or the whole of the action, pursuant to CEQA." Similarly, with respect to the scope of the NEPA analysis, the Executive Summary at page 1-20 correctly states: "Under the cooperative agreement between DOE and HECA, DOE would share the costs of the gasifier, syngas cleanup systems, combustion turbine, steam generator, steam turbine, fertilizer production facilities, supporting facilities and infrastructure, and a demonstration phase in which the project would use captured CO_2 for EOR. Under this agreement, DOE would not share in the cost of the air separation unit, CO_2 EOR and sequestration facilities, or certain other facilities. Accordingly, DOE's NEPA process considers these aspects of HECA's project as connected actions. The impacts of these connected actions are evaluated in the same manner as the impacts of the parts of the project funded by DOE." Consistent with the above statements, other sections of the PSA/DEIS describe the OEHI EOR component as part of the whole of the project and all of the sections discuss the EOR component, its potential impacts, and proposed mitigation measures if impacts are potentially significant. The PSA/DEIS discusses alternative locations to the EOR component as well. However, there are several references in later sections of the PSA/DEIS that refer to possible subsequent environmental review of the OEHI EOR project under CEQA, and which could be interpreted to contradict the statements quoted above. For example, at page 4.1-43 (Air Quality), the PSA/DEIS states: "The OEHI CO_2 EOR component is considered part of the whole of the project proposed. This subsection provides information on the air pollutant emissions sources and the current emission source estimates for the OEHI CO_2 EOR component. It should be noted that the OEHI CO_2 EOR component is expected to be evaluated in a separate CEQA document and will require a separate

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					District air quality permitting action sometime after a decision is made on HECA by the Energy Commission." (*See also*, page 4.1-10 and 4.1-75) A similar statement appears at page 4.2-101 (Biological Resources): "Staff understands that DOGGR would be the permitting authority over future development phases of the OEHI component of HECA; therefore, project-specific CEQA analyses would be conducted as future phasing of the OEHI component are submitted to DOGGR for permitting. Staff recommends that DOGGR and other subsequent permitting authorities of future phased components of the OEHI component adopt the conservation strategies and conservation measures identified in either the existing biological permits (URS 2012d, OEHI biological permitting documents) or as amended in the subsequently adopted OEHI Section 10 HCP and subsequent CEQA analyses." It is expected that the Division of Oil, Gas and Geothermal Resources (DOGGR) and San Joaquin Valley Air Pollution Control District (SJVAPCD) would issue discretionary permits to OEHI for the operation of its EOR project. It is also expected that in doing so DOGGR and SJVAPCD would act as "responsible agencies" as defined in in CEQA (Cal. Pub. Res. Code §21069) and will rely on the environmental analysis completed by the CEC and DOE pursuant to CEQA Guidelines §15253. Applicant assumes that any suggestion in the PSA/DEIS that additional environmental review might be undertaken in connection with the OEHI EOR project refers to the analysis that DOGGR and the SJVAPCD would undertake pursuant to CEQA Guidelines §15253. Specifically, DOGGR and SJVAPCD would confirm whether or not the conditions of §15253(b) had been satisfied. §15253(b) lays out the conditions under which DOGGR and SJVAPCD would act as responsible agencies and rely on the environmental analysis prepared by the CEC and DOE. It is Applicant's understanding that the CEC has consulted

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					with both DOGGR and SJVAPCD and has afforded the agencies the opportunity to participate in the review. Applicant noted in this regard that both DOGGR and SJVAPCD are specifically identified Public Agencies on the CEC's official proof of service list for the HECA Project. If DOGGR and SJVAPCD concluded that the conditions of §15253(b) had not been satisfied, they would then undertake their own environmental analysis as specified in §15253(c). It is the intent of Applicant, and we believe the intent of OEHI, DOGGR and SJVAPCD that the environmental analysis being completed by the CEC and DOE would satisfy the conditions of §15253(b), and that any subsequent analysis by DOGGR and SJVAPCD would be limited to confirming that this is the case. Applicant requests that the CEC staff confirm that Applicant's interpretation of the references to subsequent environmental analysis of the OEHI EOR project, as laid out above, is correct.
G-2			Global		Please refer to the Updated Emissions and Modeling Report, May 2013 for the most current equipment layout, operational schedules, operational emissions and modeling for the HECA Project.
G-3	Global Edit	Various	Global	Various requirements for submission of detailed design documents for review by the Compliance Project Manager.	A number of the detailed design documents that must be submitted for review and approval by the CPM pursuant to the proposed conditions of certification will be voluminous and considerably more complicated than similar documents prepared in connection with a more traditional power plant. It will be important for Applicant and the CPM to develop and implement procedures for the timely review by the CPM of such documents.
G-4			Global		Throughout the PSA please change "coal dryer" to "feedstock dryer," which more accurately describes the function.

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1 Executive Summary					
ES-01			1-2	"The proposed HECA project would result in a significant, unavoidable impact to Blunt Nosed Leopard Lizard, a California Fully Protected species."	Applicant will implement avoidance measures to avoid impacts to Blunt Nosed Leopard Lizard. *Proposed Change*: "The proposed HECA project ~~would~~ may result in a significant, unavoidable impact to Blunt Nosed Leopard Lizard, a California Fully Protected species unless mitigation is applied."
ES-02			1-3	HECA would result in a loss of 495 acres (for project site and rail spur) of Prime Farmland and Farmland of Statewide Importance.	Applicant suggests this text be amended as follows for clarity given the discussion of farmland conversion, which appears later in the Land Use section of the PSA: *Proposed New Text:* "HECA would result in the conversion of 458 acres (or a total of 495 acres if the rail spur is constructed) of Prime Farmland and Farmland of Statewide Importance."
ES-03			1-3	"Staff's preliminary determination of HECA would likely result in unmitigable significant impacts to visual resources."	Applicant has entered into agreements with the property owners at KOP-1 to install and maintain landscaping on their property to shield the view of the project and reduce visual impacts to less than significant levels. The agreements and associated landscape plans will be provided in a subsequent submittal to the CEC.
ES-04			1-7, global	"While OEHI has stated that it can use as much carbon dioxide as HECA can produce, the stated lifespan of the OEHI operation (20 years) is shorter than the length of time HECA proposes to operate (25 years)."	As explained in response CS-1 in Applicant's Responses to PSA/DEIS Information Requests, Set 1, 8/9/2013 (Docket No. 200144), HECA anticipates that the duration of an agreement for the sale and purchase of CO_2 would be 20 years, with a 5-year renewal option that would be effective upon the mutual agreement of the parties.
ES-05			1-7, global	"When considering the air separation unit and the electricity used by OEHI during enhanced oil recovery operations, which are both part of the project as described by the applicant, the net electricity generation available to California consumers drops to 52.5 MW of new electrical capacity added to the grid during periods of maximum electricity production. The project would	These "net" generation values are inaccurate and misleading. Please refer to Applicant's Responses to PSA/DEIS Information Requests, Set 1, 8/9/2013 (Docket No. 200144) for a discussion on greenhouse gas emissions and carbon sequestration, which includes discussion of the output of the HECA Project. A submittal from HECA regarding SB 1368 EPS is forthcoming; it will clarify the appropriate scope of

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				be a net consumer of 61.8 MW from the grid during periods of maximum fertilizer production. These net power values include all project-wide power generation and power consumption sources, including the power consumption of the third-party owned air separation unit and the power consumption required by OEHI for CO_2 compression/injection/recovery/re-injection for EOR and, ultimately, carbon sequestration."	analysis under SB 1368 and HECA's compliance therewith.
ES-06			1-13	"Although the Tejon Indian Tribe did not share information about specific cultural resources in the project area of analysis, the tribe indicated that it is concerned about the proposed project's potential to damage Native American archaeological sites and human remains." (Emphasis added)	Applicant requests further information regarding the nature of these concerns. This statement is inconsistent with other portions of the PSA/DEIS that indicate the federally recognized tribes have not raised any concerns about the HECA Project. (See, e.g., letter from the Tejon Indian Tribe in Appendix CUL-1.) Please see comment below regarding additional consultation activities by DOE associated with Section 106 of the National Historic Preservation Act.
ES-07			1-13	"the Tejon Indian Tribe requested information about how it can continue to participate in the siting review process."	Applicant requests more information regarding whether staff provided the requested information. Please see comment below regarding additional consultation activities by DOE associated with Section 106 of the National Historic Preservation Act.
ES-08		CALIFORNIA ENVIRON-MENTAL QUALITY ACT (CEQA) ALTERNA-TIVES SUMMARY	1-27	"Staff is considering an alternative that would consist of a biomass-fired boiler that would provide the same net new electrical capacity and energy as HECA. This alternative may not provide carbon capture and storage, but would provide a new, local renewable energy facility with a low-carbon footprint, depending on how far the biomass would have to be transported to the facility site."	This alternative would not feasibly attain most of the basic objectives of the HECA Project.
ES-09		Carbon Sequestration and Greenhouse Gas Emissions	1-29	"Some operating profiles may result in the facility not complying with certain regulatory requirements. For example, a profile provided by the applicant indicated reduced electricity	Please refer to Applicant's Responses to PSA/DEIS Information Requests, Set 1, 8/9/2013 (Docket No. 200144) for a discussion of the HECA Project's compliance with the GHG EPS.

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				production for eight hours each day, reducing the portion of the hydrogen-rich gas used to produce electricity and increasing that used to produce fertilizer. Under this operating profile, the project may not comply with California's Greenhouse Gases (GHG) Emission Performance Standard (EPS) during early operating years."	A submittal from HECA regarding SB 1368 EPS is forthcoming; it will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
ES-10			1-30	The PSE/DEIS refers to the loss of 571 acres of agricultural lands.	HECA would result in the conversion of 458 acres (or a total of 495 acres if the rail spur is constructed) of Prime Farmland and Farmland of Statewide Importance.
ES-11			1-33	"California testing standards should be used to determine if the HECA gasification solids are nonhazardous."	Please see Applicant's Responses to PSA/DEIS Information Requests, docketed on August 9, 2013. Response to WM-2 includes test results on representative gasification solids (GS) that show that the GS are expected to be deemed non-hazardous under all applicable tests.
ES-12			1-33	The PSA/DEIS states that waste diversion plan with the CEC, Kern County and CalRecycle must be "completed and approved" prior to the FSA.	Beneficial reuse of the HECA gasification solids (GS) remains the Project's primary intent. Please see Applicant's response to PSA/DEIS Information Requests, Set 1, docketed on August 9, 2013. Response to WM-2 includes a study of the potential for beneficial use of the GS, which includes identification of potential off-takers for the GS. The study confirms the suitability of the GS for beneficial use at locations consistent with the information on shipping locations that was presented in Appendices C and D to the Updated Emissions and Modeling Report. This study also provides a description of the GS, results of the waste characterization tests, an evaluation of where the residual material is suitable for disposal, and an identification of facilities that would accept the volume of waste generated.

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3 Project Description					
PD-01			Global	Project Description.	Please see Applicant's tracked changes of the Project Description included in this submission for a complete set of updates.
PD-02			Global, 3.1-2, 3.1-3, 3.1-15	The PSA/DEIS requests reconciliation between the expected life of project of 25 years and the proposed 20-year agreement with OEHI for sale of the CO_2.	As explained in response CS-1 in Applicant's Responses to PSA/DEIS Information Requests, Set 1, 8/9/2013 (Docket No. 200144), HECA anticipates that the duration of an agreement for the sale and purchase of CO_2 would be 20 years, with a 5-year renewal option that would be effective upon the mutual agreement of the parties.
PD-03			3.1-2	The PSA/DEIS describes operation truck trips.	Please see the July 2013 Revised Traffic Study Report docketed on August 1, 2013 for updated traffic generation data. Also see Applicant's tracked changes of the Project Description included in this submission.
PD-04			3.1-3	"Additional permits [for the OEHI EOR project] may also be required for certain project elements, such as roads, through Kern County."	Applicant is not aware of any additional permits that would be required from Kern County in order to implement the OEHI EOR project.
PD-05			3.1-5, Global	"This EOR project and the related infrastructure would be the responsibility of the Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) as Lead Agency."	Please see global comment G-1 above regarding DOGGR's role in the permitting and environmental review of the OEHI EOR project. As indicated in that comment, it is expected that DOGGR would act as a responsible agency, not as a lead agency.
PD-06			Global, 3.1-9, 3.1-19	"The applicant's statement of the gross and net electrical production from HECA continues to fluctuate based on continued design refinement by the applicant and the equipment manufacturer, Mitsubishi Heavy Industries. The information is reflected in a variable assessment of the gross and net electrical output for HECA. Gross output may vary as noted in information provided to the SJVAPCD and in the April 10, 2013 email to Energy Commission staff (URS, 2013): • Gross electrical output 405 MW as noted in the	The net power output for the HECA Project ranges from 267 to 300 MW (Updated Emissions and Modeling Report, May 2013) and gross production ranges from 405 to 431 MW. The lower value represents a conservative low end estimate for emissions performance standard calculation purposes and the upper value represents the maximum expected production rate. Further details regarding the net and gross generation under various ambient conditions and during peak power or off peak power production are presented in the Carbon Sequestration and Greenhouse Gas Emission responses in Applicant's Responses to PSA/DEIS Information Requests.

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				AFC, and 431 MW in other documents; • Net electrical output may vary from 300 MW as noted in the AFC, and 267 MW. No information on the overall project heat rate and breakdown of auxiliary loads based on the 431-MW figure has been provided to staff at this time."	A submittal from HECA regarding SB 1368 EPS is forthcoming; it will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
PD-07			3.1-14, global	"HECA CO_2 production and delivery to OEHI, utilized in a water alternating gas (WAG) process, would **potentially** result in the permanent geologic sequestration of substantial quantities of CO_2, and important greenhouse gas." (Emphasis added.)	Applicant proposes revising this sentence as follows: "HECA CO_2 production and delivery to OEHI, utilized in a water alternating gas (WAG) process, would ~~potentially~~ result in the permanent geologic sequestration of substantial quantities of CO_2, and important greenhouse gas."
4.1 Air Quality					
AQ-01		Summary of Conclusions	4.1-1	"In addition, the District's recently adopted air quality management plan for fine particulate identifies a 4.1:1 SO_X for $PM_{2.5}$ interpollutant trading ratio. Therefore, in a formal comment letter regarding the PDOC dated March 28, 2013, staff has asked the District to provide additional information on why a 1:1 SO_X for PM_{10} and $PM_{2.5}$ interpollutant trading ratio for this project would be allowed, and whether that value would truly provide a net air quality benefit. Staff's final determination on whether the proposed mitigation meets CEQA requirements, or whether additional mitigation may be required, will in part be based on the answers to these questions received from the District, as well as, additional review and consideration of the other mitigation measures proposed for the project; including the applicant's funding of the District's ERIP."	The San Joaquin Valley Air Pollution Control District (SJVAPCD) Final Determination of Compliance (FDOC) was released on July 8, 2013 and docketed with the CEC on July 16, 2013. It includes a discussion of the SO_X for $PM_{2.5}$ interpollutant offset ratio. Emissions of $PM_{2.5}$ from the HECA Project are less than 100 tons/yr, thus the project is not a major source of $PM_{2.5}$ emissions. As such, Rule 2201 does not require that $PM_{2.5}$ emissions be offset. $PM_{2.5}$ offsets are only required since the project modeled impacts are predicted to be greater than the significance levels. In addition CEC Staff concludes in the "Summary of Projections" (page 4.1-81) that "staff believes that the $PM_{2.5}$ emissions, with the current operations assumptions would not exceed the Clean Air Act New Source Review trigger of 100 tons per year which would mean that the $PM_{2.5}$ offsets do not have to comply with an interpollutant precursor trading ratio approved by U.S. EPA." As stated in the FDOC "The District has determined that the appropriate interpollutant ratio for SO_X emission reductions to be used to offset PM_{10} emission increases is 1:1 based on chemical mass balance modeling and

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					speciated rollback modeling as performed by the 2008 $PM_{2.5}$ attainment plan. This same ratio (1:1) is applicable for $SO_X/PM_{2.5}$ interpollutant offsets." HECA requests that CEC respect the professional judgment of SJVAPCD and uphold to the 1:1 SO_X to $PM_{2.5}$ interpollutant ratio.
AQ-02		Introduction	4.1-3	… and between 151 to 266 MW net after accounting for onsite auxiliary power loads. The lower values apply during the periods of maximum fertilizer production and the higher values apply during periods of maximum electricity production. When considering the air separation unit and the electricity used by OEHI during enhanced oil recovery operations, which are both part of the project as described by the applicant, the net electricity generation available to California consumers drops to 52.5 MW of new electrical capacity added to the grid during periods of maximum electricity production. The project would be a net consumer of 61.8 MW from the grid during periods of maximum fertilizer production.	These "net" generation values are inaccurate and misleading. Please refer to Applicant's Responses to PSA/DEIS Information Requests, Set 1, 8/9/2013 (Docket No. 200144) for a discussion of greenhouse gas emissions and carbon sequestration, which includes discussion of the output of the HECA Project.
AQ-03			4.1-9	"Establishes the permit application and compliance requirements for the federal Title V federal permit program. HECA qualifies as a Title V facility and must submit the Title V application within twelve months after starting operation."	Applicant proposes the following changes: "Establishes the permit application and compliance requirements for the federal Title V federal permit program. ~~HECA~~ If OEHI CO_2 EOR qualifies as a Title V facility, then it ~~and~~ must submit the Title V application within twelve months after starting operation."
AQ-04		Existing Ambient Air Quality	4.1-16; Table 5; footnotes b, d, and e	24-hour $PM_{2.5}$ data shown are the 98th percentile concentrations, 1-hour federal NO_2 data are 98th percentile of daily 1-hour maximums, 1-hour federal SO_2 data are 99th percentile of daily 1-hour maximums.	Presenting the AAQS next to the statistical monitoring values is confusing. The AAQS are actually compared to the monitored design value, which is the average of the statistical values over the past three years, not just one year.
AQ-05		Existing Ambient Air Quality, Summary	4.1-21; Table 6	In summary, staff recommends the background ambient air concentrations in Air Quality Table 6 for use in the modeling and impacts analyses. The	The PM_{10} 24-hour concentration of 238 $\mu g/m^3$ presented in this table is from CARB for 2010 most likely represents an exceptional event, since monitoring data reported by the

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				maximum criteria pollutant concentrations from the past three years of available data collected at the monitoring stations near the proposed project site, excluding exceptional events, are used to determine these recommended background values.	EPA for the same year is 86 µg/m^3 which excludes exceptional events. Leland Villalvazo of SJVAPCD has contacted CARB on this issue. CARB informed SJVAPCD that CARB only has processed exceptional event information for 2007 and earlier. Therefore, it is recommended that EPA data for all PM monitoring background concentrations be used. Applicant also recommends the use of the high-second-high concentration to compare with the 24-hour PM_{10} NAAQS instead of first high concentration.
AQ-06		Existing Ambient Air Quality, Summary	4.1-21; Table 6	Table Title: "Staff Recommended Background Concentrations (µg/m^3)"	Applicant recommends changing the title of the table to "Staff Recommended Background Concentrations for Modeling (µg/m^3)" This helps clarify that these values cannot be compared with the standard alone, as some of the statistical values shown are not design concentrations but rather higher concentrations that may be paired with modeled values as a conservative approach.
AQ-07		Existing Ambient Air Quality, Summary	4.1-21; Table 6 footnote	Note: $PM_{2.5}$ 24-hour data shown in Air Quality Table 5 are the 98th percentile values, 1-hour NAAQS NO_2 data are a three year average of the 98th percentile of maximum daily values for the past three years of data, and 1-hour NAAQS SO_2 are 99th percentile of maximum daily values.	The design value for NO_2 1-hour NAAQS (average of last 3 years) is shown in this table. Please use the design value for SO_2 1-hour NAAQS and the $PM_{2.5}$ 24-hour NAAQS.
AQ-08		OEHI CO_2 EOR component	4.1-45	Table 19	Emissions presented in this table do not match the data presented in the documents referenced in the table footnotes. CEC should ensure that the most current data are presented in the FSA.
AQ-09		Construction Modeling Analysis	4.1-51	Footnote 11 These in-stack NO_2/NO_X ratios are CAPCOA recommended values (CAPCOA 2011) for on-road heavy duty diesel trucks (0.11) and on-road light and medium duty gasoline vehicles (0.25), respectively. Staff notes that the applicant also used the 0.11 ratio for the off-road diesel equipment, although the	The in-stack ratio of 0.11 that was used for the diesel construction equipment is the most representative ratio presented in the CAPCOA guidance. The values presented by CEC staff are for stationary diesel engines. Construction equipment is more appropriately represented by heavy duty diesel trucks than stationary diesel engines. Applicant strongly recommends using an in-stack

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				CAPCOA recommendations for off-road equipment are either a default value of 0.2, or a value of 0.1564 presented for a 322 horsepower water pump. Staff may re-run the 1-hour NO_2 modeling analysis using the higher CAPCOA default off-road diesel equipment NO_2/NO_X ratio, and if so will present those modeling results in the FSA.	NO_2/NO_X ratio of 0.11 for the diesel construction equipment.
AQ-10		Emission Offsets	4.1-67 to 4.1-70	Tables of NO_X, VOC, SO_X ERC requirements	Values should be updated to be consistent with the FDOC, which contains the most recent data.
AQ-11		VOC Emission Offsets	4.1-69	Table 28	Please remove ERC certificate number S-3605-1. HECA will not need to surrender these ERCs as the two other certificates are sufficient. This is reflected in the FDOC.
AQ-12		SO_X and $PM_{10}/PM_{2.5}$ Emission Offsets	4.1-69	The applicant does not currently have sufficient offset credits to comply with the District's SO_X and PM_{10} offset requirements for this project if the SO_X to PM_{10} offset ratio is increased from 1:1 to 4.1:1.	In the FDOC, the SJVAPCD determined that the appropriate interpollutant ratio for SO_X to $PM_{2.5}$ emission reductions is 1:1. HECA requests that CEC respect the professional judgment of SJVAPCD and uphold to the 1:1 SO_X to $PM_{2.5}$ interpollutant ratio.
AQ-13		Mitigation Agreements	4.1-71	However, staff would prefer that these agreements include an additional implementation requirement that these emission reductions would occur as close to the project site as feasible.	In the turbine VERA, on page 2 item 2, it states that the money will be used to "ensure additional air quality localized benefits within the District, and, in particular, direct or indirect benefits in Kern County." Also Item 4 on page 2, first and fourth bullets: programs will focus on replacing agricultural equipment within Kern County or nearby communities.
AQ-14		Adequacy of Proposed Mitigation SO_2-for-PM_{10} offset ratio	4.1-72	Staff is still evaluating the appropriateness of the 1:1 offset ratio for interpollutant trading of SO_2 for PM_{10} in terms of providing adequate and SIP-required mitigation for the project's potential PM_{10} impacts and adequate mitigation for the project's $PM_{2.5}$ impacts.	In the FDOC, the SJVAPCD determined that the appropriate interpollutant ratio for SO_X to $PM_{2.5}$ emission reductions is 1:1. HECA requests that CEC respect the professional judgment of SJVAPCD and uphold to the 1:1 SO_X to $PM_{2.5}$ interpollutant ratio.
AQ-15		Adequacy of Proposed Mitigation Mercury and Air	4.1-72	The affected sources are the combustion turbine generator/heat recovery steam generator (CTG/HRSG) and coal dryer that need to meet the particulate, mercury, and hydrogen chloride	The FDOC contains conditions ensuring compliance with the MATS; proposed Condition of Certification AQ-SC13 is redundant and should be removed.

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		Toxics Standards (MATS) Compliance		emission limitations of this rule. For the time being, staff has added Condition of Certification AQ-SC13 to address the project's MATS compliance requirements.	
AQ-16		Staff Proposed Mitigation	4.1-73	"staff is proposing that the applicant obtain an onsite switching engine that meets Tier 4 standards, and that the applicant require the contracted rail provider to use Tier 4 locomotives starting in 2020."	Please see Applicant's comments on proposed Condition of Certification AQ-SC12. The requirement of Tier 4 engines for the line haul locomotives starting in 2020 may not be within the Project's control as the Project does not own these engines.
AQ-17		Staff Proposed Mitigation	4.1-73	As noted above, staff has included Condition of Certification AQ-SC13 to address compliance with the federal MATS regulation. Staff expects to delete this condition assuming the District, per staff's comment on the PDOC, adds MATS compliance conditions in the FDOC.	The FDOC contains conditions ensuring compliance with the MATS; proposed Condition of Certification AQ-SC13 is redundant and should be removed.
AQ-18			4.1-84	"The District is responsible for issuing the federal New Source Review (NSR) permit and has delegated enforcement of the applicable New Source Performance Standards (NSPS, Subparts A, Db, GA, GG,Y, KKKK, and IIII)."	Applicant proposes the following changes: "The District is responsible for issuing the federal New Source Review (NSR) permit and has <u>been</u> delegated enforcement of the applicable New Source Performance Standards (NSPS, Subparts A, Db, GA, GG,Y, KKKK, and IIII)."
AQ-19			4.1-85, 4.1-86	"Through this mechanism, the District would ensure that construction and operational emissions of NO_X and VOCs from the project that exceed the GCR thresholds would be more than offset by the emission reductions achieved by the District's ERIP."	Applicant proposes the following changes: "Through this mechanism, the District would ensure that construction and operational emissions of NO_X and VOCs from the project that exceed the GCR thresholds would be more than offset <u>(i.e., at least down to zero for all emissions subject to the GCR)</u> by the emission reductions achieved by the District's ERIP."
AQ-20			4.1-92	"This District can consider mitigation of emissions through offsets in this determination."	Applicant proposes the following changes: "~~This~~ <u>The</u> District can consider mitigation of emissions through offsets in this determination."
AQ-21		Rule 4703 – Stationary Gas Turbines	4.1-98	However, the CTG is subject to this rule when fired on natural gas or co-fired with a blend of natural gas and hydrogen.	The turbine will not co-fire natural gas and hydrogen. Please change to "However, the CTG is subject to this rule when fired on natural gas."
AQ-22		NOTEWORTHY	4.1-118	The PSA/DEIS suggests that no air quality related	More than 90% of the carbon in the syngas will be

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		PUBLIC BENEFITS		noteworthy public benefits associated with the HECA Project have been identified.	captured and sent to OEHI for EOR and resulting sequestration. HECA's carbon dioxide emissions will be significantly lower than power producers burning either coal or natural gas, and significantly lower than typical fertilizer production facilities. The HECA Project is supported by DOE and the President's Interagency Task Force on CCS. The HECA Project advances the President's goal for "commercial development and deployment of clean coal technologies, particularly CCS, will help position the United States as a leader in the global clean energy race" (Obama, 2010). To cut carbon pollution in America, the President's Climate Action Plan encourages federal investments in projects that can avoid, reduce, or sequester anthropogenic emissions of GHGs, including clean coal technologies (Obama, 2013). In addition, CEC, CPUC and CARB formed the CCS Review Panel, which concluded that "there is public benefit from long-term geologic storage of CO_2 for reducing GHG emissions" (California CCS Review Panel, 2010a).
AQ-23		Conclusions	4.1-119	This preliminary finding is contingent that staff's final determination regarding the appropriate interpollutant offset ratio agrees that the District's proposed SO_X for PM interpollutant offset ratio	In the FDOC, the SJVAPCD determined that the appropriate interpollutant ratio for SO_X to $PM_{2.5}$ emission reductions is 1:1. HECA requests that CEC respect the professional judgment of SJVAPCD and uphold to the 1:1 SO_X to $PM_{2.5}$ interpollutant ratio.
AQ-24		Conclusions	4.1-119	Staff is recommending condition AQ-SC13 to ensure compliance with the Federal MATS Rule. Staff expects that the District will include MATS compliance conditions in the FDOC that will allow staff to remove this recommended condition.	The FDOC contains conditions ensuring compliance with the MATS; proposed Condition of Certification AQ-SC13 is redundant and should be removed.
4.2 Biological Resources					
BIO-01			4.2-3	Blunt-nosed leopard lizard (BNLL) is a California Fully Protected species under California Fish and Game Code Section 5050, and therefore, incidental take of the species is not legally permitted as defined by Section 86 of the Fish and Game Code… Staff	Applicant proposes the following changes: Blunt-nosed leopard lizard (BNLL) is a California Fully Protected species under California Fish and Game Code Section 5050 and, therefore, incidental take of the species ~~is not legally permitted~~ as defined by Section 86 of the Fish

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				concludes that even with the implementation of staff's proposed take avoidance and minimization measures, incidental take of blunt-nosed leopard lizard would likely occur over the life of the project. Therefore, staff considers this impact significant and unavoidable under CEQA even with the incorporation of mitigation. It is also unclear whether the project would comply with Fish and Game Code Section 5050 relating to Fully Protected Reptile and Amphibian Species and the California Endangered Species Act, because avoiding take of this species cannot be guaranteed for the life of the project.	and Game Code is not permitted. This species is present at the Elk Hills Oil Field and has a high potential to occupy the proposed carbon dioxide pipeline route ~~as well as disturbed allscale scrub areas along the natural gas pipeline~~. The construction of the Project would temporarily impact approximately ~~192~~ 33 acres and permanently impact approximately 64 acres of natural allscale scrub and disturbed lands which potentially provide small mammal burrows that could be used ~~habitat for~~ by BNLL.~~;~~ ~~this poses a threat to BNLL in the form of~~ Applicant has proposed measures that would avoid mortality from vehicles and equipment on roadways, entrapment in construction-related trenches or pipes, and burial in burrows by equipment.~~,~~ ~~avoidance of certain habitats, modification to breeding and/or foraging behaviors, and reduced carrying capacity of natural scrub habitat and neighboring lands known to be occupied by BNLL.~~ Staff has also proposed Condition of Certification **BIO-8** which requires that Applicant prepare and implement a Blunt-nosed Leopard Lizard Impact Avoidance and Minimization Plan to ~~further minimize~~ avoid the potential for take during construction and operation of the project. In particular, this plan would take into consideration the phasing of linear construction and how clearance surveys, exclusion fencing, and fence and burrow monitoring would also be phased in order to ensure BNLL remain clear of active construction areas. Condition of Certification **BIO-8** also requires that various impact avoidance measures be incorporated including scheduling surface ground disturbing during the BNLL's active season (approximately April 15 to October 15) to the greatest extent practicable, particularly in habitat areas where this species is mostly likely to be encountered, minor shifts in proposed pipeline alignments in order to avoid potentially occupied small mammal burrows, and presence of biological monitor(s) in active construction areas. ~~Scheduling surface ground disturbing activities during the BNLL active season would make it more likely to guarantee that BNLL are above ground, active, and able to~~

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					~~escape from construction activities.~~ Staff concludes that ~~even with the~~ implementation of staff's proposed take avoidance and minimization measures~~,~~ would avoid incidental take of blunt-nosed leopard lizard as defined under Section 86 of the Fish and Game Code ~~would likely occur over the life of the project~~ but would still result in loss of land that would otherwise be available and occupied by this species. Therefore, staff considers this impact significant ~~and unavoidable~~ under CEQA. However, implementation of the proposed mitigation would reduce the potential impact to a level less than significant under CEQA.~~ even with the incorporation of mitigation. It is also unclear whether the project would comply with Fish and Game Code Section 5050 relating to Fully Protected Reptile and Amphibian Species and the California Endangered Species Act since avoiding take of this species cannot be guaranteed for the life of the project.~~
BIO-02			4.2-3, 4.2-64, and 4.2-109	Staff states that incidental take of blunt-nosed leopard lizard "would likely occur over the life of the project."	Applicant proposes that CEC revise the conclusion as follows: incidental take would be avoided by the implementation of proposed mitigation measures.
BIO-03			4.2-3	Staff states that compliance with Fish and Game Code Section 5050 is unclear because avoiding take cannot be guaranteed .	LORS compliance should be based on what is expected to occur. Take of BNLL would not occur with the implementation of mitigation measures, therefore LORS compliance is expected. No take of BNLL is allowed under Section 5050 of the Fish and Game Code.
BIO-04			4.2-3 and 4.2-70	Swainson's hawk nest tree failure as a result of groundwater drawdown. Staff asserts Swainson's hawk nest tree failure as a result of groundwater drawdown could result in take under CESA, MBTA and Fish and Game code 3503	Please see Applicant's Responses to PSA/DEIS Information Requests, Set 2 docketed on September 3, 2013 for the relevant analysis. Applicant prepared a detailed evaluation of groundwater drawdown on potential nest trees that shows trees would not be impacted by Project-induced groundwater drawdown. Therefore LORS compliance is expected.

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BIO-05			4.2-35	San Joaquin Antelope Squirrel (*Ammospermophilus nelsoni*, California Threatened): "Focused surveys and small mammal trapping have not been conducted for this species in the project area; surveys for this species for the current linear alignments were completed in conjunction with 2012 wetland delineation, botanical, Swainson's hawk, and blunt-nosed leopard lizard surveys during which no San Joaquin antelope squirrel were observed (URS 2012a)."	Mammal surveys are not required to evaluate potential impacts. Applicant has assumed presence in areas where habitat is potentially suitable as described in the Amended AFC and subsequent submittals.
BIO-06			4.2-48	Table 6, Western burrowing owl and other MBTA protected migratory birds: "… potential impacts to wildlife exposed to high concentrations of selenium from operation of retention ponds; bioaccumulation of selenium by foraging waterbirds from ingestion of a variety of organisms used as food resources."	The ponds would collect storm water, which would not be expected to contain selenium. Ponds would be drained within a few days. No direct or indirect impacts are anticipated.
BIO-07			4.2-49	Footnote 3 on Page 4.2-49 defines "construction" to include operations.	Construction duration is approximately 42 months, including commissioning. Operational impacts would be substantially different and would continue for approximately 25 years. Operational impacts and construction impacts should be defined separately.
BIO-08			4.2-59 and 4.2-62	Staff critiques SJ kit fox vehicle strike plan and proposes new methodology. Staff requires additional data about project impacts and overall mitigation strategy for SJ kit fox and other species	Please see Applicant's Responses to PSA/DEIS Information Requests, Set 2 docketed on September 3, 2013 for an updated analysis. Applicant is currently developing a separate mitigation proposal for vehicle strike impacts to San Joaquin kit fox.
BIO-09			4.2-90	Nitrogen deposition modeling has not been performed to date, although modeling will be performed in preparation of the FSA/FEIS. Therefore, the potential for the project to affect sensitive biological resources from nitrogen deposition are unknown at this time.	Per the discussions at the September 18, 2013, CEC Staff workshop, Applicant is preparing the nitrogen deposition analysis and will submit to CEC upon completion.
BIO-10			4.2-101	Staff states that "project-specific CEQA analyses would be conducted as future phasing of the OEHI	See global comment section of this table regarding this issue.

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				component are submitted to DOGGR for permitting."	
BIO-11	Conclusions		4.2-111	Staff estimates the project's impacts to 773 acres of habitat represents a loss of denning and regional movement lands for San Joaquin kit fox.	Nearly all of the referenced acres are currently in cultivation and are not suitable for denning. Temporary impacts to cultivated lands are consistent with existing disturbance associated with cultivation; and would have minimal effects on kit fox—primarily impacts associated with movement. Very few recent occurrences of kit fox in the cultivated lands area have been documented. Additional clarification regarding the basis for this impact is required.
BIO-12	Conclusions		4.2-111	The construction of the project would impact approximately 192 acres of natural allscale scrub and disturbed lands which provide small mammal burrow habitat for blunt-nosed leopard lizard;	The project would permanently impact 32.59 acres and temporarily impact 63.90 acres of natural and disturbed/ruderal lands. It is not clear where the referenced estimate of 192 acres originated. Please see Applicant's Responses to PSA/DEIS Information Requests, Set 2 docketed on September 3, 2013 for a summary of the impacts for both the HECA and OEHI projects. Additional comments regarding impact area totals are provided in a separate attachment included in this submittal for proposed changes to Conditions of Certification (see comments on BIO-20).
BIO-13	Conclusions		4.2-112	…incidental take of blunt-nosed leopard lizard would likely occur over the life of the project. Therefore, staff considers this impact significant and unavoidable under CEQA even with the incorporation of mitigation and the project may not comply with the California Endangered Species Act	This conclusion is incorrect. Applicant has proposed standard measures that would avoid take of blunt-nosed leopard lizard. This species is not protected under the California Endangered Species Act but it is fully protected under the California Fish and Game Code and any form of take is prohibited.
BIO-14	Outstanding information required for completion of the FSA/FEIS		4.2-114	Additional focused protocol-level botanical surveys (CDFG 2009) along all linear routes and additional baseline botanical data, primarily the proposed carbon dioxide pipeline route;	This is inconsistent with the mitigation measure BIO-17, which requires botanical surveys **prior to the start of any project-related ground disturbance** in a previously undisturbed area along a linear route. Applicant cannot conduct focused botanical surveys in the time period preceding preparation of the FSA/FEIS due to seasonal requirements of focused botanical surveys.

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BIO-15	Outstanding information required for completion of the FSA/FEIS		4.2-115	Vehicle-fox strike and incidental take analysis considering the project's contribution to existing traffic volumes and intersections of the proposed construction and operation routes with other linear right-of-ways that occur within and outside of San Joaquin kit fox core recovery areas. The applicant should calculate vehicle mortality rates to kit fox and other mammals over the life of the project;	Please see Applicant's Responses to PSA/DEIS Information Requests, Set 2 docketed on September 3, 2013 for updated analysis.
4.3 Carbon Sequestration and Greenhouse Gas Emissions					
CS-01			4.3	General Comment	Please refer to Updated Emissions and Modeling Report, May 2013 for the most current equipment operational schedules, detailed carbon balance and GHG emissions for the HECA Project. A submittal from HECA regarding SB 1368 EPS is forthcoming; it will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith..
CS-02			4.3	General Comment	The wells at OEHI will be Class II wells for EOR and regulated by DOGGR. Applicant does not believe that Class VI wells are required for CO_2 sequestration. OEHI will update the MRV Plan to clarify the proposed monitoring as requested by CEC.
CS-03		Summary and Conclusions	4.3-1	"the project may not comply with California's Greenhouse Gases (GHG) Emission Performance Standard (EPS)"	This statement is misleading and inaccurate. It is repeated many times throughout this section and leads the reader to false conclusions. HECA easily complies with the SB 1368 EPS as demonstrated in the upcoming SB 1368 submittal.
CS-04			4.3-2	"would use a California petroleum refinery by-product, petroleum coke, as a fuel feedstock source which would reduce the transportation GHG emissions associated with international export of this material."	Applicant proposes the following changes: "would use a California petroleum refinery by-product, petroleum coke, as a fuel feedstock source which would reduce the transportation GHG emissions associated with international export <u>and subsequent less controlled combustion</u> of this material."
CS-05		Greenhouse Gases Analysis	4.3-4	However, staff requires that prior to publication of the Final Staff Assessment/Final Environmental	HECA will enter into a binding contract with Occidental of Elk Hills, Inc., prior to construction and will provide CEC

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				Impact Statement the applicant shall enter into a binding contract with Occidental of Elk Hills, Inc.	a copy of this agreement.
CS-06		Carbon Sequestration Geology Analysis	4.3-6	OEHI has not provided detailed information on the approach it would apply to assess the amounts of CO_2 leaked to the surface. Staff therefore cannot assess the effectiveness of the approach. OEHI should decide on one or more approaches to be used for assessing the amounts of fugitive CO_2 ahead of the detection of leaks and provide details of those approaches to staff for assessment. Without this information, staff cannot conclude that HECA would comply with the state's EPS.	The details of leakage monitoring plan have been outlined in the Monitoring, Reporting and Verification Plan provided by OEHI. As discussed during the PSA/DEIS Workshop held September 17 through 19, OEHI has agreed to update the MRV with additional information to address CO_2 leakage to the surface.
CS-07		*HECA's and OEHI's Potential Greenhouse Gas Emissions*	4.3-10	General comment for this subsection.	The carbon data presented in this section do not reflect the carbon balance at the HECA facility. The most up-to-date carbon balance and GHG emissions are provided in the responses to Carbon Sequestration and GHG in Applicant's Responses to Information Requests.
CS-08		LAWS, ORDINANCES, REGULATIONS, AND STANDARDS	4.3-14	4.3-14: "It is also likely that the OEHI CO_2 EOR component, itself or as part of the larger Occidental operating complex, would also require a PSD permit for GHG emissions prior to construction because the CO_2 emissions without the regulated recycling of the produced CO_2 would easily exceed the CO_2 PSD emissions permitting trigger level."	The OEHI CO_2 EOR component is not expected to trigger PSD review since CO_2e emissions are expected to be less than 60,000 tons/year.
CS-09			4.3-15	"Mandatory compliance with cap-and-trade requirements commenced on January 1, 2012, and enforcement began in January 2013."	Applicant proposes the following changes: "Mandatory compliance with cap-and-trade requirements commenced on January 1, ~~2012, and enforcement began in January~~ 2013."
CS-10			4.3-16	"Market participants such as HECA would be required to report their GHG emissions and to obtain GHG emissions allowances (and offsets) for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Thus, HECA, as a GHG cap-and-trade participant, would be consistent with	Applicant proposes the following changes: "Market participants such as HECA would be required to report their GHG emissions and to obtain ~~GHG emissions allowances (and offsets)~~compliance instruments for those reported emissions by purchasing allowances from the capped market and offsets from outside the AB 32 program. Thus, HECA, as a GHG cap-and-trade

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				California's landmark AB 32 Program, which is a statewide program coordinated with a region wide WCI program to reduce California's GHG emissions to 1990 levels by 2020."	participant, would be consistent with California's landmark AB 32 Program, which is a statewide program ~~coordinated with a region wide WCI program~~ to reduce California's GHG emissions to 1990 levels by 2020."
CS-11		Onsite GHG Emission Sources Description CO_2 Vent	4.3-23	When operating the CO_2 vent has the second highest instantaneous GHG emission rate of any HECA emission source.	The CO_2 vent has the largest instantaneous emission rate of the sources at HECA.
CS-12		Onsite GHG Emission Sources Description	4.3-23	Gasification Flare	The gasification flare has emissions that are significantly less than 10,000 MT/year; please move this source to the Moderate GHG Emissions Source category.
CS-13		Onsite GHG Emission Sources Description	4.3-24	The gasification flare, when operating under turbine outage or upset conditions and under full syngas production, has the highest instantaneous GHG emission rate of any HECA emission source.	The gasification flare has the second highest instantaneous GHG emissions of the sources at HECA.
CS-14		Onsite GHG Emission Sources Description	4.3-25	Nitric Acid Unit The total annual operation of the nitric acid unit would be 8,053 hours.	Please change the operating hours to 8,052 hours.
CS-15		Onsite GHG Emission Sources Description	4.3-26	Ammonia Synthesis Unit Start-Up Heater The 55-Million British Thermal Units/hour (MMBtu/hr) natural-gas-fired start-up heater	Please change the rating to 56-Million British Thermal Units/hour (MMBtu/hr) natural-gas-fired start-up heater.
CS-16		Undetermined GHG Emissions Source	4.3-26	Limestone Fluxant	HECA provided information to the CEC regarding the emissions associated with the addition of fluxant to the feedstock via email April 10, 2013. These emissions are also presented in the Updated Emissions and Modeling Report, May 2013.
CS-17		OEHI CO_2 EOR COMPONENT ***EOR Power Consumption***	4.3-29	The EOR component would require a total of approximately 940,000 MWh/yr, which is approximately 34 percent of HECA's annual generation total. The indirect GHG emissions from the EOR power consumption is by a large margin, at over 80 percent of the total EOR component's CO_2E emissions, the largest OEHI CO_2 EOR	As presented in the 2012 SEI the EOR component would require approximately 758,000 MWh/yr. In addition, the EOR process at OEHI is a separate and independent business, and the amount of electricity used for EOR is much greater than, and independent of, the amount of electricity needed for sequestration of HECA's CO_2. Finally, there are no direct GHG emissions from the power

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				component GHG emission source.	consumption at OEHI. Thus, this entire statement is misleading and should be removed.
CS-18			4.3-32	Table 3	Applicant recommends inserting a note to Table 3 indicating that GHG emissions associated with land use change are not substantial and thus not included. Otherwise, GHG emissions associated with land use change should be incorporated.
CS-19		OEHI CO_2 EOR Component GHG Emissions	4.3-39	Table 8 Estimated HECA and EOR Component Emissions and Generation Efficiency	The data presented in this table are very misleading and not useful. Benchmarks are only of value if they compare things equally. This generation efficiency value is only useful for comparing the power generation portion of HECA to other power generation facilities. The values shown in this table include CO_2e emissions from all sources at HECA and OEHI and subtract power usage from all consumption at HECA, the ASU and OEHI for EOR. Not only does this calculation include emissions from sources not involved in power generation, it also excludes power generation from activities not related to power generation. The value is shown for CO_2e, but the EPS only governs CO_2 emissions. SB 1368 is the EPS that should be looked at for a power generation benchmark. Presenting varying calculations resembling but not directly comparable to SB 1368 EPS engenders confusion for the reader.
CS-20		OEHI CO_2 EOR Component GHG Emissions	4.3-39	For comparison the Avenal Energy power plant was estimated to have an emissions rate of 0.384 MT CO_2E/MWh.	Staff compares the values estimated in Table 8 to the SB 1368 EPS calculated for the Avenal Energy power plant, which is a natural gas power plant, and the EPS only includes power related emissions. The 'generation efficiency' values shown in Table 8 are not comparable to the SB 1368 EPS, since Table 8 includes CO_2e emissions from all sources at HECA and OEHI and subtracts power usage from all consumption at HECA, the ASU and OEHI for EOR. It does not show just power related emissions and power generation.

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CS-21		OEHI CO_2 EOR Component GHG Emissions	4.3-39 Footnote 14	The total heat equivalent of 12,000 barrels per day of oil is approximately 920 MW per hour, and after consideration of useful efficiency, assuming around 33 percent efficiency, would be over 300 MW of equivalent useful energy. Considering that useful energy in the total efficiency would drop the maximum combined HECA and EOR component permitted efficiency value from 0.702 CO_2E/MWh to 0.185 CO_2E/MWh.	Inclusion of useful energy from the oil extracted at OEHI has nothing to do with the power plant benchmark. There is no way for CEC staff or HECA to know how that oil may be used. Plus HECA will not have access to any power that might be generated from that oil. Inclusion of this footnote is misleading and confusing to the reader.
CS-22		GHG LORS Compliance EPS Compliance	4.3-41	1) (f): Auxiliary Boiler [per §2904(a), ancillary equipment]	Although the regulations cited (i.e., CCR Title 20, Section 2904[a]) are expected to be inapplicable, this regulatory citation specifically excludes ancillary equipment from inclusion in the total CO_2.
CS-23		GHG LORS Compliance EPS Compliance	4.3-41	j. Ammonia Synthesis Plant Start-Up Heater k. Urea Absorber Vents Fertilizer Plant Fugitives	These sources do not belong in the emission inventory for the SB 1368 EPS. A submittal from HECA regarding SB 1368 EPS is forthcoming; it will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
CS-24		GHG LORS Compliance EPS Compliance	4.3-42	3) The CO_2 emissions within the OEHI CO_2 EOR component that are included in the total CO_2 emissions for EPS compliance include the following CO_2 emission sources…	No emissions from OEHI should be included in the SB 1368 EPS. The EPS measures emissions related to power generation only. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
CS-25		GHG LORS Compliance EPS Compliance	4.3-42	3) The CO_2 emissions within the OEHI CO_2 EOR component that are included in the total CO_2 emissions for EPS compliance include the following CO_2 emission sources: c) Indirect CO_2 emissions generated from the electricity consumed to sequester the CO_2.	There is electricity usage for the EOR process at OEHI, but this is a distinctly different industrial process than power generation, and is different than the electricity needed for sequestration, as noted in the Response to PSA/DEIS Information Request CS-7J. As noted in the comment above, no emissions or power usage at OEHI should be included in the SB 1368 EPS. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance

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					therewith.
CS-26		GHG LORS Compliance EPS Compliance	4.3-43	The onsite fuel preparation process (i.e., gasification process and its various emission sources) is not an ancillary process. This realizes that the actual fuel is the coal and coke feed stocks that are gasified as the hydrogen rich fuel combusted in the gas turbine/HRSG would not exist without the coal and coke.	This reasoning conflicts with a previous statement in footnote 15 on page 4.3-41: "Regardless that the carbon is in a solid form part (a) notes 'the calculation shall assume that all carbon in the fuels is converted to carbon dioxide.' However, in this case the petcoke and coal are not directly used as fuels but rather as feedstock to make the fuel…"
CS-27		GHG LORS Compliance EPS Compliance	4.3-44	Table 9 HECA SB 1368 EPS Compliance – Preliminary Calculations	HECA disagrees with the CEC calculation of the SB 1368 EPS. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
CS-28		GHG LORS Compliance EPS Compliance	4.3-45	Based upon preliminary data, if the facility were to reduce electricity production by 110 MW and maximize ammonia production during off-peak hours (eight hours per night), HECA would emit 0.51 MT CO_2/MWh	HECA disagrees with the CEC calculation of the SB 1368 EPS. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
CS-29		GHG LORS Compliance EPS Compliance	4.3-47	Table 10 HECA EPS Compliance – Staff Versus Applicant Comparison	HECA disagrees with the CEC calculation of the SB 1368 EPS. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
CS-30		AVENAL PRECEDENT DECISION	4.3-49	As proposed, the project would also use a limited amount of natural gas, with more being used in the early years of operation and less used as the project matures and the operators learn how to optimize operations as described above.	Natural gas firing in the turbine is for a backup fuel, primarily to be used when power generation is needed to meet the electricity delivery in the event of maintenance.
CS-31		AVENAL PRECEDENT DECISION	4.3-49	Thus, when HECA is new, it would operate with CO_2 emissions that are higher per megawatt-hour than the electricity production system's average natural gas fired power plants and may exceed the EPS of 0.5 MT CO_2/MWh. However, when HECA is mature it would operate with CO_2 emissions that	This statement is extremely misleading and inaccurate. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.

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				are below the system average and slightly lower than today's new natural gas combined cycle facilities.	
CS-32		**OEHI CO_2 EOR COMPONENT** **GHG Emission Inventory and Reporting**	4.3-50	Because leaks of injected CO_2 have the potential to contaminate underground sources of drinking water (USDW), the U.S. EPA, with mandate under the Clean Water Act, has issued regulations to control injection wells intended for long term storage of CO_2 in terms of construction, operation, monitoring, plugging, post-injection site care (PISC), and closure, as well as financial responsibility for any maintenance and correction action plans. The U.S. EPA regulations were codified under 40 CFR part 146 subpart H commencing with subsection 146.81. Compliance of the project owner with the regulations for injection wells as required by Condition of Certification **GHG-3**	Although these statements are correct, they are not relevant to the OEHI EOR project since they apply to wells used for CCS only, not EOR.
CS-33		Direct/Indirect Operation Impacts and Mitigation GHG Emissions During Plant Operation	4.3-51	the facility would operate 50 weeks a year, require 192 hours (total), to start up twice a year	The entire facility will take up to 157 hours to startup. The turbine will take 4.5 hours to startup.
CS-34		The Role of HECA in Energy Displacement	4.3-53	Again, this could result in HECA being dispatched before a natural gas-fired combined cycle which, during the early years of HECA's operation, would have a lower GHG emissions rate.	HECA will have an EPS that is significantly lower than a natural gas power plant. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
CS-35			4.3-69	The U.S. EPA regulations were codified under 40 CFR part 146 subpart H commencing with subsection 146.81. The Class VI regulations include specific requirements for the construction of new wells and retrofitting of existing wells, and also for the operation and monitoring of the wells	Although these statements are correct, they are not relevant to the OEHI EOR project since they apply to wells used for CCS only, not EOR. OEHI will be further addressing the monitoring of the CO_2 wells in the revised MRV Plan.

Comment Number	PSA/DEIS Chapter	PSA/DEIS Section[1]	Page Number[2]	PSA/DEIS Statement[3]	Comments to CEC/DOE[4]
				during and after termination of the injection activities.	
CS-36			4.3-69	Table 13	As noted previously, Class II wells will be used for the EOR and sequestration of CO_2. Applicant does not believe the Class VI wells are required for long-term CO_2 sequestration.
CS-37			4.3-72	In order to achieve that goal, HECA is required to demonstrate that the sequestered CO_2 remains sequestered during and after the plugging of wells and closure of the injection site. Therefore, CEC staff believes that compliance with the Class VI well requirements would ensure that the injected CO_2 would remain sequestered on a long term basis. Compliance of the project owner with the regulations for injection wells as required by Condition of Certification GHG-3	Applicant does not believe the Class VI wells are required for long-term CO_2 sequestration. OEHI will be further addressing the monitoring of the CO_2 wells in the revised MRV Plan.
CS-38		Project Operations	4.3-73	Project Operations – OEHI is expected to receive a daily maximum rate of 130 MMSCFD… and an annual average rate of 107 MMSCFD…	The Project generates a peak instantaneous rate of 165 MMSCFD. This equates to an annual average rate for mature operation of 136 MMSCFD.
CS-39			4.3-83	If some or all of the wells are not plugged and abandoned, periodic monitoring of casing pressures, as well as surface monitoring of CO_2 concentration would be necessary. Additionally, according to the Class VI regulations, the Area of Review (AoR) associated with Class VI wells is required to be revised continually until site closure. Revision of the AOR requires continuous modeling of the CO_2 plume through the post injection period until site closure.	OEHI will be further addressing the monitoring of the CO_2 wells in the revised MRV Plan.
CS-40			4.3-83	Closure and Decommissioning Section	OEHI will be further addressing the monitoring of the CO_2 wells in the revised MRV Plan.
CS-41		Conclusions	4.3-95	As long as CO_2 sequestered in the oil field remains under ground, HECA would emit considerably less GHG than existing coal-fired power plants, but	HECA will have an EPS that is significantly lower than a natural gas power plant. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the

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				would have GHG emissions efficiency that is somewhat worse than current natural gas fired combined cycle plants	appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
CS-42			4.3-114	**CARBON SEQUESTRATION and GREENHOUSE GAS - FIGURE 1**	HECA does not agree with the assumptions outlined in this figure. A submittal from HECA regarding SB 1368 EPS is forthcoming that will clarify the appropriate scope of analysis under SB 1368 and HECA's compliance therewith.
4.4 Cultural Resources					
CUL-01	4.4		4.4	Discussion of Section 106 consultation is limited. • Appendix CUL-1/2 does not include all correspondences. • LORS consistency should describe compliance with Section 106.	The FSA/FEIS should provide a more detailed summary of DOE's Section 106 activities. The FEIS should address: • Consultation with SHPO. • DOE's ongoing government-to-government consultation with the federally recognized tribes. • ACHP notification. • Appendix CUL-1 and Appendix CUL-2 should include all related correspondences, including log or table showing outreach efforts (letters, meetings, calls, emails, etc.). • LORS consistency should describe DOE's compliance with Section 106. Please also see next comments.
CUL-02	4.4	Cultural Summary	4.4-1	"Although the adoption and implementation of Conditions of Certification CUL-1 through CUL-8 would reduce the currently identifiable potential impacts of the proposed project on cultural resources to a less-than-significant level, the incompleteness of the cultural resources analysis available to staff requires staff to tentatively conclude that the proposed project would result in one or more significant impacts/adverse effects on cultural resources. The level of significance after mitigation of significant impacts/adverse effects is	Completing surveys once access has been secured may result in the identification of additional resources. However, these resources would be treated with the same conditions as the known sites and as such, impacts would be reduced to less-than-significant levels.

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				currently unknowable."	
CUL-03	4.4	Cultural, Geoarchaeology	4.4-12	"As of March 2013, the proposed plan is not complete and the proposed field work has not taken place. The applicant, however, has provided staff with a draft geoarchaeological work plan (URS 2013d) and is revising the plan pursuant to staff comments."	The geoarchaeological work has been completed and the summary report was submitted to CEC confidentially on August 26, 2013.
CUL-04	4.4	Cultural, Geoarchaeology	4.4-13	"The applicant has not conducted the additional sub-surface sampling which staff considers necessary to complete an analysis of the potential cultural resource impacts of the proposed project."	The geoarchaeological fieldwork has been completed and the summary report was submitted to CEC confidentially on August 26, 2013.
CUL-05	4.4	Cultural, Definitions of direct and Indirect Impacts	4.4-42	"New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting…"	The introduction of stylistically incompatible buildings is an indirect impact.
CUL-06			4.4-66 and 4.4-67	Description of "Department of Energy Consultation."	In addition to consultation activities identified in the "Department of Energy Consultation" section of the PSA/DEIS, Applicant is aware of additional activities associated with DOE's Section 106 consultation under the National Historic Preservation Act. Applicant requests that the following summary be added to the end of the discussion of "Department of Energy Consultation," and that the section be further updated prior to the publication of the FSA/FEIS. Applicant requests that the references identified below as Pozzuto, 2013b, 2013c, 2013d, 2013e, 2013f, and 2013g be added to Appendix CUL-1, as well as the letters referenced in the PSA/DEIS as Pozzuto, 2012c and 2012d. These items are attached to Applicant's comments hereto. Add to "Department of Energy Consultation": <u>DOE continued to consult with the federally recognized tribes on a government-to-government basis during the preparation of the PSA/DEIS. See correspondence from DOE to the Santa Rosa Rancheria Indian Tribe, Tule River Indian Tribe, and Tejon Indian Tribe on June 13, 2013</u>

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					(Pozzuto, 2013b, 2013c, and 2013d) and September 10, 2013 (Pozzuto, 2013e, 2013f, and 2013g). In accordance with 36 CFR § 800.2(d)(3), DOE relied on the NEPA public review period to accept comments on the Section 106 consultation (36 CFR § 800.2[d]). The federally recognized tribes were provided copies of the PSA/DEIS (78 Fed. Reg. 43871). DOE provided notice of the PSA/DEIS workshops in the *Bakersfield Californian*, which invited comment on the Section 106 consultation process. DOE consulted with the California State Historic Preservation Officer (SHPO), as described in the "Consultation with Others" section of the PSA/DEIS, on page 4.4-67. As part of the Section 106 consultation process, DOE could also consider outreach by the CEC as part of the joint PSA/DEIS and by HECA as part of the Application for Certification. Additional References: Pozzuto, Fred, 2013b. Letter. National Energy Technology Laboratory, U.S. Department of Energy, Morgantown, West Virginia. Submitted to Tejon Indian Tribe, Wasco, California. June 13. Pozzuto, Fred, 2013c. Letter. National Energy Technology Laboratory, U.S. Department of Energy, Morgantown, West Virginia. Submitted to Santa Rosa Rancheria, Lemoore, California. June 13. Pozzuto, Fred, 2013d. Letter Regarding Proposed Hydrogen Energy California Project in Kern County, California. National Energy Technology Laboratory, U.S. Department of Energy, Morgantown, West Virginia. Submitted to Tule River Indian Tribe, Porterville, California. June 13. Pozzuto, Fred, 2013e. Letter Regarding Proposed Hydrogen Energy California Project in Kern County, California. National Energy Technology Laboratory, U.S. Department of Energy, Morgantown, West Virginia. Submitted to Tejon Indian Tribe, Wasco, California.

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					September 10. Pozzuto, Fred, 2013f. Letter Regarding Proposed Hydrogen Energy California Project in Kern County, California. National Energy Technology Laboratory, U.S. Department of Energy, Morgantown, West Virginia. Submitted to Santa Rosa Rancheria, Lemoore, California. September 10. Pozzuto, Fred, 2013g. Letter Regarding Proposed Hydrogen Energy California Project in Kern County, California. National Energy Technology Laboratory, U.S. Department of Energy, Morgantown, West Virginia. Submitted to Tule River Indian Tribe, Porterville, California. September 10.
CUL-07			4.4-67	"Consultation with Others"	Applicant requests that the "Consultation with Others" section reflect that, by letter dated September 4, 2013, the SHPO indicated it had no objections to the identified APE for the Section 106 consultation (Roland-Nawi, 2013). Applicant requests that this letter be added to the information provided in Appendix CUL-2. Additional Reference: Roland-Nawi, Carol, 2013. Letter from Carol Roland-Nawi, PhD, State Historic Preservation Officer, regarding continuing Section 106 consultation for Hydrogen Energy California Project, Kern County, CA. Reply in Reference to: DOE120514A. Submitted to Fred Pozzuto, Department of Energy. September 4.
CUL-08	4.4	Cultural, Environmental Justice/ Socioeconomic Methods	4.4-67	***Environmental Justice/Socioeconomic Methods*** "In accordance with federal and state law, regulations, policies, and guidance, staff considered the proposed project's potential to cause significant adverse impacts on environmental justice populations (E.O. 12898; 40 C.F.R., §§1508.8, 1508.14; 14 Cal. Code Regs., §§15064(e), 15131, 15382; 20 Cal. Code Regs., §1704(b)(2), App. B(g)(7); CEQ 1997). **Socioeconomics Figure 1**	While Applicant agrees that the work of the cultural team should be consulted by those doing Environmental Justice analysis in order to capture relevant data, the placement of this text in the cultural chapter seems inappropriate.

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				indicates that an environmental justice population exists within a 6-mile buffer of the proposed project area (see the **Socioeconomics** section of this PSA/DEIS for a discussion of methods and composition of the environmental justice population). In addition, staff reviewed the ethnographic and historical literature, and corresponded with Native American tribes, to determine whether any additional environmental justice populations use or reside in the project area. These efforts are documented in the "Ethnographic Setting" and "Native American Consultation" subsections of this PSA/DEIS."	
CUL-09	4.4	Cultural, Cultural Resources Table 8	4.4-74, 4.4-77	Second column heading "Description"	For the most part, staff is supplying interpretations here rather than resource descriptions. The subsequent site discussions that begin on page 4.4-88 use the existing site descriptions as provided in the Amended AFC, associated technical report (Hale et al., 2012), and other technical reports to "classify" the sites in the analysis presented in the PSA/DEIS. These classifications are interpretations of site function.
CUL-10	4.4	Cultural, Cultural Resources Table 8	4.4-74	CA-KER-5392 (P-15-6767) "CO_2 line; near controlled area."	The northern boundary of CA-KER-5392, as identified in a number of efforts, is over 1,000 feet away from the Controlled Area. This site is separated from the Controlled Area by the West Side Canal, the Kern River Flood Canal, and the California Aqueduct. Therefore, the resource should be removed from Cultural Resources Table 8, because it is not in the PAA/APE.
CUL-11	4.4	Cultural, Cultural Resources Inventory Fieldwork, Table 9, Historic Built Environment Resources	4.4-79	MR 4 Landing Strip and Hangar w/ "28" footnote that reads: "This resource was submitted with the 2009 Amended AFC but was not resubmitted with the 2012 Amended AFC and is not indicated on the current project maps (JRP 2012: Map 2, Sheet 5). The resource lies partially within the current PAA/APE and therefore is included in staff's	The PAA/APE from the 2009 Revised AFC differs from that of the 2012 Amended AFC (transmission lines to Midway Substation eliminated). The airfield no longer exists and the quonset hut hangar that was recorded in 2009 is no longer within the PAA/APE and as such was not discussed in the 2012 Amended AFC.

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		Eligibility: HECA		analysis."	
CUL-12	4.4	Cultural, Geo-archaeological Study	4.4-80 – 4.4-82	In the section, the CEC reiterates their request for a geoarchaeological field study.	The geoarchaeological fieldwork has been completed and the summary report was submitted to CEC confidentially on August 26, 2013.
CUL-13	4.4	Cultural, Intensive Pedestrian Surveys	4.4-86	"The applicant has informed staff that they will complete pedestrian surveys and report on their findings in time to inform staff's FSA/FEIS for the proposed project."	Applicant has stated that pedestrian surveys will be completed when access has been secured. Currently, there are some portions of linear alignments where access has not been secured and Applicant is not anticipating access prior to the FSA/FEIS. These areas can be surveyed pursuant to a Condition of Certification when access has been secured.
CUL-14	4.4	Cultural, Intensive Pedestrian Surveys	4.4-87	"…the cultural resources inventory currently leaves a number of issues unresolved: the significance status of certain archaeological resources is undetermined…"	Applicant will conduct an Extended Phase I investigation once access has been secured, which is expected after certification. Those sites that are known to be within the PAA/APE and subject to impacts resulting from Project implementation will be avoided.
CUL-15	4.4	Cultural, Intensive Pedestrian Surveys	4.4-87	"…the potential for buried archaeological deposits to be present in the PAA/APE has not been adequately assessed…"	The geoarchaeological fieldwork has been completed and the summary report was submitted to CEC confidentially on August 26, 2013.
CUL-16	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations	4.4-88	"At present, staff is able to conclude that a total of 18 prehistoric archaeological resources would be subject to direct impacts from the proposed project elements."	Applicant disagrees with this statement. An Extended Phase I investigation will be implemented to partially resolve this issue by confirming which resources in question are subject to direct impacts. Some resources the CEC staff claims are subject to direct impacts are anticipated to be avoided or are not within the Project's impact area. The citing of 18 resources is inconsistent with later sections of PSA/DEIS. Later in PSA/DEIS (see list on page 4.4-160) some of these 18 resources are combined together rather than discussed individually as they are here, resulting in a different number of resources referenced.
CUL-17	4.4	Cultural, Cultural Resource	4.4-88	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	An Extended Phase I investigation will be implemented to resolve this issue by confirming if the resource in question

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		Descriptions and Significance Evaluations, CA-KER-171			occurs within the Project's area of impact.
CUL-18	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-179	4.4-89	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	An Extended Phase I investigation will be implemented to resolve this issue by confirming if the resource in question occurs within the Project's area of impact.
CUL-19	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-2485	4.4-89	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	An Extended Phase I investigation will be implemented to resolve this issue by confirming if the resource in question occurs within the Project's area of impact.
CUL-20	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-2485	4.4-89	The surface component of the site measures approximately 150 feet from north to south and 150 feet from east to west. (Jackson 1989:1.) It is located along the proposed process waterline, primarily on the southwest side of the West Side Canal.	As recorded by Jackson, CA-KER-2485 is entirely on the southwest side of the West Side Canal.
CUL-21	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-2485	4.4-89	The site was not relocated by the applicant.	As recorded, the site is on the opposite side of the West Side Canal from the survey area. It would perhaps be more appropriate to state that "the applicant did not identify archaeological materials potentially associated with CA-KER-2485 within their survey corridor."
CUL-22	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-3108	4.4-90	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	An Extended Phase I investigation will be implemented to resolve this issue by confirming if the resource in question occurs within the Project's area of impact.

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CUL-23	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2008-1	4.4-92	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	HECA-2008-1 is within the PAA/APE, and Applicant has committed to avoiding this resource, thus having no impact on the resource. Staff has previously suggested HDD as an acceptable avoidance measure.
CUL-24	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2009-2	4.4-92	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	The site is located in the Controlled Area. The CO_2 line will be bored well beneath the site in a HDD boring. Staff has indicated that they accept HDD as a proper avoidance measure of this resource. Staff has raised concerns in a number of forums about the continued practice of farming within the Controlled Area as a potential impact to this resource. The Controlled Area has been and is currently in active agricultural use. Therefore, any impacts associated with continued agricultural use are part of the baseline condition and not impacts associated with the HECA Project.
CUL-25	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2009-2	4.4-93	The Amended AFC does not suggest temporal associations or functional interpretations for the site (Hale et al., 2012:40; URS 2012a:5.3-28). However, the lack of groundstone and freshwater mussel shell indicates that this site was a special function site that can be classified as a lithic scatter.	From the site description presented on page G-3-40 of the Amended AFC: "… site consists of a low-density scatter of lithic artifacts…" In Table 6 of the Cultural Section in the Amended AFC the site is identified as a "Lithic Scatter." Applicant's findings are virtually identical with those made by staff.
CUL-26	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2009-9	4.4-93	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	This particular resource falls within the PAA/APE because of two project components, the Process Waterline and the Well Field. An Extended Phase I investigation will be implemented to determine if the resource extends into the PAA/APE for the process waterline. An exclusion zone has been established around the site within the well field to avoid potential impacts from this component.
CUL-27	4.4	Cultural, Cultural Resource Descriptions and Significance	4.4-93	"The Amended AFC does not suggest temporal associations or functional interpretations for the HECA-2009-9. However, this site can be classified as a lithic scatter, which may have served	From the site description presented on page G-3-40 of the Amended AFC: "… site consists of a relatively moderate-sized, low-density scatter of lithic debris…" In Table 6 of the Cultural Section in the Amended AFC the site is

Comment Number	PSA/DEIS Chapter	PSA/DEIS Section[1]	Page Number[2]	PSA/DEIS Statement[3]	Comments to CEC/DOE[4]
		Evaluations, HECA-2009-9		a special function."	identified as a "Lithic Scatter." Applicant's findings are virtually identical with those made by staff.
CUL-28	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2009-10	4.4-94	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	This particular resource falls within the PAA/APE because of two project components, the Process Waterline and the Well Field. An Extended Phase I investigation will be implemented to determine if the resource extends into the PAA/APE for the process waterline. An exclusion zone has been established around the site within the well field to avoid potential impacts from this component.
CUL-29	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2009-10	4.4-94	"The Amended AFC does not suggest temporal associations or functional interpretations for the HECA-2009-10. However, this site can be classified as a lithic scatter, which may have served a special function."	From the site description presented on page G-3-41 of the Amended AFC: "… site consists of a relatively large, low-density scatter of CCS debris…" In Table 6 of the Cultural Section in the Amended AFC the site is identified as a "Lithic Scatter." Applicant's findings are virtually identical with those made by staff.
CUL-30	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2010-1	4.4-94	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	An Extended Phase I investigation will be implemented to resolve this issue by confirming if the resource in question occurs within the Project's area of impact.
CUL-31	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, BS-IF-004	4.4-96	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	This resource was neither among the sites of concern provided by staff in the memo of March 25, 2013 nor in DR A147 (nor raised as an issue in the Revised AFC of 2009). The resource could be added to the list of those subjected to the Extended Phase I investigation; however, the final plan has already been approved by the CEC.
CUL-32	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, KRM-IF-003	4.4-96	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	Elsewhere staff has combined this isolated find with archaeological site CA-KER-179. Separating inflates the number of resources to be addressed. An Extended Phase I investigation will be implemented to determine if the resource (addressed along with CA-KER-179) occurs within the area of impact.
CUL-33	4.4	Cultural, Cultural	4.4-102	One of the 18 prehistoric resources staff concludes	An Extended Phase I investigation will be implemented to

Comment Number	PSA/DEIS Chapter	PSA/DEIS Section[1]	Page Number[2]	PSA/DEIS Statement[3]	Comments to CEC/DOE[4]
		Resource Descriptions and Significance Evaluations, CA-KER-89/H		would be subject to direct impacts on page 4.4-88.	resolve this issue by confirming if the resource in question occurs within the Project's area of impact.
CUL-34	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-89/H	4.4-102	"The surface component measures approximately 148 feet north-south and 49 feet east-west. It is located along the proposed HECA process water line, primarily on the southwest side of the West Side Canal."	As recorded by Laframboise, CA-KER-89/H is entirely on the southwest side of the West Side Canal.
CUL-35	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-5356/H	4.4-103	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	An Extended Phase I investigation will be implemented to resolve this issue by confirming if the resource in question occurs within the Project's area of impact.
CUL-36	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, CA-KER-5356/H	4.4-103	"It is located along the proposed HECA process water line, primarily on the southwest side of the West Side Canal."	As recorded by Scott, CA-KER-5356/H is entirely on the southwest side of the West Side Canal.
CUL-37	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-5356/H	4.4-103	"One 33-foot-long trench paralleling the levee road was excavated approximately 66 feet north of the artifacts observed in the road. No buried component was identified in this trench (URS Greiner Woodward Clyde 1999:L-9)."	It should be noted that this trench, found to be devoid of cultural material, was excavated between the site area and process water line, which is evidence supporting Applicant's position that that this site does not extend into the Project's impact area.
CUL-38	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations,	4.4-103	One of the 18 prehistoric resources staff concludes would be subject to direct impacts on page 4.4-88.	An Extended Phase I investigation will be implemented to resolve this issue by confirming if the resource in question occurs within the Project's area of impact.

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		CA-KER-5356/H			
CUL-39	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, HECA-2010-2	4.4-104 and 4.4-105	"Privies would likely be located north and east of the house so that the prevailing westerly and northwesterly winds would blow unwanted odors away from the residence."	As stated in the Air Quality Section of the Amended AFC (see page 5.1-5 and Appendix E-1) based upon data collected from 2006 to 2010 "winds for all seasons and all years blow predominantly from the sector between northwest and north, although the directional pattern is more variable during the fall and winter seasons." Utilizing these documented prevailing wind patterns, the privy would have to be placed to the south-southeast of the residence in order to be located "downwind." The now demolished structure was standing at 35034 Stockdale Highway at the time of project initiation. The home was oriented towards the intersection of Stockdale Highway and Dairy Road which lay to the south-southeast. A privy placed downwind of the residence would be placed in the front yard of this particular residence. Nonetheless, an Extended Phase I investigation will be implemented to resolve this issue by confirming if a privy occurs within the Project's area of impact.
CUL-40	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, Adohr Farms/ Palm Farms	4.4-113	"There is some confusion on the part of the cultural resources and visual resources descriptions of the current and former buildings on the property. The Visual Resources section of the Amended AFC describes the former Port Organics plant as adjacent to the northwest of the project site (URS 2012a:5.11-3)."	Applicant does not believe there is any "confusion" between the descriptions presented in the Visual and Cultural Sections. The type of descriptions presented in these sections may differ based on the nature of the analyses but there is no data presented that is conflicting (i.e., confused).
CUL-41	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, Adohr Farms/ Palm Farms	4.4-114	"The HECA project footprint and proposed laydown area are located on parts of what was known as Adohr/Palm Farms. An area designated as the controlled area would be located on the site of three of the remaining Adohr/Palm Farms buildings and related landscape elements. The Amended AFC does not specify what activities would take place within the controlled area."	As depicted on project maps consistently throughout the Amended AFC, the Historic Architectural Resources Study Area map in the cultural section (Figure 5.3-2 Sheet Four), the northern Controlled Area will be used for laydown during project construction. No new use of the area is proposed as part of the Project.

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CUL-42	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, Adohr Farms/ Palm Farms (i.e., Map References 7, 8, and 9).	4.4-114 through 4.4-122	"Throughout the Adohr Farms/Palm Farms discussion, but in particular beginning on the final paragraph on page 4.4-114 through the close of the discussion on page 4.4-122 staff calls out apparent shortcomings of the analysis of this potential resource. Similar points were at least partially iterated in Data Requests A186a-c."	Consistent with Applicant's formal objection to Data Requests A186a-c, additional information requested by CEC staff would not alter the eligibility conclusions of the properties. This position appears to be supported by staff as they conclude that the resources that comprise the Adohr Farms/Palm Farms complex (i.e., Map References 7, 8, and 9) are not eligible for listing in the CRHR or NRHP (4.4-118, 4.4-120, and 4.4-121.
CUL-43	4.4	Cultural, Cultural Resource Descriptions and Significance Evaluations, JRP-HECA-4, Landing Strip and Hangar	4.4-139	"This resource lies partially within the PAA/APE for the proposed railroad spur, but was not submitted with the 2012 amended application. Staff became aware of the previous evaluation late in the discovery period and has not had the opportunity to review the DPR 523 forms and evaluation for the PSA/DEIS."	As indicated previously, the PAA/APE from 2009 Revised AFC differs from that of the 2012 Amended AFC (transmission lines to Midway Substation eliminated). The airfield no longer exists and the quonset hut hangar that was recorded in 2009 is no longer within the PAA/APE and as such was not discussed in the 2012 Amended AFC.
CUL-44	4.4	Cultural, Direct/ Indirect Impacts and Mitigation, Construction Impacts and Mitigation, Surface Archaeological Resources	4.4-148	"Accordingly, staff has requested that the applicant provide information that permits to determine the significance of these archaeological resources. Supplying this information would be a multi-step process that would inform staff's analysis in the FSA/FEIS. The first step would entail the applicant preparing and submitting to staff an archaeological research design for scientific excavation and documentation of the known archaeological resources in the PAA/APE. Upon staff review and approval of the research design, the applicant would implement the research design and prepare an excavation report containing their significance recommendations to staff. Once the applicant provides an excavation report that is acceptable to staff, Energy Commission staff will have information sufficient to analyze the proposed project's impacts on the subject archaeological	As explained in Applicant's Responses to PSA/DEIS Information Requests docketed on September 3, 2013, access to conduct the Extended Phase I investigation has been denied. Therefore Applicant will conduct the XPI in accordance with Conditions of Certification. Those resources found to be in the impact area will either be avoided or subject to the evaluation efforts outlined by the CEC.

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				resources in the FSA/FEIS."	
CUL-45	4.4	Cultural, Environmental Justice Impacts	4.4-151	**Environmental Justice Impacts**	Applicant questions the appropriateness of this section in this chapter. While Applicant acknowledges that some ethnographic groups can also be considered environmental justice populations, the Amended AFC as well as the PSA/DEIS contain environmental justice analyses elsewhere.
CUL-46	4.4		4.4-151	"Construction of the electrical interconnection between the proposed HECA project and the Midway–Wheeler Ridge Transmission Line would require installation of optical control grounding wire along the transmission line between the proposed HECA switching station and Midway Substation in Buttonwillow. Additionally, the proposed project would necessitate installation of a 500/220-kV transformer bank and ten 80-kA breakers at Southern California Edison's Mesa Substation in Pasadena, Los Angeles County."	The optical control grounding wire would be installed above-ground along the transmission line. Also see comments on TSE.
CUL-47	4.4	Cultural, Unresolved Issues Relating to Cultural Resources	4.4-158	Complete pedestrian survey results for all of HECA's linear alignments.	All portions of linear alignments where land owners have granted access have been surveyed. Despite Applicant's repeated efforts, which have been documented with the CEC, Applicant does not anticipate receiving permission to these other areas prior to the FSA/FEIS. As such, the completion of these surveys should be made a Condition of Certification.
CUL-48	4.4	Cultural, Unresolved Issues Relating to Cultural Resources	4.4-158	"Results of test excavations and evaluations of CRHR/NRHP eligibility for all archaeological sites that staff has identified as having the potential to be directly impacted by HECA…"	An Extended Phase I investigation will be implemented to determine which resources actually occur within the area of impact. Those resources found to be in the impact area will either be avoided or subject to the evaluation efforts outlined by the CEC. Since access for cultural investigations beyond surface reconnaissance have been denied by the private landowners, completing the Extended Phase I investigation and any subsequent evaluations would need to be a Condition of Certification.

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CUL-49	4.4	Cultural, Unresolved Issues Relating to Cultural Resources	4.4-159	Complete Pedestrian Survey Results for Project Linears	All portions of linear alignments where land owners have granted access have been surveyed. Despite Applicant's repeated efforts, which have been documented with the CEC, Applicant does not anticipate receiving permission to these other areas prior to the FSA/FEIS. As such, the completion of these surveys should be made a Condition of Certification.
CUL-50	4.4	Cultural, Unresolved Issues Relating to Cultural Resources	4.4-159	Significance Evaluations of Identified Archaeological Resources	An Extended Phase I investigation will be implemented to determine which resources actually occur within the area of impact. Those resources found to be in the impact area will either be avoided or subject to the evaluation efforts outlined by the CEC. Since access for cultural investigations beyond surface reconnaissance have been denied by the private landowners, completing the XPI and any subsequent evaluations would need to be a Condition of Certification.
CUL-51	4.4	Cultural, Unresolved Issues Relating to Cultural Resources	4.4-160	Significance Evaluations of Identified Archaeological Resources • KRM-IF-006/P-15-89 • BS-IF-003/P-15-2485 • P-15-7176/P-15-6725 • P-15-171 • P-15-179/KRM-IF-003/KRM-IF-004/ KRM-IF-005 • P-15-3108 • HECA-2008-1 • HECA-2009-2 • HECA-2009-9 • HECA-2009-10 • HECA-2010-1 • HECA-2010-2 • BS-IF-004	Applicant requests that the site discussions be presented in a consistent manner. Table 8 and the discussion of prehistoric resources beginning on page 4.4-88 utilizes the state issued trinomial when available while in this bullet list the state issued "P" number is used when available.

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CUL-52	4.4	Cultural, Unresolved Issues Relating to Cultural Resources	4.4-160	Significance Evaluations of Identified Archaeological Resources • P-15-179/KRM-IF-003/KRM-IF-004/ KRM-IF-005	KRM-IF-003 is combined with other identified resources here; however, it is presented and tabulated individually on page 4.4-96 leading to some confusion of the total number of resources to be addressed.
CUL-53	4.4	Cultural, Unresolved Issues Relating to Cultural Resources	4.4-160	Geoarchaeological Investigation	The geoarchaeological field work was complete where access had been secured. The summary report was submitted to CEC on August 26, 2013.
4.5 Hazardous Materials Management					
HAZ-01	Hazardous Material Management	4.5	4.5-2	"….. a Risk Management Plan (RMP) which would include several new Offsite Consequence Analysis, and a spill Prevention Control and Counter-measures (SPCC) plan for many of the 15 processes identified by staff above."	Applicant proposes the following changes: ….. a Risk Management Plan (RMP) which would include several new Offsite Consequence Analysis , and a spill Prevention Control and Countermeasures (SPCC) plan for many of the 15 processes identified by staff above staff above, in accordance with state and federal regulations.
HAZ-02	Hazardous Material Management	4.5	4.5-5	"… a concrete containment structure that would allow the refrigerated anhydrous ammonia to flow into a subsurface vault."	The following sentence should be deleted: Should both walls of the double-walled tank fail or should the piping fail, anhydrous ammonia will flow as a refrigerated liquid into the third line of defense, a concrete containment structure that would allow the refrigerated anhydrous ammonia to flow into a subsurface vault.
HAZ-03			4.5-9	Nearest residence would be at significant risk of harm unless purchased and demolished.	Applicant has stated that it will purchase the nearest residence (370 feet from the facility fenceline). Staff believes that this residence's proximity to the facility would place any resident at a significant risk of harm if allowed to continue to reside at that location. If this residence is purchased and demolished this risk would be eliminated. The offsite consequences analysis performed for the Project shows that risks to the nearest residence, even under worst-case release scenarios, would be less than significant. Nevertheless, Applicant intends to purchase

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					and demolish this residence.
HAZ-04	Hazardous Material Management	4.5	4.5-29	"The secondary containment would slope to a drain to allow spilled ammonia to flow into a subsurface sump. (HECA 2012e, section 5.12.2.2)"	Applicant proposes deleting this sentence, because there is no subsurface sump for ammonia.
HAZ-05	Hazardous Material Management	4.5	4.5-31	"The placement of a subsurface vault into which spilled anhydrous ammonia would flow…"	Applicant proposes deleting this bullet because no reference to a subsurface vault was made in the Amended AFC and the OCA did not consider a subsurface vault as part of the calculations.
HAZ-06			4.5-36	Last paragraph says "… Chili.."	"… Chili.." should be Chile.
4.6 Land Use					
LU-01	4.6	Various	Various	References to "fertilizer manufacturing for agricultural uses only."	Applicant suggests various references in the Land Use section be corrected to be consistent with the Kern County Zoning Ordinance to read: "fertilizer manufacturing <u>and storage</u> for agricultural use only."
LU-02	4.6	Various	Various	References to "Tule Elk Reserve State Park"	References to this park should be corrected to read: "Tule Elk ~~Reserve~~ State ~~Park~~ <u>Natural Reserve</u>."
LU-03	4.6	Setting, Project Site	4.6-3	"The controlled area includes four separate legal parcels: 159-040-16 (part), 159-040-17, 159-040-18 (part) and 159-0190-09."	Applicant suggests correcting a typo in this sentence as follows: The controlled area includes four separate legal parcels: 159-040-16 (part), 159-040-17, 159-040-18 (part) and 159-~~0~~190-09.
LU-04	4.6	Setting, Project Site	4.6-3	"The project site is bounded to the north by Adohr Road and to the west by Tupman Road which provides access to the site."	Applicant suggests this sentence be corrected to read as follows: The project site is bounded to the north by Adohr Road<u>, the east by Tupman Road,</u> and to the west by ~~Tupman~~ <u>Dairy</u> Road<u>,</u> which provides access to the site.
LU-05	4.6	General Plan Land Use, Project Site	4.6-6	"The general plan designation on the OEHI EOR site is Mineral and Petroleum (8.4) which is defined as appropriate for areas devoted to the production of irrigated crops or other agricultural	Applicant suggests that these sentences be revised to correctly reflect the allowable uses on the OEHI EOR site under the Kern County General Plan and Zoning Ordinance.

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				uses. The zoning ordinance classifies the project site as Exclusive Agriculture (A) and Limited Agriculture (A-1)."	Applicant proposes the following changes: The general plan designation on the OEHI EOR site is Mineral and Petroleum (8.4) which is defined as appropriate for ~~areas devoted to the production of irrigated crops or other agricultural uses~~ activities directly associated with resources extraction, including mineral and petroleum exploration and extraction. The zoning ordinance classifies the project site as Exclusive Agriculture (A) and Limited Agriculture (A-1). Oil or gas exploration and production are permitted uses in these zones pursuant to Kern County Zoning Ordinance Section 19.98.
LU-06	4.6	General Plan Land Use, Surrounding Area	4.6-6	'"The nearest sensitive visual resource area would be the Tule Elk State Natural Reserve which is located approximately 3,800 feet east of the project site… The nearest recreational use within six miles of the project site is the Tule Elk Reserve State Park which is located on Station Road approximately 2,000 feet east of the project site."	Two different distances are listed on this page for the separation between the project site and the Tule Elk State Natural Reserve. The second reference should be corrected to read: … approximately ~~2,000~~ 3,800 feet east of the project site …
LU-07	4.6	Direct/Indirect Impacts and Mitigation, Agriculture and Forest, Would the project conflict with existing Williamson Act contracts?	4.6-12	"County planning staff estimates the contract cancellation application to be scheduled for Planning Commission review on June 13, 2013 with final determination to be made by the Board of Supervisors thereafter."	The Planning Commission voted unanimously (3-0) to approve the Williamson Act cancellation on August 22, 2013. The Kern County Board of Supervisors will vote on its final determination at a meeting which is currently scheduled for October 15, 2013.
LU-08	4.6	Direct/Indirect Impacts and Mitigation, Agriculture and Forest, Would the project conflict with existing Williamson Act	4.6-13	"However, Kern County has determined that the rail spur would not be a compatible use pursuant to the Williamson Act and would require cancellation of those affected contracts. At this time, Kern County has not indicated that the applicant has submitted an application for cancellation of the rail spur lands."	HECA will submit an application for Williamson Act cancellation for the rail spur should it decide to proceed with that alternative.

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		contracts?			
LU-09	4.6	Compliance with LORS, Kern County General Plan	4.6-16	"The initial AFC submitted by the applicant included a chemical manufacturing complex which would produce products for agricultural, transportation and industrial uses (HECA 2012e)."	Applicant suggests that this sentence be amended as follows to correctly reflect the description of the Manufacturing Complex originally included in Amended AFC Section 2.1.1: The initial AFC submitted by the applicant included a ~~chemical~~ manufacturing complex which would produce ~~products for~~ low-carbon nitrogen-based products, including urea, UAN and anhydrous ammonia, to be used in agricultural, transportation and industrial ~~uses~~ applications (HECA 2012e).
LU-10			4.6-22	References conversion of "about 458 acres" of farmland. Staff is proposing conditions of certification LAND-1 and LAND-2 to mitigate the direct impacts of HECA's conversion of about 458 acres of agricultural land.	Applicant suggests this text be amended as follows for clarity given the discussion of farmland conversion, which appears earlier in the Executive Summary section of the PSA (see Comment ES-10): Staff is proposing conditions of certification LAND-1 and LAND-2 to mitigate the direct impacts of HECA's conversion of about 458 acres of agricultural land (or a total of 495 if the rail spur is constructed).
4.7 Noise and Vibration					
NOISE-01		Worker Effects	4.7-13	"The project would specify that nearly all components would not exceed a near-field maximum noise level of 80 dBA at 1 meter (3 feet) as the standard for equipment selection and procurement. Additionally, signs would be posted in areas of the facility with noise levels exceeding 85 dBA (the level that OSHA recognizes as a threat to workers' hearing), and hearing protection would be required."	Applicant believes this was a legacy from the previous HECA Project. The current project design basis is 85 dBA. Applicant recommends changing text to 85 dBA.
NOISE-02	4	7	4.7-16	"Therefore, prior to preparing the FSA/FEIS, the applicant needs to inform staff of the potential locations of the soundwalls, including their height and length."	Applicant will be providing the results of additional noise screening analysis for staff to incorporate into the FSA/FEIS.

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NOISE-03	4	7	4.7-24	Mitigation Measures	Three potential traffic noise mitigation measures are listed in the PSA/DEIS. Since publication of the Amended AFC, additional potential mitigation measures have been identified. The full range of mitigation options should be available to the applicant, if required. Please see Applicant's proposed revisions to Condition of Certification NOISE-9.
4.8 Public Health					
PH-01	4.8		4.8	General Comment	Please refer to Updated Emissions and Modeling Report, May 2013 for the most current equipment operational schedules, operational emissions and modeling for the HECA Project.
PH-02		Summary of Conclusions	4.8-1	"Additionally, the applicant and staff were not able to quantitatively describe and assess the short-term fluctuations of emissions of TACs under start-up, commissioning, or upset operating conditions…only acute impacts on public health could be impacted."	Applicant assessed TAC emissions during start-ups and shutdowns by assuming full load emissions during these events. This overestimates these emissions since during start-ups and shutdowns there will be less fuel to the given source. During a startup of the turbine, natural gas at a 20% capacity will be used for 30 minutes, and the oxidation catalyst will not be functioning, but emissions were based on 100% load. In the second step of turbine startup the catalyst starts working and natural gas at a 40% capacity will be used. In the final stage of startup, syngas at a 40% capacity will be used, and the catalyst is almost at full capacity. For all of these steps, 100% fuel rate was used in the emission calculations, overestimating the emissions. Although an HRA was not conducted for commissioning, it is similar to the startup and shutdown scenarios, there will be short periods of low load activities during times while the oxidation catalyst is being tested or at the beginning of a test, but the majority of the time the oxidation catalyst will be functional. Commissioning activities last for significantly less hours per year than normal commercial operations, thus the impact estimates for normal activities should be representative of the impacts expected during

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					commissioning. HECA never plans to run in an "upset operating condition," thus emissions are not evaluated for this scenario.
PH-03			4.8-2	"Modeling and measurements of 'indicator' emissions (the criteria pollutants) and other operations by continuous emission monitoring (CEM), on-site measurements of accidental chemical releases, and the monitoring of process efficiency parameters (temperature, feed rates, pressure, flow, etc.) will enable the facility to ensure that short-term releases of higher amounts than routine, which will invariably occur, will be kept to a minimum and not result in a significant impact on the nearby public or on-site workers."	Applicant proposes the following changes: "Modeling and measurements of 'indicator' emissions (the criteria pollutants) and other operations by continuous emission monitoring (CEM), on site measurements of accidental chemical releases, and the monitoring of process efficiency parameters (temperature, feed rates, pressure, flow, etc.) will enable the facility to ensure that short-term releases of higher amounts than routine, which ~~will invariably~~ could occur, will be kept to a minimum and not result in a significant impact on the nearby public or on-site workers."
PH-04		Operation Impacts and Mitigation/ Emissions Sources	4.8-13	"The emissions sources at the proposed HECA are many and include the HRSG combustion turbine, power block cooling towers, gasifier refractory heaters, auxiliary boiler, gasification flare, SRU flare, rectisol flare, tail gas thermal oxidizer, carbon dioxide vent, diesel emergency generator, a diesel fire pump engine, rail delivery and/or heavy truck traffic associated with petcoke, coal, and gasifier solids handling, and fugitive emissions from various plant components	Please remove the reference to "gasifier refractory heaters" as these sources do not exist at HECA. Please refer to the Updated Emissions and Modeling Report, May 2013 for a complete list of sources.
PH-05		Operations Phase Analysis	4.8-18 and 4.8-19	The 294 emitting units modeled by the applicant include:	Please update the equipment list based on the data provided in the Updated Emissions and Modeling Report, May 2013. Please refer to the vehicles listed under "Transportation" as "modeled sources" under this source heading to avoid confusion, as the number represents the number of modeled sources not actual vehicles. For example, 104 Rail volume sources really represent the emissions from 284 trains per year.
PH-06			4.8-21	"staff included carbonyl sulfide in its HRA by	COS is not the same as H_2S and should not be included in

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				assuming it to have the same toxicity as hydrogen sulfide."	the HRA as H_2S. COS does not have toxicity factors, thus is not appropriate for inclusion in the HRA.
PH-07			4.8-45	Table 5.1-19 of the Amended AFC (HECA, 2012e) lists the anticipated on-site maximum trucks and trains by period for the HECA project—including all truck trips—and is summarized below.	Please update the truck and train data to reflect the Updated Emissions and Modeling Report, May 2013.
PH-08		Conclusions	4.8-52	"However, staff wishes to note that the applicant and staff were not able to quantitatively describe and assess the short-term fluctuations of emissions of TACs under start-up, commissioning, or upset operating conditions."	Please refer to the comments above. Applicant does feel that these emissions and impacts are appropriately addressed.
4.10 Soil and Surface Water					
SSW-01	S&SW	Disturbed Areas	4.10-13 through 4.10-15	Soil & Surface Water Table 2, Disturbed Acreage (HECA and Linear Facilities).	The values shown in the table are not the most current values for temporary and permanent disturbance. See Applicant's Supplemental Response to CEC DR A56, docketed on March 6, 2013. While the values have been updated, the changes do not affect the conclusions.
SSW-02	S&SW	Disturbed Areas	4.10-15 and 4.10-16	Soil & Surface Water Table 3, Disturbed Acreage (CO_2-EOR Component).	The values shown in the table are not the most current values for temporary and permanent disturbance. See Applicant's Supplemental Response to CEC DR A56, docketed on March 6, 2013. While the values have been updated, the changes do not affect the conclusions.
SSW-03			4.10-20	Last paragraph references the "propped project site."	Applicants suggests changing "propped" to "proposed."
SSW-04	S&SW	Horizontal Drilling Activities	4.10-26	"The Draft DESCP states that when a proposed linear facility route crosses Interstate 5, Highway 58 and the adjacent Rail America railroad line, the East Side Canal, California Aqueduct, Kern River Flood Control Channel, or the West Side Canal, the pipeline may be installed under these features using HDD. The applicant has to date identified that HDD would be used to pass the CO_2 pipeline under the Outlet Canal, the Kern River Flood Control Channel (KRFCC), and the	HDD would be used to pass the CO_2 pipeline under the Outlet Canal, the Kern River Flood Control Channel (KRFCC), and the California Aqueduct (Aqueduct). No additional HDD is anticipated.

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				California Aqueduct (Aqueduct), as shown on Soil & Surface Water Figure 9. In addition, an assessment of the crossing methods to use (conventional open trenching or HDD) would be made for all water bodies, such as other irrigation canals along the pipeline route."	
SSW-05	S&SW	Horizontal Drilling Activities	4.10-26	The PSA/DEIS discusses potential impacts associated with frac-outs.	Applicant provided a draft Horizontal Directional Drilling Plan that included a frac-out contingency plan as part of the Notification of Lake or Streambed Alteration submitted to CDFW on May 2, 2013 and docketed with the CEC on May 3, 2013 as Supplemental Response to CEC DR A54.
SSW-06			4.10-27	Staff is requiring that the final Drainage, Erosion, and Sedimentation Control Plan ("DESCP") show all actual locations of horizontal directional drilling ("HDD") activities, rather than just possible locations. This would allow Staff to evaluate nearby resources.	Please see Applicant's response to PSA/DEIS Information Requests docketed on August 9, 2013.
SSW-07	S&SW	Flooding, HECA Onsite Area Flooding	4.10-35	Staff also noted that some of the lined onsite retention basins are calculated to have drawdown times that exceeds Kern County maximum of seven days. The applicant states that outflow rate from the lined basins is based on the available capacity of the treatment plant or clarifier. Staff understands that the basin lining is the cause for the low drawdown times, but Kern County's limit is exceeded by weeks in one of the basin, as shown in Soil & Surface Water Table 5.	Applicant has provided an explanation for this issue in its Responses to Information Requests Set 1 docketed with CEC on August 9, 2013 (see response SSW-2).
SSW-08			4.10-35	"Lined onsite retention basins are calculated to have drawdown times that exceed Kern County's maximum of seven days and must be adjusted or redesigned to meet the standard."	Please see Applicant's response to PSA/DEIS Information Requests docketed on August 9, 2013.
SSW-09	S&SW	Flooding, Linear Facilities	4.10-37	"Although the terrain in the vicinity is generally very flat, and water is conveyed primarily through a network of irrigation ditches, staff does not have enough information to determine whether the	Please see Applicant's Responses to Information Requests Set 1 docketed with CEC on August 9, 2013 (see response SSW-3).

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				proposed rail spur would significantly increase flooding of adjacent areas. Staff asks the applicant to provide additional information, as specified in the "Outstanding Information" under the Staff Conclusions heading below."	
SSW-10	S&SW	Vicinity Flood Hazards	4.10-37	"FEMA classifies the proposed HECA site location as Zone X, an area determined to be outside the 500-year flood and protected by levee from the 100-year flood."	This description is partially correct. FEMA designates two types of Zone X. OTHER FLOOD AREAS, Zone X – Other flood areas subject to inundation by the 0.2% annual chance flood (500-year flood). OTHER AREAS, Zone X – Other areas determined to be outside the 0.2% annual chance floodplain. The HECA site is Other Areas, Zone X and outside the 0.2% annual chance floodplain. Please see Applicant's Responses to Information Requests Set 1 docketed with CEC on August 9, 2013 (see response SSW-5).
SSW-11			4.10-37	"Rail spur construction could alter drainage patterns and result in flooding of adjacent areas."	Please see Applicant's response to PSA/DEIS Information Requests docketed on August 9, 2013.
SSW-12	S&SW	CO_2-EOR Component	4.10-43	However, Class II well requirements are not intended for injecting CO_2 for sequestration purposes. The USEPA promulgated Class VI injection well regulations specifically tailored for wells intended for sequestering the injected CO_2.	Class II wells are appropriate in the context of EOR operations as proposed here.
SSW-13			4.10-46	"Staff also recommends Condition of Certification SOILS-5 requiring that HECA comply with all requirements of the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity, including the development of an Industrial SWPPP. This federal permit is not required if the facility does not discharge to Waters of the U.S. Although HECA is designed to prevent storm water discharge offsite, this may not be the case for	During operations, the Project will not have any offsite storm water discharges to Waters of the U.S. Applicant will file the appropriate documentation and/or obtain the appropriate documentation from SWRCB or RWQCB indicating the Project is exempt from the general NPDES permit for discharges of storm water associated with industrial activity.

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				extremely heavy rain events larger than the 100-year storm event. Documentation from the SWRCB or the RWQCB indicating that there is no requirement for a general NPDES permit for discharges of storm water associated with industrial activity would satisfy Condition of Certification SOILS-5."	
SSW-14	S&SW		4.10-50 and 4.10-51	Outstanding Information required for completion of FSA/FEIS	Please see Applicant's Responses to Information Requests Set 1 docketed with CEC on August 9, 2013.
4.11 Traffic and Transportation					
TRAFFIC-01			4.11	Traffic and Transportation – global comment.	Since the publication of the PSA/DEIS on June 28, 2013, Applicant submitted the Traffic Study Technical Memorandum (Revision 2), which was docketed with the CEC on August 1, 2013. The FSA/FEIS needs to incorporate this updated information. Applicant is working with the County to develop appropriate mitigation for intersections and roadways that would be affected.
TRAFFIC-02			4.11-20, 4.11-61	States that Kern County is the licensing authority for the OEHI Project. Staff recommends that Kern County adopt mitigation to ensure construction traffic with the EOR activities is less than significant.	Kern County is not the licensing authority for the OEHI EOR project. Please refer to Global Comment G-1 for a discussion of the permitting and environmental review process for the OEHI EOR project.
TRAFFIC-03			4.11-35	Marker balls required for 230kV lines. Also see TRANS-10 on p. 4.11-60.	While it is not unusual for FAA to require marker balls for safety precautions, especially in areas where transmission lines are unexpected or few, Applicant questions the need for them in an area that already has numerous transmission lines.
4.13 Visual Resources					
VIS-01			4.13-1	Even with mitigation, the project will have a significant and unavoidable adverse direct visual impact at Key Observation Point ("KOP") HECA 1.	Applicant disagrees with this statement. Applicant has prepared a landscape plan for each of the two residents at KOP 1,which has been approved by each resident. Implementation of the landscape plans will result in less

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					than significant impacts to the residents at KOP 1. Copies of the agreements with the property owners, including the landscape plans, will be provided to CEC.
VIS-02		Visual Impact Determination (KOP 1)	4.13-21	Energy Commission staff requests that the applicant prepare and submit an electronic copy of a conceptual off-site landscape plan and/or architectural enhancements to the feedstock storage structure for review by staff at least two months prior to publication of the Final Staff Assessment (FSA) for the project.	Applicant has prepared landscape plans for KOP 1 has agreements with each landowners at KOP 1 approving the plan. The landscape plan and agreements will be docketed with the CEC in a separate submittal.
VIS-03			4.13-30	List of KOPs without significant impacts in last paragraph of Conclusion.	Applicant suggests adding KOP 5 to the list without significant impacts in last paragraph of Conclusion.
VIS-04		Proposed Conditions of Certification	4.13-53	No galvanizing process shall be used that produces a reflective metallic finish.	Applicant understands that this pertains to galvanizing, but excludes insulation jacketing, stainless steel pipe, etc., which would be located in a structure.
4.14 Waste Management					
WM-01			4.14-2	"The gasification waste could be excluded from hazardous waste regulations (i.e., 40 CFR Section 261.4 (b) (7) (ii) (F) and Title 22 CCR Section 66261.4(b) (5) (A)." Also, page 4.14-24 indicates: "The States of Utah and North Dakota confirmed that both would use 40 CFR§261.4(b): Exclusions: Solid Wastes which are Not Hazardous Wastes (7) ((ii) (F) Coal gasification to dispose of the gasification solids into solid waste (nonhazardous) landfills."	Please see Applicant's Responses to PSA/DEIS Information Requests docketed on August 9, 2013. The gasification solids are expected to be non-hazardous based on testing. California WET test was not performed because the WET test is only required if the pertinent concentrations are above the STLC value but below the TTLC value. *See* 22 Cal. Code Regs. 66261.24(a)(2). The testing of the gasification solids indicates that all concentrations were below both the STLC and TTLC values; therefore, the California WET test of GS is not required.
WM-02			4.14-4	"This law excludes gasifier ash from coal gasification and process wastewater from coal gasification from being considered as a hazardous waste."	Applicant proposes the following changes: "This law <u>generally</u> excludes gasifier ash from coal gasification and process wastewater from coal gasification from being considered as a hazardous waste."
WM-03			4.14-9	"The compressed CO_2, which has the same characteristics as a liquid, is injected into an oil reservoir via injection wells designed for CO_2	Applicant recommends rephrasing this statement, because "dissolves in oil" could suggest that CO_2 is not sequestered. Some of the CO_2 mixes with the oil, while

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				injection. The CO_2 flows from the injection well and dissolves in the oil."	some remains sequestered in place.
WM-04			4.14-9	"The hazardous waste generated during this phase of the project would consist of used oils, universal wastes, solvents, and empty hazardous waste materials."	Applicant proposes the following changes: "The hazardous waste generated during this phase of the project would consist of used oils, universal wastes, solvents, and empty hazardous waste materials <u>containers</u>."
WM-05			4.14-12	The project owner must enter into an Agreement with DTSC for the purpose of fully characterizing and if necessary remediating the site property so that it is in the appropriate condition to allow for future use. In addition based on the type of agreement with DTSC the applicant should conduct the necessary site characterization to determine if site remediation is needed and if so what the scope of remediation would be prior to the FSA.	This work is not feasible before the FSA since Applicant does not own the property. Applicant will complete this work under a Condition of Certification.
WM-06			4.14-12	Footnote 2 refers to federal "PRGs."	EPA Region 9 now refers to PRGs as "Regional Screening Levels."
WM-07			4.14-20	"The final disposition of the gasification waste as either a Class I (hazardous) or Class III (nonhazardous) waste should be determined using the source of coal and petcoke and processing methods proposed for HECA operation prior to project construction so a strategy for management of the waste can be developed."	See Applicant's Responses to PSA/DEIS Information Requests, Set 1 docketed on August 9, 2013, for information about the gasification solids. Results of testing indicate that the gasification solids would not be classified as hazardous.
WM-08			4.14-23	If gasification waste cannot be recycled or reused, this Section indicates that the Project must either: (i) receive confirmation from CalRecycle that the waste material cannot be recycled and have Cal Recycle concurrence that the waste can be adjusted out of the jurisdictional reporting as disposal; or (ii) seek/receive legislative or regulatory exemption.	As presented in Applicant's Responses to PSA/DEIS Information Requests docketed on August 9, 2013, the gasification solids are not expected to be considered hazardous and the Project intends to beneficially reuse them.
WM-09			4.14-24	"Staff spoke with Steve Tillotson, Assistant Director, North Dakota Department of Health, Division of Waste Management and he stated that	Applicant proposes that the statement be revised to the following: "Staff spoke with Steve Tillotson, Assistant Director, North Dakota Department of Health, Division of

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				277,000 tons per year of waste imported into North Dakota would not cause an impact the State or the Clean Harbors Sawyer landfill (Tillotson 2013)."	Waste Management and he stated that 277,000 tons per year of waste imported into North Dakota would not cause an impact <u>to</u> the State or the Clean Harbors Sawyer landfill (Tillotson 2013)."
WM-10			4.14-29	"Although the management of the nonhazardous and hazardous waste generated during construction and operation of HECA would comply with applicable waste management laws, ordinances, regulations, and standards provided that the measures proposed in the AFC and staff's proposed conditions of certification are implemented, HECA as currently proposed will cause a significant waste management impacts to Kern County. The project will produce a significant amount of operational waste and push Kern County into non-compliance according to AB 939 and SB 1016."	Applicant proposes that the statement be revised to the following: "Although the management of the nonhazardous and hazardous waste generated during construction and operation of HECA would comply with applicable waste management laws, ordinances, regulations, and standards provided that the measures proposed in the AFC and staff's proposed conditions of certification are implemented, implemented, HECA as currently proposed ~~will~~<u>could</u> cause ~~a~~ significant waste management impacts to Kern County. The project will produce a significant amount of operational waste and <u>could</u> push Kern County into non-compliance according to AB 939 and SB 1016. <u>However, as presented in Applicant's Responses to PSA/DEIS Information Requests docketed on August 9, 2013, the gasification solids are not expected to be considered hazardous and the Project intends to beneficially reuse them, which would avoid Kern County non-compliance under AB 939 and SB 1016.</u>"
WM-11			4.14-31	"The project owner should enter into an Agreement with DTSC for the purpose of fully characterizing and if necessary remediating the site property so that it is in the appropriate condition to allow for future use. In addition based on the type of agreement with DTSC the applicant should conduct the necessary site characterization to determine if site remediation is needed and if so what the scope of remediation would be prior to the FSA."	Applicant notes that an agreement with DTSC is unnecessary because HECA, CEC Staff, and DTSC now concur on an approach to future site characterization and, if necessary based on site characterization, site remediation. This concurrence was reached during a March 2013 conference call, as summarized in DTSC's September 16, 2013, letter to the CEC (Docket TN# 200507), and is reflected in Applicant's proposed revisions to Condition of Certification WASTE-1.
4.15 Water Supply					
WATER-01			4.15-1, 4.15-33	Staff has not received the data or met with BVWSD since the workshop and is awaiting the	Since the February 2013 workshop, the following information has been provided to CEC:

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				data for further analysis in a revised staff assessment. Much of the analysis presented below is the same or similar to that presented in the draft preliminary staff assessment at the workshop. At a workshop on February 20, 2013, staff discussed the results of the preliminary water supply analysis that raised questions about BVWSD's BGRP. At the workshop BVWSD indicated they had additional information that was not considered in staff's analysis. BVWSD requested that staff provide data requests indicating what data they would need to reevaluate the preliminary results and agree to maintain the confidentiality of information that may be submitted by BVWSD. Staff agreed but has not yet received responses to the data requests. Information provided by the district may improve staff's understanding of water quality in the district. Staff expects some new information to be incorporated in future iterations of this analysis, but will proceed with an independent analysis of impacts and alternatives if such information is not forthcoming.	- Applicant's Slide Presentation from CEC Workshop, docketed on February 22, 2013. - BVWSD's Response to CEC Staff's Preliminary Water Supply Analysis, docketed on March 22, 2013. - BVWSD's Data submitted confidentially to CEC on March 26, 2013. - BVWSD's Response to CEC Data Requests dated March 21, 2013 and Response to Preliminary Staff Assessment, docketed on August 21, 2013. - Applicant's Responses to PSA/DEIS Information Request, Set 2 docketed on September 3, 2013. In addition, CEC Staff met with BVWSD, DWR, and RWQCB on September 5, 2013.
WATER-02		Kern Basin Overdraft	4.15-3, 4.15-34, 4.15-35, 4.15-37, 4.15-38	The project's pumping could exacerbate overdraft in the Kern County subbasin. Staff views this increase in storage as definite positive influence on basin storage during a period of significant and widespread storage decline in the Kern County Subbasin. However if the proposed project pumping created a negative change in storage within the BSA, this would compound deficits in a basin that has experienced a perpetual decline in groundwater storage. The HECA project would be located within the Kern County subbasin,…However, the available basin budget analyses reviewed by staff indicate	Please see BVWSD's Responses to CEC Staff's Preliminary Water Supply Analysis, docketed on March 22, 2013, and BVWSD's Response to CEC Data Requests, dated March 21, 2013 and Response to PSA, docketed on August 21, 2013. • Applicant and BVWSD have documented that the BSA, in which the BGRP Area B Well Field is planned, is in the Buttonwillow Subbasin which exhibits structural and hydrogeologic factors that support that it is in total or partial isolation from the main Kern County Subbasin depending on eastern boundary conditions. Per PSA Water Figure 1, the main Kern County Subbasin includes several small subbasins caused by local

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				that the uses within the Kern County subbasin may already exceed supply. The project's incremental impact would be additive and cumulatively considerable. If the Kern County subbasin is in a state of overdraft, the proposed project's pumping would contribute to the water storage deficit. Though BVWSD's contribution to the Kern County subbasin is currently positive, the use of 7,500 AF/y of water by the project can potentially exacerbate overdraft.	geological complexities along the east, south and west main basin boundaries, each of which have some degree of isolation from the main basin as manifested by some degree of isolated water level behavior, distinct water chemistry, and delayed and/or attenuated pressure response to main-basin events, or vice versa. The BVWSD BSA occupies one such subbasin being located within Buttonwillow Syncline (Dale, et al, 1966) which is geologically separated from the main basin to the east by the Buttonwillow Anticline. The northern half of the BSA shows significant degrees of hydrologic isolation from the basin to the west and north but, most importantly, complete isolation from the main basin to the east. Based on available basin water level data, the BVWSD has concluded that there has been no correlatable water level impact in the northern half of the BSA, including the proposed well field area, to any observed groundwater behavior in the main Kern County Subbasin to the east. The empirical evidence is that the groundwater elevations within the northern BSA have remained essentially static over time, while a very large pumping depression in the main basin just a few miles to the east-northeast has lowered groundwater levels across many townships from their 1940 levels. This is illustrated by the narrow band of steep water level contours between the BSA and the pumping depression (see BVWSD August 21, 2013 Attachments 2 and 3; the narrow band of steep gradients representing a NW/SE trending flow barrier that runs across four townships (T27S/R22-23E and T28S/R22-23E between the BSA and the main basin to the east). The BVWSD concluded:1) that if a groundwater impact cannot propagate from the main basin into the northern BSA, than a groundwater impact cannot propagate in the opposite direction from the BSA to the main basin; 2) that if a pumping depression, like that in T27S/R23E, caused by scores of wells over a period of decades cannot propagate a water level impact across a basin

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					interconnection pathway of only 2 to 3 miles, than a smaller well field operating for similar or lesser time periods could not propagate a water level impact to the main basin, and 3) that the operation of the proposed project well field located on the west side of the BSA must be in complete isolation from the main basin to the east and that the operation of the proposed well field operating at 7,500 afy for years will have no observable impact at any location in the main basin. The CEC analysis of water level rise and then potential impacts associated with project pumping at approximately 7,500 afy is limited in that it does not take into account BVWSD documented long-term positive water balance or groundwater underflow that leaves the BSA to the southeast, of the northeastern hydraulic barrier summarized in the prior bullet. BVWSD has documented that it is in a state of long-term positive water balance, storing an average of 46,490 afy more than consumptive use (representing an estimated 36,964 afy into the BSA, 1,652 afy into the Maples Service Area, with the remaining 7,793 afy banked in out-of-basin projects). Of the 36,964 afy positive water balance to the BSA and in consideration of CEC's positive change in groundwater storage of 4,600 afy (i.e., +6.8 feet/decade of water level rise using a specific yield of 0.15), the BVWSD estimates an average annual subsurface outflow (SE portion of BSA into the main Kern County Basin) of approximately 32,364 afy. In other words, that approximately 32,000 afy of BVWSD outflow water is already recharging the main Kern County Basin with a portion being used by non-BVWSD users outside the BSA boundary. Accordingly, the increase in consumptive use of groundwater of 7,500 afy, would result in a decrease in the subsurface outflow to approximately 24,500 afy which is still considered a positive input to the main Kern County Basin.
WATER-03			4.15-3,	Subsidence	Please see BVWSD's Responses to CEC Staff's Preliminary Water Supply Analysis, docketed on

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			4.15-36	There is no historical evidence for subsidence in the Buttonwillow Service Area or immediate vicinity of the proposed well field… The consumption of stored groundwater will result in long-term water level declines beneath the BVWSD that could lead to subsidence. Staff is concerned that given the proximity to the California aqueduct and historic occurrence of subsidence during extensive groundwater use, there may be potential for significant impacts in the region from project pumping.	March 22, 2013. BVWSD concluded: • Available data indicates that subsidence due to groundwater pumping is highly unlikely as extensive compressible silts and clays (which provide a key mechanism for subsidence) are absent in the well field area. • There is no evidence that subsidence has taken place in the well field area even after extensive pumping from agricultural wells over a long period of time. • Available subsidence maps indicate that the nearest known areas of subsidence are more than 20 miles away from the proposed well field and within separate subbasins • Large recharge and recovery cycles (200,000+ afy) that occur relative to the Kern Fan banking projects (approximately 20 miles to the southeast) have only produced changes of +/- 0.02 feet. As such, it would take the BGRP Area B Well Field more than 25 years to do what the Kern Fan projects do in that than one year. Subsidence along the nearby portion of the California Aqueduct has been well documented and is associated with hydrocompaction which is completely different from subsidence relative to groundwater pumping.
WATER-04			4.15-3, 4.15-47	Staff notes that the proposed power plant would use water at an extremely high rate, primarily for evaporative cooling. Staff also cannot verify that the proposed groundwater for use is the worst water quality available, or that the use satisfies state and Energy Commission policies regarding the use and conservation of water resources. Staff is therefore unable to verify that the proposed groundwater pumping for industrial cooling is reasonable. The project proposes to use up to 7,500 AF/y, which is significantly more water per megawatt	The water is not all being used to make power. As shown on Amended AFC Figure 2-10, approximately one third of the total raw water supplied is used for Power Block cooling. The HECA Project makes its own hydrogen rich fuel and produces fertilizers and CO_2. The water consumption is not "inordinately high" for comparable facilities (See NETL Cost and Performance Baseline for Fossil Energy Plans, November 2010, DOE/NETL-2010/1397). Since the HECA plant is a combined-cycle plant and not a simple-cycle plant, it is more appropriate to look at water usage per kWh instead of just kW. When considering only

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				than other recently licensed projects. Staff understands that approximately 30 percent of the proposed water use would go to the gasification process, but even then the projected water use required produce up to 300 MW net is inordinately high.	the power block, the usage of 0.25 gpm/kWh for the HECA plant compares favorably to the natural gas combined cycle (NGCC) facility without carbon capture and sequestration (CSS) (see Case 13 in Exhibit ES-2 from the NETL report). When considering only the units for an integrated gasification combined cycle (IGCC) facility and carbon sequestration the calculated usage for the HECA facility is 0.73 gpm/kWh. Again, this seems reasonable when compared with the IGCC with CCS (Case 4 in Exhibit ES-32 from the NETL report), which has a usage of 0.66 gpm/kWh. As demonstrated by these calculations, the HECA power block uses no more water than a typical NGCC. The steam turbine condensing duty and ambient conditions are the big drivers for water usage. Therefore if an NGCC plant were to capture CO_2 it would use significantly more water (nearly double that of an NGCC without CCS, i.e., 0.26 versus 0.50 gpm/kWh). Furthermore, the HECA Project water usage per net megawatt is higher because of the auxiliary loads associated with gasification and the production of fertilizer. NGCC plants have none of these loads. The other two-thirds of the water used by the HECA Project serves as the chemical source of hydrogen for the fuel and fertilizer production, and cooling for the gasification and fertilizer processes.
WATER-05			4.15-12	Seven miles of pipeline would be constructed to deliver water from the district. Horizontal directional drilling (HDD) would be necessary to route the pipeline beneath the Outlet Canal, the Kern River Flood Control Channel (KRFCC), and the California Aqueduct (HECA 2012b).	The proposed process water pipeline from the BVWSD well field to the HECA Project site is approximately 15 miles long. The process water pipeline does not cross the Outlet Canal, the KRFCC or the California Aqueduct. HDD will be used to install the proposed CO_2 pipeline beneath the Outlet Canal, the KRFCC and the California Aqueduct.
WATER-06			4.15-17 and 4.15-18	The [Applicant's] model domain ignores the contact between water-bearing alluvium and the essentially non-water bearing marine rocks of the Coast Ranges. The contact between alluvium and	While Applicant concurs that boundary conditions can be modified, evaluations indicate there is little to no difference in model results between the no flow (Staff's model) and general head (Applicant's model) boundary

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				rock is located approximately six miles west of the proposed well field. Accordingly, a zero- or no-flow boundary is needed approximately 6 miles west of the well field. Hydrogeologic subbasin boundaries are reportedly located about 5 to almost 17 miles north and south of the proposed well field, respectively. These boundaries are defined by structural highs due to folding or faulting, and may isolate, at least partially, the hydrogeologic subbasin in which the simulated well field is located (the Buttonwillow subbasin) from other parts of the southern San Joaquin Valley groundwater basin (URS2009). Hence, the three remaining model boundaries could conceivably also be re-located and changed to no-flow boundaries to correspond to the Buttonwillow subbasin boundaries.	conditions in the eastern, northern and southern edges of the model domain. The difference between the general head and no flow boundary condition in simulated drawdowns is small: 0.43 feet at the well field and a maximum difference of 1.28 feet at the western edge of the model domain (approximately 6 miles west of the pumping wells). As such boundary conditions are not the most sensitive hydraulic parameter that result in a difference between Applicants and the Staff's modifications to Applicant's groundwater model. Applicant agrees that consistent boundary conditions should be used for all three model layers. This inconsistency in head dependent flow conditions (in the May 12, 2010 model transmittal) was noted and corrected in the February 2013 Workshop, and Applicant verified that the consistent use of either general head or no-flow boundary conditions in all three model layers resulted in minimal effects on model results.
WATER-07			4.15-18	Specific yield is a measure of the volume of water drained from saturated unconfined aquifer material under the force of gravity per unit surface area and unit change in water table elevation. The applicant assumed the 270-feet thick pumped aquifer simulated by the model is unconfined, and the model assigned a specific yield value of 0.18 to pumped aquifer represented by model layer 1. The aquifer test results reported by URS (2010a) suggest however that the pumped aquifer is not unconfined but rather may be semi-confined. The URS (2010a) aquifer tests were conducted on wells screened at depths corresponding to model layer 1 and the upper portion of model layer 2. The aquifer test results indicate a geometric mean storativity of 0.007. Storativity is a measure of the volume of water released by compression of the	Applicant maintains that the Staff's application of a specific yield value of 0.007 is inappropriate for the unconfined conditions of Model Layer 1 (0 to 300 feet bgs with first water at approximately 50 feet bgs) because it is not supported by what the BVWSD has observed with long-term agricultural pumping (i.e., average measured specific yields of approximately 0.21). The Staff's use of a 0.007 storativity value from the URS March 2010 DRAFT HDAR report for specific yield is misapplied and taken out of context as the DRAFT HDAR report documented that the storativity value was not considered reliable. DRAFT HDAR findings stated that the distribution of storativity values was bimodal: some wells had lower values and some wells had higher values. The pumping tests that exhibited lower values were judged to be uncharacteristic and probably reflected the influence of backflow water from wells after pumping ceased as

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				aquifer structure and expansion of the water in response to the decline in pressure in a confined or semi-confined aquifer. The storativity of 0.007 is about 25 times smaller than the modeled specific yield (0.18), and is indicative of semi-confined aquifer conditions. The model therefore inappropriately represents the entire upper 270 feet of saturated sediment as an unconfined aquifer, and as a result likely underestimates the water level decline caused by groundwater extractions that occur at depths below the water table.	well as from the condition of old and inefficient wells that were available for use along with outside agricultural pumping influences that made pumping test analysis complicated, at best. In February 2013, URS provided the CEC with information as to why AQTESOLV, the program used for pumping test analysis, has deficiencies in estimating storage. Specifically, examples from the AQTESOLV user's manual were provided that show that while transmissivity (T) and hydraulic conductivity (K) estimates remain consistent, storativity estimates can change up to orders of magnitude using the same pumping test data. As such, while direct use of AQTESOLV estimates for T and K are used, specific yield and/or storativity values are usually based on known hydrogeologic conditions (unconfined or confined conditions). Applicant also notes that the PSA is inconsistent in its application of storativity and specific yield. For example, Staff applies a specific yield value of 0.15 when calculating water level trends and storage in the BSA but applies a storativity value of 0.007 for the groundwater model modifications.
WATER-08			4.15-19	The [Applicant's] model assumes vertical conductivity is 30 times smaller than horizontal conductivity, which may be too low relative to actual conditions and model layer thicknesses. URS (2009) tested model sensitivity to vertical conductivity and reported that the extent of simulated drawdown increases as the modeled vertical conductivity decreases. However, the modeled vertical conductivity is the net effect of all the sediment beds within the entire depth interval represented by the model layer. Aquifer testing and model calibration results reported by Belitz and others (1993) for Coast Range and Sierran	The CEC application of an anisotropic ratio of 1,000 is poorly justified being based on a report by Belitz and others (1993) from a study area in northern Fresno County, approximately 150 miles north of the project site. Applicant contends that the application of hydrogeologic conditions from that study is not correlatable to those of the BGRP/HECA Area B Study Area. Local geologic and geophysical logs do not support the presence of extensive clay interbeds that would justify this assumption. When observed clay lenses appeared to be of limited extent (not laterally continuous) and thickness, most of which occur at depths of approximately 600 to 700 feet bgs which is far below the intended depth and screen intervals of the

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				alluvium suggest that intermittent clay deposits can reduce the modeled vertical conductivity relative to horizontal conductivity by a factor of more than 1,000. Unless data from boreholes located in the well field and adjacent areas show an absence of clay deposits within the relatively thick depth intervals represented by the model layers, staff recommends addressing the potential influence of fine-grained beds on the modeled vertical conductivity. In the absence of more detailed information, staff recommends revising the anisotropy1 in the model to 1,000 to consider uncertainty in vertical conductivity across the relatively thick model layers.	proposed BGRP Area B wells. In Applicant's model, a realistic anisotropic ratio (K_h/K_v) of 30 was used along with sensitivity runs with anisotropic ratios of 10 (lower end) and 50 (higher end). The anisotropic ratio of 30 was used to represent effective K_h to effective K_v for the entire model layer, accounting for interbedded (laterally discontinuous) lower permeable fine grained deposits (silts and clays), not for a ratio that could be applied to specific sediment layers. Since local geologic data show no laterally continuous fine-grained deposits in the study area, use of an anisotropic ratio of 1,000 is not considered appropriate for application in the groundwater model because it blocks hydraulic communication in the vertical direction while magnifying apparent lateral drawdown extent. Furthermore, BVWSD observations on how their groundwater system has responded to agricultural pumping (volumes far greater than the BGRP proposed 7,500 afy) verify that CEC selection of an anisotropic ratio of 1,000 is not valid. Accordingly, the CEC's suggested anisotropic ratio forces an extreme condition simulating drawdown and drawdown geometry that is erroneous and misleading with respect to calculated impacts. Application of this extreme anisotropic ratio on top of an unrealistic substitution of a 0.007 storativity value, where specific yield values ranging from 0.15 to 0.20 should be applied, further compounds the erroneous drawdown results. By example USGS CVHM Model (2009) extended to South Central Valley and the project study area had a maximum anisotropy of approximately 27 with an anisotropy in the vicinity of the BGRP Area B well field <10. In addition, application of an anisotropic ratio of 1,000 infers that extensive silt or clay layers exist within the local aquifer system which is not the case based on available geologic data. If this were true, subsidence would have already occurred in the study area in response to extensive

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					agricultural pumping. The fact that subsidence has not occurred (see Applicant's comment regarding subsidence – Water 15) supports that extensive fine grained layers are not present and that selection of an anisotropic value of 1,000 is unrealistic.
WATER-09			4.15-20	Simulated recharge (7,500 AF/y) applied by the applicant represents an incremental increase in recharge above typical annual recharge rates in the Buttonwillow Service Area. Typically, recharge rates in the project setting are supplied by applied water and/or seepage losses from drainage ditches and canals.	Because the BGRP is planned as an integral element of the BVWSD's management of the Buttonwillow Service Area (BSA) which includes the long-term and future positive water balance, some percentage of that positive water balance offsets BGRP/HECA Area B pumping. BVWSD documented its long-term positive water balance, which is an average of 46,490 afy more than consumptive use. The BVWSD estimates an average annual subsurface outflow (southeast portion of BSA into the main Kern County Basin) of approximately 32,364 afy and, as such, is already recharging the main Kern County Basin. Accordingly, the increase in consumptive use of groundwater of 7,500 afy, would result in a decrease in the subsurface outflow to approximately 24,500 afy that can still be considered a positive input to the main Kern County Basin as well as a partial or total offset to BGRP/HECA Area B pumping.
WATER-10			4.15-21 and 4.15-23	PSA Water Table 3, Water Table 4 and Water Figures 3 through 7.	In the March 22, 2013 submittal, BVWSD's Item 1 and Attachment 8, pointed out that many of the wells reported in the Staff's Preliminary Water Supply Analysis (Figure 3 and Table 3), which have not changed and are now included in the PSA as Water Tables 3 and 4 and on Water Figures 3 through 7, either no longer exist or are actually shallow 20-foot deep piezometers used for shallow groundwater monitoring purposes only 22 of the 62 wells (i.e., 35%) of the wells included in PSA Water Tables 3 and 4 used to evaluate drawdown should be eliminated.
WATER-11			4.15-25 through 4.15-33	Groundwater Quality Impacts	Please see Applicant's Responses to PSA/DEIS Information Requests, Set 2 docketed on September 3, 2013 (WS-3), BVWSD's Responses to CEC Staff's Preliminary Water Supply Analysis, docketed on March

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					22, 2013, and BVWSD's Response to CEC Data Requests, dated March 21, 2013, and Response to PSA, docketed on August 21, 2013. Staff's conclusions relative to potential water quality impacts are largely driven by the use of extremely old groundwater data collected from as early as 1961, as shown on Figures 8, 9, 10, 12, and 18. This data is valuable in that it depicts what the groundwater conditions were 50+ years ago but should not be confused with current conditions as shown on URS Figure 191-1 (confidential figure in response to CEC DR 191) or data provided to the CEC in BVWSD Response to CEC Data Requests and Response to PSA, docketed on August 21, 2013. According to the BVWSD, local pumpers have documented, by progressive replacement of their wells from west to east, the degradation of water quality over time on the west side of the BSA. Staff appears to assume that the 1961 data is current and uses it with blending models to support their analysis. At the CECs request and in submittals since the February 2013 Water Supply Workshop, BVWSD has provided background well specific data to the CEC under confidentiality assurances. These data were apparently not incorporated into the PSA. As such, the water quality analysis presented in the PSA should be modified to incorporate more recent data in the BGRP Area B study area.
WATER-12			4.15-32	Depending on the approach employed, the expected TDS concentrations in water produced by extraction wells operating in the proposed well field area could range from a minimum of about 945 mg/L to a maximum of 3,730 mg/L. This range in concentrations suggests the proposed groundwater supply is not sufficiently degraded such that it can't be used for agricultural purposes and possibly as a drinking water supply.	Please see information provided by BVWSD and Applicant's Responses to PSA/DEIS Information Requests docketed on September 3, 2013. BVWSD initially estimated that the well field would likely produce brackish water with TDS levels between 2,000 and 4,000 mg/L. On August 21, 2013, BVWSD submitted additional data to the CEC demonstrating that TDS of groundwater within the area of BGRP/HECA Area B withdrawal zone is generally greater than 3,000 mg/L. Well data collected over time support the conclusion that

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					the wells in the western portion of the BVWSD area will have high enough TDS to comply with applicable LORS. For example, 1990 to 2010 data from wells in the T28S/R22E area had an average TDS of 3,439 mg/L while wells in the T29S/R22E had an average TDS of up to 3,397 mg/L. Time series plots for each of these areas show a trend of increasing TDS levels over these periods. These data are supported by prior research on the hydrology of the Kern River alluvial fan area (Dale, 1966). In contrast to the high-TDS levels in the BGRP/HECA withdrawal zone, groundwater to the east and south (the area adjacent to and east of the Main Drain, i.e., axial interface as described in Responses to CEC Data Requests 191 and 193) water quality had lower TDS levels, as shown in Attachment 1 of the BVWSD August 21 submittal. Data from those eastern areas with lower TDS concentrations may have influenced the TDS range used by Staff in the PSA. Applicant recognizes that Staff did not have this well-specific information at the time the PSA/DEIS was prepared, however, these data best reflect existing conditions, as required for the environmental review under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In the PSA/DEIS, Staffs determination that well field production TDS levels may be in the range of 945 to 3,730 mg/L is partially based on outdated information; the low TDS estimates being based on data collected from as early as 1961. Although these data can provide historical context, Applicant and BVWSD contend that they are not appropriate for evaluating current groundwater conditions. If the outdated data were removed from the analysis, the PSA/DEIS would reflect higher TDS levels consistent with the estimates provided by BVWSD and Applicant.
WATER-13			4.15-37	The onsite supply options would be to obtain supply water from one of the two alternative onsite	Applicant does not intend to use onsite wells for water supply. This is a remnant from the previous HECA Project. The onsite water will be supplied by the West

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				wells, the Ackerman well or the Alternative B well.	Kern Water District (Will Serve letter included in Amended AFC Appendix N).
WATER-14			4.15-38	Staff has not yet been able validate or deny the applicant's statement about the infeasibility of the dry cooling alternative, but notes that the following factors do not appear to have been considered by the applicant: - The energy required to move 7,500 acre-feet per year, 15 miles, and about 30 feet upgradient. - The untreated water cost of $3,375,000 per year, or $84,375,000 over a 25-year period - Cost of treating 7,500 acre-feet per year with zero liquid discharge (ZLD) technology. - Disposal of ZLD solids that may be generated if untreated process water contains high concentrations of total dissolved solids.	Even with dry cooling a raw water source along with water treatment facilities including ZLD would still be required. - The energy cost to move up to 7,500 AF/yr from the wells is included in the cost of the untreated water. - The ZLD unit is only part of the overall water treating system and is the last concentration step which turns the minerals in the untreated water into solids. - The ZLD solids estimated in the Amended AFC are based on 4,000 ppm TDS in the raw water which is the maximum allowed in the BVWSD supply contract - The 7,500 AF/YR is the maximum allowed under the BVWSD supply contract. The average annual water consumption is anticipated to be about 5,700 AF/yr (@ 85 percent Capacity Factor and with 16 hours per day of peak power output and 8 hours per day of off peak power output). For additional information, please see Applicant's Response to PSA/DEIS Information Request WS-7 docketed on September 3, 2013.
WATER-15			4.15-49	As described in this analysis and in the BVWSD FEIR, the northern portion of the district appears to contain low quality water at shallower depths. This water is detrimental to agriculture and should be removed from the crop root zone. In their FEIR, BVWSD identifies the intent to develop brackish groundwater remediation in the northern BSA and produce up to 4,500 AF/y, in addition to the supply allocated for HECA. Staff believes this opportunity provides a much greater potential for meeting the proposed objectives of remediation and power plant cooling supply. Supply wells located in BVWSD's northern BSA are more likely to remediate agricultural lands and produce a	Please see Applicant's Responses to PSA/DEIS Information Requests, Set 2 docketed on September 3, 2013. BVWSD has elected to not develop BGRP Target A, notwithstanding the fact that it was described in the BVWSD FEIR. Therefore, BGRP Target Area A has been eliminated as a process water supply source for HECA.

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				consistent poor quality supply.	
WATER-16			4.15-49 and 4.15-50	Water alternatives dismissed by the applicant such as municipal wastewater from Bakersfield, oil field wastewater, or BVWSD Target Area A water, were eliminated because they can't supply the proposed project's entire water supply. However it is unreasonable to dismiss all of these options when any one of them could provide up to 50 percent of the project's water needs. The applicant has not sufficiently evaluated alternative water sources that may better satisfy water policy concerns. The Revised Application for Certification contains a brief description of the alternative water supplies considered for the project. The description of the alternative, agricultural wastewater, is very brief and general. BVWSD's Water Balance (FIER, 2009) indicates that surface outflow from the agriculture-dominated district may be significant. Staff is also aware that BVWSD is exploring methods for treatment and options for reuse of agricultural drainage, see "Low-pressure RO membrane desalination of agricultural drainage water," published in Desalination in 2003. Staff also notes approximately 12,000 to 15,000 acres of the Buttonwillow Service Area located north of the proposed well field is affected by a shallow water table. Use of this alternative water supply by HECA could provide dual benefits of root zone salt balance and improved soil aeration in the affected area. The applicant has also neglected to adequately consider a dry-cooled project alternative. As stated in this analysis, in some cases the impact to water resources may be proportional to the volume pumped, and likewise, any decrease in water use	Please see Applicant's Responses to PSA/DEIS Information Requests, Set 2 docketed on September 3, 2013.

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				could contribute to a lessening of the impact, proportional to the decrease. It is reasonable to consider dry cooling to reduce the potential project's water consumption. Dry cooling has the potential to: a) reduce project water demand to roughly 17-percent of the currently proposed amount, and thereby b) reduce untreated water costs by approximately $70,000,000 over a 25-year period.	
WATER-17			4.15-25	The maximum simulated drawdown increased from 12.0 to 34.2 feet, and the 15-feet threshold was exceeded at 13 locations (an increase of 12 wells).	Removing the inappropriate wells and spatially correcting the pumping wells, BVWSD found that the worst case reported by the CEC modified model (drawdowns of 5.1 to 34.2 feet with 13 wells exceeding a 15-foot threshold) was reduced to drawdowns of 4.8 feet to 21 feet and 5 wells with drawdowns exceeding 15 feet. The other three model runs on BVWSD Attachment 8 (and CEC PSA Table 4) would result in only one well (Well 6 without spatially correction) and no wells with the spatial correction would exceed a drawdown of 15 feet.
WATER-18			4.15-26	The will-serve letter signed by Hydrogen Energy and BVWSD states that the water supply for HECA would vary between 1,000 mg/L and 4,000 mg/L, with an average of 2,000 mg/L. The water is described by BVWSD as having few uses and also as being the cause of low crop yield and low crop quality within the district. However, specific studies of crops of pistachios from western San Joaquin Valley indicate no adverse impacts to crop or yield at salinities even greater than 3,000 mg/L TDS (Fergusson et al., 2002). This same claim is made by HECA intervenor and residents, Association of Irritated Residents (AIR), that states that water proposed for use by the project is suitable for pistachios (AIRe). They believe groundwater of this quality should be protected for such agricultural use.	The status quo of continued use of high TDS groundwater to irrigate high-salt tolerant crops, such as pistachios, is not environmentally beneficial or consistent with BVWSD goals, as continued high TDS groundwater irrigation on a routine basis "will quickly degrade soils, agricultural production, and groundwater quality that is already extremely fragile". Local studies to the west of BVWSD on the application of elevated TDS waters for salt tolerant crops such as pistachios have different soil types (more permeable) with a thicker unsaturated zone to accommodate the leaching of salts than that of the Area B well field and much of the west side of the BSA. The intent of the BGRP is to remove salts (i.e., TDS) from the local aquifer system so as to improve water quality so that it can be used for a variety of crops beyond those that are more tolerant when irrigated by elevated TDS water.

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WATER-19			p. 4.15-28 and Water Figure 14	When an aquifer is pumped by partially penetrating wells, upward movement of deeper groundwater to the well screens can occur (herein referred to as "up-coning"). In the San Joaquin Valley, saline (brackish) groundwater of sodium chloride water type reportedly underlies the base of the pumped groundwater zone (Page1973). Water Figure 14 conceptually illustrates up-coning of brackish groundwater to variable depth pumping wells; the timing and quantity of up-coning groundwater is determined by the spatial distribution of active wells, their depths, the magnitude and timing of pumping, and the actual TDS concentration contrasts in groundwater with depth.	With respect to up-coning of water from zones (deeper than 700 feet bgs) that the CEC assumes contains water of elevated TDS (2,000 mg/L or more), the CEC model results indicate that the percentage of the extracted groundwater from depths below the proposed extraction wells increase with time. At the end of simulation (25 years), the CEC indicates that the percentage increases to its maximum value of 59 and 64 percent for side wells and center well, respectively. Over the 25 years, the CEC indicates that the average percentages are approximately 54 and 45 percent. Applicant contends that these results are misleading because the percentages are from depths below the proposed extraction wells (i.e., from depths > approximately 300 feet bgs) not from below approxiamtely700 feet bgs (even if TDS in that range was 2,000 mg/L as assumed by CEC staff). The issue is that that Staff has lumped all waters below 300 feet bgs as having TDS of 2,000 or more rather than breaking out that water which may be up-coning from depths below approximately 700 feet bgs which is much deeper than the proposed extraction wells. Applicants model results actually show that over 25 years, the average percentage of extracted water from deep zone (> 600 feet bgs) are approximately 7.3 and 12 percent with maximum percentages of 17 and 28 percent at the end of 25 years, for side wells and center well. Further modeling shows that deeper water would only up-cone underneath and radially adjacent to the extraction wells. As such, CEC PSA Water Figure 14 is oversimplified and misleading in that it depicts a broad area of up-coned groundwater as opposed to a more realistic narrow and conical up-cone from water at depths of 600 to 700 bgs or greater. In addition, the Staff's attempt to simulate up-coning using an anisotropic ratio of 1,000 is incorrect because hydraulic communication between deeper and shallower zones would be blocked.

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WATER-20			4.15-49	Staff is interested in learning more about the proposed well field and potential water quality that may be produced from it. Additional wells may provide useful information about how water quality varies with depth at the proposed well field site and also may help provide clarity in future discussions on water policy and potential impacts.	The BGRP/HECA Area B Well Field will avoid areas with lower TDS levels, while focusing areas with higher TDS levels (averaging approximately 3,000 mg/L) to maximize TDS mass removal from the local aquifer system. Accordingly, an adaptive pumping program will be developed to install, operate, and maintain a well field to ensure that the groundwater with the highest TDS levels will be used for HECA process water use.
WATER-21			WATER FIGURES	Water Figures 3-7 and 15-17 (Simulated Drawdown and Zone of Influence [ZOI]) Water Figures 8, 9, 10 12, and 18 (TDS Iso-Concentration Contours) and ZOI TDS	The BVWSD pointed out that the centroid of the BGRP/HECA Area B well field assumed in the CEC groundwater model was approximately 1/3 mile east of the actual proposed location. As the project has evolved the Target Area B wells are planned to be placed directly adjacent to the West Side Canal, not as shown in the CEC figures. For this reason, Applicant did not call out for drawdowns at specific wells, keeping them focused on distances from the center of the well field (0.25 mile, 0.5 mile, etc., from the well field). As such, Staff's reported drawdowns at specific wells is considered incorrect because the pumping center is approximately 1/3 mile east of where it is intended to be. Staffs conclusions relative to potential water quality impacts are largely driven by the use of extremely old groundwater data collected from as early as 1961, as shown on Figures 8, 9, 10, 12, and 18. This data is valuable in that it depicts what the groundwater conditions were 50+ years ago but should not be confused with current conditions as shown on URS Figure 191-1 (confidential figure in response to CEC DR 191) or that data provided to the CEC in BVWSD Response to CEC Data Requests and Response to PSA, docketed on August 21, 2013. According to the BVWSD, local pumpers have documented, by progressive replacement of their wells from west to east, the degradation of water quality over time on the west side of the BSA. Staff appears to assume that the 1961 data is current and uses it

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					with blending models to support their analysis. As such the premise of the Staffs water quality distributions and analysis require modifications. CEC produced figures depicting TDS isoconcentration contours created by BVWSD and used outdated data to question the validity of the BVWSD information. Iso-concentration contour maps produced by BVWSD were created using the most comprehensive data available prioritizing use of current over older data when available. Historically the BVWSD has only published general water quality information so as to protect its ability to collect private data for such purposes. At the CECs request and in submittals since the February 2013 Water Supply Workshop, BVWSD has provided background well specific data to the CEC under confidentiality assurances. These data were apparently not incorporated into the PSA. As such, the water quality analysis presented in the PSA should be modified to incorporate more recent data in the BGRP Area B study area.
4.16 Worker Safety and Fire Protection					
WS-01			4.16-20	Additional fire suppression equipment is required due to the complexity of the project.	Applicant concurs with the mitigation measures proposed by the Kern County Fire Department which will mitigate any impacts to fire protection services below a level of significance.
WS-02		Fire Hazards	4.16-22	The KCFD has requested that nine specific mitigation measures in the form of equipment and personnel be provided to mitigate direct and cumulative impacts on the fire department.	Applicant concurs with the mitigation measures proposed by the Kern County Fire Department which will mitigate any impacts to fire protection services below a level of significance.
5.2 Geological and Paleontology					
GP-01		5.2	5.2-5	"Applicable laws, ordinances, regulations, and standards (LORS) are listed in the application for certification (AFC) (HEI 2008c)."	This references the 2008 AFC (HEI 2008c), not the 2012 Amended AFC.
GP-02		5.2	5.2-6 (Table)	"Society for Vertebrate Paleontology (SVP), 1995 The "Measures for Assessment and Mitigation of	This references SVP 1995, although the 2012 Amended AFC includes reference to the newer SVP 2010.

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				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."	The document title is "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources". The measures were adopted in 2010 by the SVP.
GP-03	5.2	5.2-7 to 5.2-8 5.2-16 to 5.2-18	5.2-7, 5.2-8, 5.2-16, 5.2-17, 5.2-18	URS 2009a	Some of the items identified with URS 2009a an Environmental Site Assessment should reference URS 2009b a Geotechnical Investigation.
GP-04		5.2	5.2-9	"Site-specific information generated by the applicant for the proposed site and ancillary facilities was also reviewed (HEI 2008c, Appendix Q)."	This references the Paleontological Resources Technical Report (HEI 2008c), but should reference the 2012 Paleontological Resources Technical Report.
GP-05		5.2	5.2-9	"All research was conducted in accordance with accepted assessment protocol (SVP 1995) to determine whether any known paleontologic resources exist in the general area."	This references SVP 1995, although the 2012 Amended AFC includes reference to the newer SVP 2010.
GP-06		5.2	5.2-10	"Staff reviewed correspondence from the LACM (McLeod 2009), and the confidential Paleontological Resources Technical Report (HEI 2008c)"	This references the Paleontological Resources Technical Report (HEI 2008c), not the 2012 Paleontological Resources Technical Report.
GP-07		5.2	5.2-10	"Quaternary alluvium is known regionally to contain significant fossil resources, primarily terrestrial vertebrates, and is considered to be highly sensitive (HEI 2008c)."	This references the 2008 AFC (HEI 2008c), but should reference the 2012 Amended AFC. Also the 2010 SVP and 2012 Technical Report use "potential ratings" as opposed to "sensitivity ratings."
GP-08		5.2	5.2-10	"Freshwater invertebrate shells and ichnofossils (trace fossils) were identified in Quaternary alluvium at several localities within one mile of the proposed site and project linears during the field survey conducted for the Paleontological Resources Technical Report attached to the AFC	This references the Paleontological Resources Technical Report (HEI 2008c), but should reference the 2012 Paleontological Resources Technical Report.

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				(HEI 2008c, Appendix Q)."	
GP-09		5.2	5.2-10	"The potential for a geologic unit on a site to yield scientifically significant, nonrenewable paleontological resources is referred to as its paleontological sensitivity (SVP 1995)."	This references SVP 1995, although the 2012 Amended AFC includes reference to the newer SVP 2010. SVP 2010 and the 2012 Technical Report use "potential ratings" as opposed to "sensitivity ratings."
GP-10		5.2	5.2-10	"Paleontological sensitivity is a qualitative assessment made by a professional paleontologist taking into account the paleontological potential of the stratigraphic units present, the local geology and geomorphology, and any other local factors that may suggest a probability of encountering fossils."	This references "paleontological sensitivity" as opposed to "potential," a distinction made between SVP 1995 and SVP 2010.
GP-11		5.2	5.2-10	"According to the Society of Vertebrate Paleontology standard guidelines, sensitivity comprises (1) the potential for a geological unit to yield abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or paleobotanical remains, and (2) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecological, or stratigraphic data (SVP 1995)."	This is referencing SVP 1995. The 2012 Paleontological Resources Technical Report and 2012 Amended AFC report that "The paleontological potential of a stratigraphic unit reflects: (1) its potential paleontological productivity, and (2) the scientific significance of the fossils it has produced."
GP-12		5.2	5.2-11	Geology and Paleontology Table 2 SVP Paleontological Sensitivity Ratings (Sensitivity) and Equivalent Potential Fossil Yield Classifications (PFYC) Consistent with BLM Guidelines	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, considers "Potential Ratings."
GP-13		5.2	5.2-11 (Table)	Table 2	SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, used slightly different assessment criteria than were presented in Geology and Paleontology Table 2.
GP-14		5.2	5.2-11	"Pliocene to Pleistocene age Tulare Formation, which underlies the fine-grained sediments has a high sensitivity rating and high potential to contain	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, considers "Potential

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				significant fossil resources."	Ratings."
GP-15		5.2	5.2-11	"Examination of exposures of the Tulare Formation during the field survey for the Paleontological Resources Technical Report revealed previously unknown occurrences of vertebrate bones, invertebrate shells and fossilized wood within one mile of the site (HEI 2008c, Appendix Q)."	This references the Paleontological Resources Technical Report (HEI 2008c), but should reference the 2012 Paleontological Resources Technical Report.
GP-16		5.2	5.2-12	"This assessment is based on SVP criteria and the confidential paleontological report appended to the AFC (HEI 2008c)."	This references the Paleontological Resources Technical Report (HEI 2008c), but should reference the 2012 Paleontological Resources Technical Report.
GP-17	5.2	5.2-17 Hydrocompaction	5.2-17	"The proposed site specific geotechnical investigation also indicates the surface alluvial deposits which underlie the site would generally be too dense to experience significant hydrocompaction (URS 2009a)."	The word "proposed" should be removed and the reference should indicate URS 2009b a for the Geotechnical Investigation.
GP-18		5.2	5.2-19	"Quaternary alluvium and Pliocene to Pleistocene Tulare Formation deposits beneath the proposed site have a high sensitivity rating for paleontologic impacts."	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, considers "Potential Ratings."
GP-19		5.2	5.2-19	"Quaternary alluvium near the surface is less sensitive relative to deeper and older alluvium (McLeod 2009), however, all Quaternary sediments at the project site should be considered to have a high sensitivity rating until determined otherwise by a qualified professional paleontologist."	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, considers "Potential Ratings."
GP-20		5.2	5.2-19	The proposed site and linear facilities would be located in a shaded Zone X defined as "Areas of 0.2 percent annual chance of flood, areas of one percent annual chance flood with average depth of less than one foot, or with drainage area of less than one (1) square mile; areas protected by levee from one percent annual chance flood" (FEMA 2008)	This statement is incorrect. Please see Figure SSW-5-1 in Applicant's Responses to Information Requests Set 1 docketed on August 9, 2013.

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GP-21	5.2	5.2-26 to 5.2-27	5.2-26, 5.2-27	URS 2009	The items identified with URS 2009 need to indicate the appropriate reference, likely 2009c.
GP-22		5.2	5.2-26	"In 2009, PaleoResource Consultants conducted a field survey as part of an assessment of the potential adverse impacts on scientifically significant resources."	The field survey took place during 2008 through 2010.
GP-23		5.2	5.2-27	"Numerous paleosols (fossil soils) containing ichnofossils (root and burrow casts and molds) were also identified (PaleoResource, 2008)"	This statement is accurate, although it references an outdated document (PaleoResource, 2008) instead of the 2012 Paleontological Resources Technical Report.
GP-24		5.2	5.2-27	"Since fossil vertebrates have been previously reported from Quaternary alluvium within Kern County, the onsite Quaternary alluvium is also judged to have a high sensitivity"	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, considers "Potential Ratings."
GP-25		5.2	5.2-27	"According to PaleoResource Consultants, (PaleoResource 2008), due to the numerous previously unidentified fossil localities in and around the vicinity of the Elk Hills, "there is a high probability of scientifically significant paleontological resources being unearthed during future ground disturbing activities."	This statement is accurate, although it references an outdated document (PaleoResource, 2008) instead of the 2012 Paleontological Resources Technical Report.
GP-26		5.2	5.2-27	"This assessment is based on SVP criteria and the confidential paleontological report appended to the AFC (HEI 2008c)."	This references the 2008 AFC (HEI 2008c), but should reference the 2012 Amended AFC.
GP-27		5.2	5.2-33	"Quaternary alluvium and Pliocene to Pleistocene Tulare Formation deposits beneath the proposed site have a high sensitivity rating for paleontologic impacts."	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, considers "Potential Ratings."
GP-28		5.2	5.2-33	"However, all Quaternary sediments at the OEHI site should be considered to have a high sensitivity rating until determined otherwise by a qualified professional paleontologist."	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical Report and 2012 Amended AFC, considers "Potential Ratings."
GP-29		5.2	5.2-35	"Because the project area lies predominantly within geological units with high paleontological	SVP 1995 used "Sensitivity Ratings," while SVP 2010, included in the 2012 Paleontological Resources Technical

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				sensitivity, the required excavation could, potentially, damage paleontological resources."	Report and 2012 Amended AFC, considers "Potential Ratings."
GP-30		5.2	5.2-49	Certification of Completion form Worker Environmental Awareness Program Hydrogen Energy California Project (08-AFC-8)	This references the 2008 AFC, but should reference the 2012 Amended AFC.
GP-31		5.2	5.2-50 through 5.2-54	References	The 2012 Paleontological Resources Technical Report and 2012 Amended AFC are not referenced.
GP-32		5.2	5.2-50 through 5.2-54	References	SVP 2010 is not referenced.
GP-33		5.2	5.2-50 through 5.2-54	References	PaleoResource, 2008 is referenced in the text of the document and should be listed in this section.
5.3 Power Plant Efficiency					
PPE-01			5.3-1	Hydrogen Energy California LLC, the applicant, predicts an equivalent power block availability factor of at least 91.3 percent, which staff believes would be possible upon the successful completion of the requisite one-year pilot operation.	Applicant is not proposing a "one year pilot program," although the commissioning period is longer than for a conventional power plant. Please see Applicant's Responses to PSA/DEIS Information Requests docketed on August 9, 2013 for additional explanation on the expected availability factor.
PPE-02			5.3-2	"The aggregation of the power block, fuel gasification, fertilizer production, and CO_2 transmission system is designated as an integrated gasification combined cycle (IGCC) project, designated HECA in this analysis."	Applicant proposes the following changes: "The aggregation of the power block, fuel gasification, fertilizer production, and CO_2 transmission system is ~~designated as~~ an integrated gasification combined cycle (IGCC) project, designated HECA in this analysis."
PPE-03		Setting	5.3-2	"Hydrogen Electric California LLC, the applicant"	Text should state "Hydrogen Energy California LLC…"
PPE-04		Setting	5.3-2	"This project would provide the flexibility to energize its own fuel conversion from a 75 percent subbituminous coal/25 percent petroleum coke (petcoke) feedstock mixture…"	Applicant proposes the following changes: "This project would provide the flexibility to produce its own fuel ~~conversion~~ from a 75 percent subbituminous coal/25 percent petroleum coke (petcoke) feedstock

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					mixture…
PPE-05		Setting	5.3-2	"The project would incorporate …sulfur removal unit, …"	Text should state "sulfur recovery unit…"
PPE-06		Setting	5.3-2	"In turn, the ammonia would be used in the power block's low NO_X combustion emissions system and the ammonia manufacturing complex.."	Text should state "… fertilizer manufacturing complex.
PPE-07		Setting	5.3-2	"The integrated manufacturing complex would take nitrogen generated in the ASU using a method called pressure swing adsorption (PSA) to manufacture products such as nitric acid, ammonia nitrate and urea. In addition, the complex would purify the compressed carbon dioxide for urea pastillation (pelletization of the urea) along with sending compressed CO_2 to the EHOF."	Applicant proposes the following changes: "The integrated manufacturing complex would take nitrogen generated in the ASU and hydrogen produced by the fuel gasification block ~~using a method called pressure swing adsorption (PSA)~~ to manufacture ammonia which will in turn be used to manufacture intermediate and final products such as nitric acid, ammonia nitrate and urea. In addition, the complex would purify the compressed carbon dioxide for urea manufacture ~~pastillation (pelletization of the urea)~~ along with sending compressed CO_2 to the EHOF.
PPE-08		Setting	5.3-2	"…which would then be pelletized in a method called pastillation"	Applicant proposes that the following be added to the end of the sentence: "or combined with ammonium nitrate to produce urea ammonium nitrate solution."
PPE-09			5.3-3	"CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where irrelevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, §15126.4(a)(1))."	Applicant proposes the following changes: "CEQA Guidelines state that the environmental analysis "…shall describe feasible measures which could minimize significant adverse impacts, including where ~~ir~~relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, §15126.4(a)(1))."
PPE-10		Setting	5.3-3	"The balance of CO_2 (1,600 stpd or 14.8%) is purified and delivered to the manufacturing complex for chemically processing solid ammonia-based processes such as pastillation…"	Applicant proposes the following changes: The balance of CO_2 (1,600 stpd or 14.8%) is purified and delivered to the manufacturing complex for production of urea ~~chemically processing solid ammonia-based processes such as pastillation~~…
PPE-11		PROJECT ENERGY	5.3-4	"Table 2-10). The primary hydrogen fuel is limited only by the amount of feedstock products that will	Hydrogen fuel is limited by the gasifier capacity.

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		REQUIRE-MENTS AND ENERGY USE EFFICIENCY		be delivered and stored at the project site."	
PPE-12		ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES AND ADDITIONAL ENERGY SUPPLY REQUIRE-MENTS	5.3-4	"Approximately 16,000 stpd or 6.0 million stpy of petcoke would provide the balance of the feedstock mixture."	Applicant proposes the following corrections: "Approximately 1,140 stpd or 400,000 stpy of petcoke…
PPE-13		Project Configuration	5.3-5	"HECA would be configured as a single CTG coupled by a common shaft with a HRSG and STG;"	The CTG is not coupled with a shaft to the HRSG.
PPE-14		Equipment Selection	5.3-6	"Also, the applicant proposes a one-year pilot operation before commercial use."	No pilot operation is planned before commercial operation.
PPE-15		Equipment Selection	5.3-7	Footnote 12: "Because the gasification fuel is being furnished to the CTG with the moisture removed, the LHV is assumed where both heat values are not otherwise provided."	LHV excludes the heat from condensation of moisture in the combustion products, not the fuel stream.
PPE-16			5.3-7	"When allocating auxiliary power requirements, HECA efficiency stands at 22.8 percent LHV[12] compared to the 36.4-38.5 percent range for the alternative IGCCs'."	The NETL studies show a range of 31% to 32.6% efficiency (HHV basis) for IGCCs with 90% carbon capture. The estimated HECA efficiency is ~27% on a roughly equivalent IGCC basis and deducting the feedstock and aux loads associated with fertilizer production and prorating the ASU, Gasification and BOP aux loads based on 71.3% of the hydrogen production going to power during peak period operation. HECA's efficiency appears lower than indicated by the

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					NETL studies. However, the NETL studies are based on preliminary engineering (not a full FEED) and are intended only to compare technologies on a common basis. The studies assume generic mid-continent conditions (Illinois #6 coal feedstock, ISO conditions, generic specification). The NETL studies do not include the following conditions and requirements unique to HECA which reduce efficiency: • Peak power output at 97F at our site elevation vs. ISO conditions • Raw water with 4,000 ppm TDS with zero liquid discharge requirement vs. generic high quality raw water and minimal waste water discharge treatment • SCR and oxidation catalyst in HRSG • 30 ppm S in syngas vs. 4 ppm S for HECA (Syngas sulfur removal equivalent to natural gas) • O_2 Purity of 95% versus HECA O_2 Purity of 99.5% (needed for economic fertilizer co-production) • CO_2 delivery pressure assumed to be 2,200 psig vs. 2,500 psig for HECA Applicant believes the 22.8 percent LHV estimate is incorrect and does not account for the portion of the feedstock and auxiliary loads attributable to fertilizer manufacture. The efficiency range of 36.4 to 38.5 percent for alternative IGCCs appears to exclude the penalty for carbon capture. Exhibit ES-2 from the following NETL reference indicates an efficiency range of 31% to 32.6% (HHV) for IGCC plants using alternative gasification technologies that include a 90% CO_2 capture requirement. NETL's "Cost and Performance Baseline for Fossil Energy Plants, Volume 1: Bituminous Coal and Natural Gas to Electricity (Revision 2, November 2010, DOE/NETL-2010/1397.

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PPE-17			5.3-8, footnote 13	"Comparison among IGCC systems with different gasifiers and carbon capture and sequestion: "Caost–and Performance Baseline for Fossil Energy Plants. Vol. I: Bituminous Coal and Natural Gas to Electricity. Revision 2, November 2010, National Energy Technology Laboratory (NETL), Department of Energy, DOE/NETL-2010/1397."	Applicant proposes the following changes: "Comparison among IGCC systems with different gasifiers and carbon capture and ~~sequestion~~ sequestration: "~~Caost –~~Cost and ~~Performanc~~ Performance Baseline for Fossil Energy Plants. Vol. I: Bituminous Coal and Natural Gas to Electricity. Revision 2, November 2010, National Energy Technology Laboratory ~~Labortory~~ (NETL), Department of Energy, DOE/NETL-2010/1397."
PPE-18		Efficiency of Alternatives to the Project	5.3-10	"A full scale 250 MW demonstration facility employing the G Series model of this machine was brought up to full power in Nakaso, Japan."	The Nakoso facility used a D series gas turbine.
PPE-19		Conclusions	5.3-11	The coal/coke/syngas fuel cycle would produce a net fuel efficiency of 22.8 percent…	Applicant believes the 22.8 percent efficiency estimate is incorrect and does not account for the portion of the feedstock and auxiliary loads attributable to fertilizer manufacture.
5.4 Power Plant Reliability					
PPR-01			5.4-2	"From the information provided from the applicant, staff calculated the net capacity factor (NCF) at 83.1 percent[1]. assessment of impacts."	Applicant proposes the following changes: "From the information provided from the applicant, staff calculated the net capacity factor (NCF) at 83.1 percent[1]. ~~assessment of impacts~~."
PPR-02		Equipment Redundancy and Equivalency	5.4-7	Fuel substitute while gasification system is off-line for planned maintenance.	Text should state "unplanned maintenance."
PPR-03		Carbon Dioxide (CO_2) Pipeline and EOR Reliability	5.4-9	…an allowance has been made to atmospherically discharge CO_2 laden combustion gases from the CTG through the HRSG exhaust stack for an aggregate period of approximately 500 hours per year.	The captured CO_2 will not be vented through the HRSG stack, if CO_2 cannot be sent to OEHI for EOR it will go to the CO_2 vent.
PPR-04			5.4-12	"Staff considers the issue of water supply pumping, which draws down some aquifers and affects water quality, has a potentially significant impact on the reliability of the facility's industrial water supply."	Applicant disagrees that water supply pumping will draw down some aquifers and affect water quality. Please refer to comments provided on the water supply section.

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5.5 Transmission System Engineering					
TSE-01			5.5-1	The installation of a new fiber optic line from the HECA switching station to the Midway Substation may necessitate CEQA analysis. The proposed 8.5-mile-long fiber optic line will be constructed within the PG&E right-of-way by using the existing 230 kV Transmission towers.	The installation of a new fiber optic line from the HECA switching station to the Midway Substation would be constructed within the PG&E right-of-way by using the existing 230-kV transmission towers and would be part of the transmission network upgrades. Applicant provided an environmental analysis for the transmission network upgrades (see Applicant's Transmission Network Upgrades Report dated January 2013 and docketed on January 16, 2013 in Response to CEC's Data Requests A196, A210, A211, and A212; specifically, Appendix A to the responses). The results of the California Independent System Operator's (CAISO's) electrical interconnection study of the HECA Project will determine the required network upgrades, which could include reconductoring a portion of the existing Midway-Wheeler Ridge transmission line and the installation of the fiber optics, and will be permitted separately under the jurisdiction of the California Public Utilities Commission (CPUC). The CPUC will be responsible for ensuring compliance with CEQA. To facilitate the CPUC's review of the transmission network upgrades, the potential impacts of the transmission network upgrades—as they may pertain to the HECA Project—were presented in the Applicant's January 2013 Transmission Network Upgrades Report.
TSE-02		Summary of Conclusions	5.5-1	"The recommended mitigation of the voltage instability would require upgrades in the SCE Mesa 500kV system. These upgrades would be done within the fence line of the existing Mesa substation. The installation of a Rd 2 fiber optic line from the HECA switching station to the Midway Substation may necessitate CEQA analysis."	The voltage instability issue falls into the Area Deliverability Upgrades identified in Comment TSE-05. The Fiber Optic line identified here is the same as the one identified in Comment TSE-01.
TSE-03			5.5-1	The Transition Cluster Phase II Interconnection	The HECA Project is now part of Transition Cluster 6.

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				Study Report (Phase II Study) for the HECA is scheduled to be issued by early July, 2013.	The Phase I Study Report is expected in December 2013 and the Phase II Study Report is expected in December 2014. Transmission system upgrades are expected to be essentially the same as presented in the Transition Cluster 5 Phase I Interconnection Study Report issued on January 31, 2013.
TSE-04			5.5-6	Queue Cluster 5	The HECA Project is now part of Transition Cluster 6. The analysis of impacts to the transmissions system is not expected to change significantly.
TSE-05			5.5-6	"Project could contribute to the South of Vincent flow deliverability constraints, and network upgrades would be required to improve transfer capability."	Area Deliverability Upgrade costs were identified in the Phase I Report. There are Options to the project to fund or not fund these upgrades. HECA anticipates taking the option not to fund.
TSE-06			5.5-8	"The proposed 230kV PG&E substation would be designed and built by the applicant, but would be turned over to PG&E for operation."	This statement is incorrect. It is expected that the switching station will be built by PG&E and funded as part of CAISO Reliability Network Upgrades.
6 Alternatives					
ALT-01			6-9	On a typical day at 65°F, in the "electricity" mode, the facility would produce a net increase in electrical grid capacity of 52.5 megawatts (MW); and in the "fertilizer" mode on that same typical day the facility would consume a net 61.8 MW from the electrical grid. The grid-level change takes into account all electricity required to operate the facility as proposed by the applicant, including the air separation unit planned to be operated by a separate party and also including electricity consumed to recycle and re-inject the carbon dioxide produced with crude oil production. See the PSA/DEIS section on Carbon Sequestration and Greenhouse Gas Emissions for more details. The weighted average daily electricity production would be 14.4 MW.	Applicant strongly disagrees that the "weighted average daily electricity production would be 14.4 MW." The net power output for the HECA Project ranges from 267 to 300 MW (Updated Emissions and Modeling Report, May 2013). The lower value represents a conservative low end estimate for emissions performance standard calculation purposes, and the upper value represents the maximum expected production rate. As presented in the responses to additional information requests for Carbon Sequestration and Greenhouse Gas Emissions, net electricity generation during on-peak power production periods is 266 MW, and during off-peak power production is 151 MW. These represent the low end estimate for emissions performance standard calculation purposes. These "net" generation values are inaccurate and misleading. Please refer to Applicant's Responses to PSA/DEIS Information Requests, Set 1, August 9, 2013 (Docket No. 200144) for a

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					discussion of the generation output of the HECA Project.
ALT-02			6-21	"HECA does not provide low-carbon electricity using the project description and scope used by Energy Commission staff. See the PSA/DEIS section titled "Carbon Sequestration and Greenhouse Gas Emissions" for a comparison of the approach used by the applicant and that used by staff. As evaluated by staff, during early operations the carbon intensity is greater than efficient natural gas fired power plants. During mature operations the carbon intensity of the electricity that would be provided by HECA is similar to other base load power plants recently approved by the Energy Commission."	Applicant respectfully disagrees with staff's conclusion that HECA may not supply low-carbon electricity, and requests that staff identify HECA as meeting this Project Objective. As noted on page 3.1-1 of the PSA/DEIS, if approved, HECA would be partially funded as a demonstration project under the Clean Coal Power Initiative Round 3 (CCPI-3). The CCPI-3 solicitation specifically sought projects that would demonstrate advanced coal-based electricity generating technologies which capture and sequester (or put to beneficial use) carbon dioxide emissions. Applicant has provided evidence that HECA would have a low carbon profile, as discussed in comments above regarding Carbon Capture and Sequestration. As noted at the public workshops in September 2013, Applicant will file additional evidence supporting its interpretation of SB 1368. In any instance, regardless of the comparison of HECA to other types of power generation facilities, if approved as an innovative, large-scale CCS demonstration project, HECA would help demonstrate the feasibility of using CCS on a large scale, which has been recognized by many policy makers and experts as providing benefits for reducing carbon emissions from industrial sources. See, for example, the responses provided above under Carbon Capture and Sequestration and Applicant's Responses to PSA/DEIS Information Requests, Set 1, August 9, 2013, CS-1 ("Overview of Allocation of Carbon Dioxide Emissions for Determining Compliance with the Emission Performance Standard [SB 1368]") and ALT-2. Accordingly, Applicant believes it has adequately demonstrated consistency with this stated Project Objective.
ALT-03			6-21 to 6-22	"HECA has not shown that it could provide capacity to help back-up intermittent renewable sources of electricity. To do so, it would have to be able to reliably ramp electricity production up	Applicant respectfully disagrees with staff's conclusion that HECA may not provide electricity capacity to help back-up intermittent renewable sources; Applicant requests that staff identify HECA as meeting this aspect of the

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				and down. The California Independent System Operator would need to be able to dispatch HECA at a changing power output of about 5 MW per minute. The applicant has not stated that it could operate in this manner nor has it described how such operation would affect facility reliability or availability."	Project Objective. HECA would generate baseload generation that could support grid reliability (see AFC, page 2-8). Applicant disagrees that the dispatch level identified here by staff is necessarily dispositive on the question of whether HECA meets this stated Project Objective. Please also refer to Applicant's Responses to PSA/DEIS Information Requests, Set 1, August 9, 2013 (Docket No. 200144), which includes discussion of the output of the HECA Project.
ALT-04			6-22	"HECA has not shown that it would reduce the carbon footprint of power generation facilities likely to be located in California."	Applicant respectfully disagrees with staff's conclusion here and, in any instance, does not believe it demonstrates inconsistency with the portion of the Project Objective cited in Table 2 on this point: "… and prove out carbon capture and sequestration as a viable method for reducing the carbon footprint of power generation and manufacturing." As noted on page 3.1-1 of the PSA/DEIS, if approved, HECA would be partially funded by DOE as a demonstration project under the CCPI-3 solicitation, which specifically sought projects that would demonstrate advanced coal-based electricity generating technologies that capture and sequester (or put to beneficial use) carbon dioxide emissions. Moreover, Applicant has provided evidence that HECA would have a low carbon profile, as discussed in comments above regarding Carbon Capture and Sequestration. As noted at the public workshops in September 2013, Applicant will file additional evidence supporting its interpretation of SB 1368. In any instance, regardless of the comparison of HECA to other types of power generation facilities, if approved as an innovative, large-scale CCS demonstration project, HECA would help demonstrate the feasibility of using CCS on a large scale, which has been recognized by many policy makers and experts as providing benefits for reducing carbon emissions from industrial sources. See, for example, the responses provided above under Carbon Capture and Sequestration and Applicant's Responses to PSA/DEIS Information Requests, Set 1, August 9, 2013, CS-1 ("Overview of

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					Allocation of Carbon Dioxide Emissions for Determining Compliance with the Emission Performance Standard [SB 1368]") and ALT-2. Accordingly, Applicant believes it has adequately demonstrated consistency with this aspect of the quoted Project Objective.
ALT-05			6-22	"HECA has not shown that it would facilitate development of hydrogen infrastructure in California any more than would a steam reformer making hydrogen at a California refinery."	Applicant respectfully disagrees with staff's conclusion that HECA may not facilitate development of hydrogen infrastructure in California, and requests that staff identify HECA as meeting this aspect of the Project Objective. Applicant does not agree that a comparison to a steam reformer is applicable, and respectfully disputes that such a comparison demonstrates that HECA would not facilitate the development of hydrogen infrastructure in California. Rather, evidence shows that HECA produces hydrogen from coal and petcoke fuel sources to generate electricity, thus helping to demonstrate the feasibility of a new alternative source of energy (IGCC using CCS) to California and the nation (see AFC, page 2-8). HECA also generates low-carbon fertilizer products that can be used instead of the nitrogen-based fertilizer that is often imported to the region (see AFC, page 2-9; see also Applicant's Responses to PSA/DEIS Information Requests, Set 1, August 9, 2013, ALT-2). This evidence adequately supports a determination that the Project helps facilitate the development of hydrogen infrastructure in California; therefore, HECA is consistent with this Project Objective.
ALT-06			6-23	"HECA has not shown that it is economically viable, especially given its expected annual hours of operation in the California electricity market."	Applicant respectfully disagrees with staff's conclusion that HECA may not have demonstrated it is economically viable, and requests that staff identify HECA as meeting this aspect of the Project Objective. Specifically, the Project Objective states: "Ensure the economic viability of the project by integrating electricity production with the manufacture of multiple products to meet market demand." The objective focuses on the integration of the power generation component and manufacturing component of

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					the Project. As noted on page 6-60 of the PSA/DEIS, "project applicant has stated the prior HECA design, without the fertilizer manufacturing complex (2009 Revised AFC), was abandoned by the previous project owners, in part because it was not economically viable (HECA, 2012; Response A207)." The integration of the manufacturing component and the power generation component is essential to the economic viability of the Project. See Applicant's Responses to PSA/DEIS Information Requests, Set 2, September 3, 2013, ALT-3 ("The Integrated Manufacturing Complex is a fundamental and essential part of the facility, and its operation allows for the Project to generate the minimum required return necessary to attract investors. That is, the revenues from the manufacture and sale of fertilizer are critical for the economic viability of the Project."). The importance of integrating the power generation component with the manufacturing component demonstrates consistency with this Project Objective.
ALT-07			6-45 to 6-46	Dry Cooling or Wet-Dry Hybrid Cooling Alternative	For additional discussion of the dry-cooling alternative, please refer to Applicant's Responses to PSA/DEIS Information Requests, Set 2, September 3, 2013, WS-7 (regarding the dry cooling alternative). For additional discussion of other water supply alternatives, see Applicant's Responses to PSA/DEIS Information Requests, Set 2, September 3, 2013, WS-3, WS-6.
ALT-08			6-49	Table 7 "**Yes.** Under the No Fertilizer Manufacturing Complex (Reduced Project) Alternative, no nitrogen-based fertilizer products would be produced by HECA, which would reduce air quality emissions from transporting fertilizer products produced by the project. Furthermore, this alternative would not impact the ability for CO_2 capture and sequestration by the HECA project."	Applicant respectfully disagrees with staff's conclusion that "this alternative would not impact the ability for CO_2 capture and sequestration by the HECA project." Applicant requests staff to change this topic to a "No" for comparison purposes with the Project. Under this alternative, HECA would not achieve a comparable level of CO_2 capture and sequestration, because 17% of the CO_2 which goes into producing the fertilizer would be vented; fertilizer may otherwise have to be trucked from further distances (likely out of state), thereby likely increasing

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					transportation emissions; and regular (full carbon) fertilizer may be used by facilities that would otherwise have access to low carbon fertilizer that could be produced by HECA as proposed.
ALT-09			6-49	"Potentially. The No Fertilizer Manufacturing Complex (Reduced Project) Alternative would not affect the ability for CO_2 capture, sequestration and EOR by the HECA project. However, HECA has not shown that their project would produce oil reserves that could not otherwise be produced by other means."	Applicant respectfully disagrees with staff's conclusion that "HECA has not shown that their project would produce oil reserves that could not otherwise be produced by other means." Applicant requests that staff change this topic to a "No" for comparison purposes with the Project. Please refer to Applicant's Responses to PSA/DEIS Information Requests, Set 2, September 3, 2013, ALT-6. (As described in the MRV Plan prepared by OEHI and docketed with the CEC on June 13, 2012—see docket # 65780—"CO_2 EOR is a well-established EOR technique used in mature oil fields. It is often known as 'tertiary recovery' because it is typically applied after gas injection or water flooding has been employed, to further enhance the recovery of oil." As explained by OEHI at the June 20, 2012, CEC workshop, the EHOF is a mature oil field that still has a lot of oil in place. The EHOF has been producing oil for almost 100 years. Other oil recovery methods have been used, such as water flooding. Laboratory and field tests to assess miscibility have been performed, and the results indicate that oil recovery would be responsive to CO_2 EOR. To date, the lack of viable CO_2 has been a barrier to the next step of using CO_2 for EOR.)
ALT-10			6-50	"Yes. Under the No Fertilizer Manufacturing Complex (Reduced Project) Alternative, the proposed fertilizer complex would not be built."	Applicant respectfully disagrees that this alternative would meet this objective. Applicant requests that staff change this topic to a "No" for comparison purposes with the Project. As explained in Applicant's Responses to PSA/DEIS Information Requests, Set 2, September 3, 2013, ALT-3, "The No Fertilizer Complex is not a viable alternative for the HECA Project. The Integrated Manufacturing Complex is a fundamental and essential part of the facility, and its operation allows for the Project to generate the minimum required return necessary to

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					attract investors. That is, the revenues from the manufacture and sale of fertilizer are critical for the economic viability of the Project." Because HECA would not likely proceed with the Project under this alternative, Applicant does not believe the alternative would meet this objective.
ALT-11			6-62	"The greenhouse gas emissions from the HECA project would be reduced by a small degree if the fertilizer plant is not built."	Applicant respectfully disagrees with this statement. Under this alternative, HECA would not achieve a comparable level of CO_2 capture and sequestration because 17 percent of the CO_2 that goes into producing the fertilizer would be vented; fertilizer may otherwise have to be trucked from further distances (likely out of state), thereby likely increasing transportation emissions; and regular (full carbon) fertilizer would be used by facilities that would otherwise have access to low carbon fertilizer that could be produced by HECA as proposed.
7 U.S. Department of Energy Documents					
DOE-01			1	"In the construction phase, emissions would be reduced through the implementation of fugitive dust mitigation and diesel equipment exhaust mitigation. Construction emissions will be further mitigated through participation in the San Joaquin Valley Air Pollution Control District's Emission Reduction Incentive Program, pursuant to which the Hydrogen Energy California (HECA) Project will pay fees to the District to be invested in emission reduction projects in the vicinity of the HECA Project."	Applicant proposes the following changes because, as discussed on page 4.1-71 of the PSA/DEIS, this mitigation is intended to provide "additional air quality benefits to the region" beyond what mitigation is identified in the PSA/DEIS for Air Quality. "In the construction phase, emissions would be reduced through the implementation of fugitive dust mitigation and diesel equipment exhaust mitigation. Applicant has agreed to provide additional air quality benefits to the region ~~Construction emissions will be further mitigated~~ through participation in the San Joaquin Valley Air Pollution Control District's Emission Reduction Incentive Program, pursuant to which the Hydrogen Energy California (HECA) Project will pay fees to the District to be invested in emission reduction projects in the vicinity of the HECA Project."

Applicant's proposed changes to proposed Conditions of Certification

Hydrogen Energy California (08-AFC-8A)
Applicant's Proposed Changes to Conditions of Certification in the Preliminary Staff Assessment/Draft Environmental Impact Statement

Topic Area/COC	CEC Staff's PSA/DEIS COC	Applicant's Proposed Changes to COC
Air Quality		
AQ-SC6	**AQ-SC6** The project owner, when purchasing, leasing or renting dedicated on-road or off-road vehicles for feedstock or product transport (including sulfur and gasifier solids) shall obtain vehicles that meet California on-road vehicle emission standards or appropriate U.S. EPA/California off-road engine emission standards for the latest model year available when obtained. **Verification:** At least 60 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of a plan that identifies the sizes and types of onsite vehicles and equipment and the associated vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year to indicate any new vehicles or equipment purchased since the previous plan submittal. The plan shall be submitted in the Annual Compliance Report.	When leasing or renting vehicles, obtaining the latest model year may not be feasible because Hydrogen Energy California (HECA) will not own these vehicles. Applicant proposes adding the following to this Condition of Certification (COC): <u>The CPM may grant relief from this requirement if the project owner can demonstrate that a good faith effort to comply with these requirements has been made, and that compliance is not practical.</u>
AQ-SC10	**AQ-SC10** The project owner shall use the following measures to reduce fugitive dust from railcar and truck loads serving the project site. Railcars The project owner shall ensure that a surface stabilizing compound (surfactant or water), railcars with adequate freeboard, railcars with other dust mitigation design features, or a combination of these methods are used so that: 1) coal dust is not emitted in amounts that are visible by human observation outside of the coal mine property, 2) coal and produced product of any size is not released in visible quantities alongside the rail spur from the main rail line to the project site, and 3) produced product dust is not emitted in amounts that are visible by human observation at the project site or elsewhere along the entire rail transportation route. The project owner shall inspect the length of the rail spur once a month, and shall also inspect the rail spur within a day of receiving related complaints from the public or as requested by the CPM. These inspections shall be photo documented and shall include detailed information when coal or produced product losses are discovered along the rail spur and shall detail the mitigation measures applied to remove any such material found and the measure used to control future losses along the rail spur. This measure is not required if fully enclosed railcars are used for coal or produced product transport. Trucks The project owner shall ensure that all bulk material truck loads to and from the project site are either fully enclosed or covered. The project owner shall inspect the truck access/egress route within a day of receiving any complaints	Applicant would like this COC changed to match requirements of San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation 8 – dust control, so that potential dust impacts are measurable, not subjective. Applicant proposes the following changes to this COC: Railcars The project owner shall ensure that a surface stabilizing compound (surfactant or water), railcars with adequate freeboard, railcars with other dust mitigation design features, or a combination of these methods are used so that~~: 1)~~ coal dust <u>and produced product dust are minimized and comply with SJVAPCD Regulation 8 – Fugitive PM_{10} Prohibitions</u> ~~not emitted in amounts that are visible by human observation outside of the coal mine property, 2) coal and produced product of any size is not released in visible quantities alongside the rail spur from the main rail line to the project site, and 3) produced product dust is not emitted in amounts that are visible by human observation at the project site or elsewhere along the entire rail transportation route~~. The project owner shall inspect the length of the rail spur once a month, and shall also inspect the rail spur within a day of receiving related complaints from the public or as requested by the CPM. These inspections shall be photo documented and shall include detailed information when coal or produced product losses are discovered along the rail spur and shall detail the mitigation measures applied to remove any such material found and the measure used to control future losses along the rail spur. This measure is not required if fully enclosed railcars are used for coal or produced product transport.

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	of truck load spills from the public or as requested by the CPM. These inspections shall be photo documented and shall include detailed information when truck load spills are discovered along the truck route and detail the mitigation measures applied to remove the spilled material that is found and the measure used to control future truck load losses along the truck route. This measure is not required if only fully enclosed trucks are used for all bulk material transport into and out of the project site. **Verification:** The project owner shall submit the monthly rail spur and any required truck route inspection reports in the Quarterly Operations Reports (**AQ-SC8**). The applicant shall provide the method of initial railcar emissions control, including the specifications of the surface stabilizing compound if used, to the CPM for approval at least 60 days prior to shipping the first load of coal to the site. These records shall be maintained onsite for a minimum of two years and shall be provided to the CPM and District personnel upon request. For the purposes of this condition for rail transport the term "coal" means coal or petroleum coke, and "produced product" and "bulk materials" are any materials transported where such materials can be lost through wind erosion or can be spilled from loaded rail cars or trucks due to bumps or turns, as opposed to catastrophic accidents.	
AQ-SC12	The project owner shall provide the following to mitigate locomotive engine emissions: Line Haul Locomotives The project owner shall complete an agreement with the rail line operator that requires the use of Tier 3 or better line haul locomotive engines for all rail transportation to and from the project site until the end of 2019, and shall require the use of Tier 4 engines thereafter. These agreements may be made in two parts with the first Tier 3 agreement due prior to the receipt of any operating coal or petroleum coke feedstock materials by rail; and the second Tier 4 agreement due by October of 2019. Onsite Switch Locomotives Onsite Switch Locomotives shall meet Tier 4 locomotive or Tier 4 Nonroad emissions standards, depending on which standard applies.	The requirement of Tier 4 engines for the line haul locomotives starting in 2020 may not be within the HECA Project's control, because the HECA Project does not own these engines. The HECA Project estimated the locomotive engine emissions based on a fleet mix average of Tier 3 engines; this means that there may be some Tier 4 engines in the mix, along with some older Tier engines. It is unrealistic to expect that the rail operator will be able to dedicate only Tier 4 trains to the HECA Project by 2020, so a realistic mix of trains was analyzed. The emission inventory, the conformity analysis, and the mitigation agreement were based on Tier 3 emissions. Applicant proposes the following changes to this COC: Line Haul Locomotives The project owner shall complete an agreement with the rail line operator that requires the use of a fleet mix of ~~Tier 3 or better~~ line haul locomotive engines for all rail transportation to and from the project site that meet Tier 3 emission standards ~~until the end of 2019, and shall require the use of Tier 4 engines thereafter~~. These agreements may be made in two parts, with the first Tier 3 agreement due prior to the receipt of any operating coal or petroleum coke feedstock materials by rail, ~~;~~ and the second Tier 4 agreement due by October of 2019. Onsite Switch Locomotives Onsite Switch Locomotives shall meet Tier 4 locomotive or Tier 4 Nonroad emissions standards, depending on which standard applies. If Tier 4 engines are not available at time of purchase, the engines shall meet Tier 3 emission standards.

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AQ-SC13	**AQ-SC13** The project owner shall document compliance with federal Mercury and Air Toxics Standards (MATS). The project owner shall provide source testing data or other U.S. EPA approved testing results that demonstrate compliance with the MATS (40 CFR Subpart UUUUU Table 1). The mercury emissions control system shall be in operation at all times when the gasifier and coal dryer are operating and otherwise when there is any potential for coal or petcoke derived mercury emissions. The project owner shall develop a plan to monitor the activated carbon mercury emissions control systems to identify proper carbon change out frequency to avoid saturation and emissions break through. The testing shall meet test plan preparation, notification, and test report requirements as specified in applicable provisions of Conditions of Certification **AQ-1**, **AQ-5**, **AQ-6**, **AQ-9**, and **AQ-11**. **Verification:** The project owner shall submit to the CPM a summary of the results of tests required prior to commercial operation that demonstrate compliance with the appropriate 40 CFR Subpart UUUUU Table 1 emissions standards. no later than 60 days after testing is complete, and shall submit subsequent compliance demonstration data no later than 60 days after the testing is complete that meets the compliance demonstration frequency requirements of 40 CFR Subpart UUUUU. The project owner shall provide a monitoring plan for the mercury emissions control systems to the CPM for approval at least 60 days prior to operating these control systems.	The Final Determination of Compliance (FDOC) contains conditions ensuring compliance with the Mercury and Air Toxics Standards; COC AQ-SC13 is redundant and should be removed.
AQ-1 – AQ25	Not listed here, because edits are minor. But the FSA will need to incorporate these from the FDOC.	AQ1 – AQ25: These COCs will need to be updated to reflect changes from the Preliminary Determination of Compliance to the FDOC.
AQ- 1, 2, 3, 4, 5, 7, 9, 19, 22	**Verification:** The project owner shall provide the District and the CPM at least 30 days prior notice of any performance test, except as specified under other District Conditions, and the project owner shall submit source test plans to the District for approval and the CPM for review at least 15 days prior to testing.	The California Energy Commission (CEC) verification requirements should match SJVAPCD requirements so that redundant record keeping is not necessary. This verification requirement is above and beyond what is required in the FDOC—which only requires notification at least 30 days in advance, but not plans or approval. Applicant requests the removal of the following from each COC: "and the project owner shall submit source test plans to the District for approval and the CPM for review at least 15 days prior to testing."
AQ-11	**Verification:** "The project owner shall provide the SCR system and oxidation catalyst system design plans and a Continuous Emission Monitoring System (CEM) design plan to the APCO for approval and the CPM for review at least 30 days prior to commencement of construction (Conditions **AQ-11-24** and **-25**). The CEMS shall be designed to comply with Conditions AQ-11-63 through -77."	Applicant requests that the timing of the requirement be clarified by revising this COC to the following: "The project owner shall provide the SCR system and oxidation catalyst system design plans and a Continuous Emission Monitoring System (CEM) design plan to the APCO for approval and the CPM for review at least 30 days prior to commencement of construction <u>of the power block</u> (Conditions **AQ-11-24** and **-25**). The CEMS shall be designed to comply with Conditions AQ-11-63 through -77."

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Carbon Capture and Sequestration and Greenhouse Gas Emissions		
GHG-1	**GHG-1** The project owner shall prepare a CO_2 Emissions Performance Compliance Plan (EPCP). This plan shall include the operating, monitoring and recordkeeping methods used to demonstrate the onsite CO_2 emissions from HECA. This plan shall: • Detail the methods used to monitor the operating parameters and CO_2 emissions and CO_2 quantities exported from the site as required to show compliance with the EPS. • Detail the measures used to minimize onsite CO_2 emissions "leakage" from venting and other upset events. • Detail the methods to compute and document the amount of CO_2 sequestered by the CO_2 user receiving the exported CO_2. • Define the steps to be undertaken to demonstrate compliance with SB 1368. • Detail the methods used to document all GHG emissions of the stationary and mobile emissions sources not subject to SB 1368 compliance but subject to ARB's GHG emissions reporting regulations, the AB32 Cap and Trade regulation, and other federal or state regulations. **Verification:** The project owner shall provide a copy of the CO_2 EPCP to the compliance project manager (CPM) for review and approval at least six months prior to the initial commissioning of the project's gasification unit. Any updates to the CO_2 EPCP necessitated by project owner initiated changes to the monitoring and recordkeeping methods, or those necessary to maintain regulatory compliance, shall be provided to the CPM for review and approval at least 30 days prior to the initiation of any changes to the plan. Additionally, this plan shall be re-approved every two years, with the project owner providing a plan re-approval request letter with a copy of the current CO_2 EPCP for review and approval to the CPM at least 30 days before the end of every other calendar year after the project has started commercial operation. The plan re-approval letter shall document any changes to the CO_2 EPCP that have occurred over the period since its last approval by the Energy Commission and shall state the reasons for any needed changes.	Items requested in this COC are duplicative of methods required by the actual regulations listed, so it is not necessary to have a condition outlining how they will be monitored and recorded. Also, COC GHG-4 already requires: (i) compliance with federal greenhouse gas reporting requirements, state greenhouse gas reporting requirements, and any reporting required under the California cap-and-trade program; (ii) Applicant to certify such compliance to the CPM; and (iii) such reports to be provided by the Applicant to the CPM upon request. Furthermore, Senate Bill (SB) 1368 emission performance standard compliance is a one-time assessment by the California Public Utilities Commission (CPUC). This assessment is expected to be performed by the CPUC during its review of the power purchase agreement(s), well before an Emissions Performance Compliance Plan would be submitted to the CPM under the proposed COC. Accordingly, Applicant proposes deletion of this COC.
GHG-2	**GHG-2** The project owner shall operate the facility in compliance with the CO_2 Emissions Performance Compliance Plan after its approval. The project owner shall cease operations of the gasifier if: 1) the project owner cannot demonstrate compliance with the CO_2 Emissions Performance Compliance Plan; or 2) if OEHI permanently stops accepting the CO_2 for sequestration; or 3) temporarily as necessary for ongoing compliance with CO_2 venting limits provided in Air Quality Condition of Certification **AQ-11-85**. **Verification:** The project owner shall provide documentation of compliance with this condition to the CPM in the annual report required by Condition	Consistent with the above comment, Applicant proposes the following changes: **GHG-2** ~~The project owner shall operate the facility in compliance with the CO_2 Emissions Performance Compliance Plan after its approval.~~ The project owner shall cease operations of the gasifier ~~if:~~ 1) ~~the project owner cannot demonstrate compliance with the CO_2 Emissions Performance Compliance Plan; or 2)~~ if OEHI permanently stops accepting the CO_2 for sequestration; or ~~3~~2) temporarily as necessary for ongoing compliance with CO_2 venting limits provided in Air Quality Condition of Certification **AQ-11-85**.

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	AQ-SC8. This report shall verify compliance with SB1368 regulations.	**Verification:** The project owner shall provide the CPM with documentation of compliance with this condition ~~to the CPM~~ in the annual report required by Condition **AQ-SC8**. ~~This report shall verify compliance with SB1368 regulations.~~
GHG-3	**GHG-3** The project owner shall obtain from the CO_2 user a CO_2 Emissions Sequestration Plan (CO_2 ESP) that identifies the preparation of injection wells either by retrofitting existing ones or drilling new wells to meet requirements for injection wells intended for the purpose of long term storage, operating, monitoring, recordkeeping, and closure methods used to demonstrate the quantity of CO_2 that is sequestered annually. The CO_2 ESP shall also identify and update as needed the long-term plan for future petroleum production and the financing instrument for post injection site care (PISC) including a corrective action plan, and eventual well closure to assure permanent CO_2 sequestration. The project owner/CO_2 supplier shall also obtain from the CO_2 user records of the annual CO_2 emission sequestration quantities from the CO_2 user and maintain these records for the life of the project. This plan shall: • Detail plans to retrofit existing wells and construct new wells in compliance with the requirements for Class VI injection wells found at 40 CFR § 146.86 and related articles, which include requirements for casing and cementing of injection wells, except that the injector would not have to obtain the actual permits for Class VI wells and also that any mention of "Director" in those requirements must be replaced with compliance project manager (CPM). • Detail the methods used to monitor the operating parameters and CO_2 emissions directly and indirectly related to the CO_2 sequestration process, including fugitive emissions and indirect emissions from electricity use, and the quantity of supplied CO_2 that has been sequestered annually. This shall include a leak detection and repair (LDAR) program for all EOR piping components not regulated by an SJVAPCD LDAR requirement that are in CO_2 service. • Detail the design measures used to minimize and the monitoring methods used to measure potential CO_2 emissions "leakage" from the injection and production wellheads/well casings, including the monitoring of wells that are in production surrounding the EOR component's well field pattern areas and monitoring aboveground ambient CO_2 concentrations to detect surface leakage. • Detail the design measures used to minimize and the monitoring methods used to measure potential CO_2 emissions "leakage" from tank venting for all tanks that contain CO_2 in gas phase or dissolved in liquids in the EOR component's tanks. • Detail the methods used to detect whether there is underground formation leakage of CO_2 emissions related to the CO_2 injection process that could be due to unknown faults or cracks in the cap rock, including the monitoring methods that will be used for determining CO_2 leakage in all of the petroleum and groundwater bearing formations located above the Steven's formation.	Occidental of Elk Hills, Inc. (OEHI) has prepared a preliminary Monitoring, Reporting, and Verification (MRV) plan for sequestering carbon dioxide. The MRV plan replaces the CEC's proposed Emissions Sequestration Plan, and will ensure that redundant documents are not generated. Applicant requests that this COC should be removed and replaced with the following: The project owner shall obtain from the CO_2 user a MRV Plan that meets applicable requirements for CO_2 sequestration resulting from Enhanced Oil Recovery. **Verification:** The project owner/CO_2 supplier shall provide a copy of the MRV Plan to the CPM for review and approval prior to the start of the initial commissioning of the project's gasification unit. Any updates to the MRV Plan necessitated by CO_2-user-initiated changes to the monitoring and recordkeeping methods, or necessitated to maintain regulatory compliance, shall be provided to the CPM for review and approval at least 30 days prior to the initiation of any changes to the MRV Plan.

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	• Detail the physical and chemical methods used to show how much CO_2 is sequestered during and after EOR and the monitoring methods used to ensure the CO_2 remains sequestered. • Detail the physical and chemical methods used to show how much CO_2 is contained in products moved off site. • Detail the methods used to monitor the operating parameters and CO_2 emissions of the stationary and mobile emissions sources subject to ARB's GHG Mandatory Reporting regulations, the AB32 Cap and Trade regulation, or other federal or state regulations. • Detail the long term plan for future petroleum production and eventual well closure to assure that the CO_2 is permanently sequestered. This part of the plan shall include a financial instrument, such as a bond or other financial assurance that will assure that funds will be available for well plugging, PISC, and closure whenever that may occur, and ongoing maintenance of the oil field to ensure long term geologic sequestration. **Verification:** The project owner/CO_2 supplier shall provide a copy of the CO_2 ESP to the CPM for review and approval prior to the start of the initial commissioning of the project's gasification unit. Any updates to the CO_2 ESP necessitated by CO_2 user initiated changes to the monitoring and recordkeeping methods, or necessitated to maintain regulatory compliance, shall be provided to the CPM for review and approval at least 30 days prior to the initiation of any changes to the CO_2 ESP. Additionally, this plan shall be re-approved every two years, with the project owner providing the CO_2 users plan re-approval request letter with a copy of the current CO_2 ESP for review and approval to the CPM by December 1st of every other calendar year once HECA starts commercial operation. The plan re-approval letter shall document any changes to the CO_2 ESP that has occurred over the period since its last approval by the Energy Commission and shall state the reasons for any needed changes. The ESP update can be combined with the EPCP update as appropriate.	
GHG-5	**GHG-5** The project owner must adopt industry standard and verified methodologies to keep an accurate count of the amounts of CO_2 transferred to OEHI, the amounts injected underground, the amounts recovered with extracted fluids, the amounts reinjected, the amounts lost through surface equipment, and the amounts leaked to the surface after injection. The difference between the amounts transferred and all the losses constitutes the amount of CO_2 that has been sequestered. Both measured and calculated amounts shall be reported on an annual basis. The project owner shall demonstrate compliance with California's Environmental Performance Standard by annually accounting for annual MWh sold and all carbon dioxide generated at HECA, received at OEHI, vented, stored underground, and leaked as described in the equation in the portion of the staff assessment dealing with quantification of sequestered CO_2 volumes.	This proposed COC is redundant due to COCs GHG-1 and GHG-3. Applicant requests that this COC be deleted.

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	Verification: No later than 60 days before commencement of injection, the owner shall present to the CPM for approval the methods used to detect and quantify any amounts of CO_2 lost. These include losses through surface equipment, losses though exported fluids, and losses from leaks of injected CO_2 to the surface. Measured and calculated quantities shall be included in the Annual Compliance Report (ACR).	
Biological Resources		
BIO-6	**IMPACT AVOIDANCE AND MINIMIZATION MEASURES** **BIO-6** The project owner shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources: [see PSA/DEIS for items 1-7, 9-12, and 14-19 of this condition] 8. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat. Lighting shall be shielded, directional, and at the lowest intensity required for safety. Lighting shall be directed away from biologically sensitive areas. 13. Dispose of Road-killed Animals. Road-killed animals or other carcasses detected on project maintenance roads along linear routes and within one mile of the project site shall be picked up immediately and delivered to the Biological Monitor or Designated Biologist. For listed species road kill, the Designated Biologist or Biological Monitor shall contact USFWS and CDFW within 24 hours of receipt of the carcass for guidance on disposal or storage and need for necropsy of the carcass. The Biological Monitor or Designated Biologist shall report the special-status species record as described in these biological conditions of certification.	Applicant proposes the following changes: BIO-6.8. Minimize Lighting Impacts. Exterior facility lighting within 100 feet of wildlife habitat shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat. Lighting shall be shielded, directional, and at the lowest intensity required for safety. Lighting shall be directed away from biologically sensitive areas. Lighting as required by FAA or other safety lighting as required by other agencies are exempt from this condition. BIO-6.13. Dispose of Road-killed Animals. Road-killed animals or other carcasses detected on project maintenance roads along linear routes and within 1 mile of the project site shall be ~~picked up immediately and delivered to~~ reported to the Biological Monitor or Designated Biologist immediately. The Biological Monitor or Designated Biologist shall record the location with GPS coordinates, note the likely cause of death, and photo-document the carcass for inclusion within the MCR. For listed species road kill, the Designated Biologist or Biological Monitor shall contact USFWS and CDFW within 24 hours ~~of receipt of the carcass~~ for guidance on disposal or storage, and on the need for necropsy of the carcass. The Biological Monitor or Designated Biologist shall report the special-status species record as described in these biological conditions of certification.
BIO-7	**SAN JOAQUIN KIT FOX AND AMERICAN BADGER SURVEYS AND IMPACT AVOIDANCE MEASURES** **BIO-7** Following USFWS's *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011), the project owner shall implement the following impact avoidance measures for San Joaquin kit fox and American badger: [see PSA/DEIS for items 1-3 and 5of this condition] 4. Other avoidance and minimization measures to be implemented during construction and operation (per USFWS 2011 or more current agency San Joaquin kit fox guidance). a. Project-related vehicles shall observe a 20-mph speed limit on all paved roads in all non-public project areas (10-mph on dirt roads), except on county roads and state and federal highways. Off-road traffic outside of designated project areas shall be prohibited. Nighttime construction and truck deliveries shall be minimized to the extent possible and is prohibited along the carbon dioxide pipeline route; however, when it does occur, speed limits shall be	Applicant proposes the following changes: 4. Other avoidance and minimization measures to be implemented during construction and operation (per USFWS, 2011 or more current agency San Joaquin kit fox guidance). a. Project-related vehicles shall observe a 20-mph speed limit on ~~all paved roads in~~ all non-public paved roads in project areas (10-mph on dirt roads~~, except on county roads and state and federal highways~~. Off-road traffic outside of designated project areas shall be prohibited. Outdoor nighttime construction and truck deliveries shall be minimized to the extent possible and is prohibited along the carbon dioxide pipeline route; however, when it does occur, speed limits shall be reduced to 10 mph on project roadways.

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	reduced to 10 mph on project roadways. b. Any contractor or employee who is responsible for inadvertently killing or injuring a kit fox shall immediately report the incident to the Designated Biologist. If at any time an accidental death, injury, or entrapment of kit fox is discovered, the USFWS Sacramento Fish and Wildlife Office and CDFW Central Regional Office shall be notified in writing within three working days at the following location: Sacramento Fish and Wildlife Office Endangered Species Division 2800 Cottage Way, Suite W2605 Sacramento, California 95825-1846 (916) 414-6620 California Department of Fish and Wildlife Central Region 1234 East Shaw Ave. Fresno CA 93710 (559) 243-4005 c. As described in **BIO-16**, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be revegetated to promote restoration of the area to pre-project conditions. Appropriate methods and plant species used to revegetate such areas shall conform with the Revegetation Plan per **BIO-16**. d. The Designated Biologist shall be the main point of contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped individual; the Designated Biologist and approved Biological Monitors shall be identified during the WEAP training and the Designated Biologist and list of approved Biological Monitors names and contact information shall be provided to USFWS. e. The Designated Biologist(s) shall submit all observations of San Joaquin kit fox to CDFW's California Natural Diversity Database CNDDB within 60 calendar days of the observation and the Designated Biologist(s) shall include copies of the submitted forms with the next Monthly Compliance Report h. Reasonable effort shall be made to avoid damage and destruction of potential dens or burrows occupied by kit fox or other wildlife such as minimizing grading and disturbance to the minimal area required and minor relocation of project facility and pipeline routes.	
BIO-14	**TIPTON KANGAROO RAT AND SAN JOAQUIN ANTELOPE GROUND** **SQUIRREL IMPACT AVOIDANCE MEASURES** **BIO-14** The project owner shall implement the following measures prior to ground disturbing activities to avoid and minimize impacts to burrowing mammals specifically Tipton kangaroo rat and San Joaquin antelope squirrel: Applicant proposes the following changes:	Applicant proposes the following changes: 2. Small Mammal Trapping and Relocation. Within 30 days prior to the estimated start of construction activities, the Designated Biologist and Biological Monitors shall conduct live trapping in the areas identified with small mammal burrows. The trapping protocol, trapping conditions, and relocation activities shall be performed in accordance with the approved Small Mammal Relocation Plan per **BIO-12**. San Joaquin antelope squirrels,

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	[see PSA/DEIS for items 1 and 3-5 of this condition] 2. Small Mammal Trapping and Relocation. Within 30 days prior to the estimated start of construction activities, the Designated Biologist and Biological Monitors shall conduct live trapping in the areas identified with small mammal burrows. The trapping protocol, trapping conditions, and relocation activities shall be performed in accordance with the approved Small Mammal Relocation Plan per **BIO-12**. San Joaquin antelope squirrels, Tipton kangaroo rats and other special-status mammals shall be trapped and relocated to the agency-approved release site only after young of the year are observed above ground and during the main activity period for San Joaquin antelope squirrel (April 1 to September 30) and the main activity period for Tipton kangaroo rat (April 1 to June 30). Following live trapping activities, any potential San Joaquin antelope squirrel and Tipton kangaroo rat burrows present within the portion of the project site or along project linear facilities shall be fully excavated by hand by the Designated Biologist. Any San Joaquin antelope squirrels, Tipton kangaroo rat, or other small mammals encountered in the excavated burrows during their active period shall be allowed to escape to the adjacent natural habitat or if captured shall be relocated to the CPM-approved release site. Any dormant San Joaquin antelope squirrels, Tipton kangaroo rats, or other special-status mammals encountered shall be collected and moved to an artificial burrow installed at the agency-approved release site.	Tipton kangaroo rats and other special-status mammals shall be trapped and relocated to the agency-approved release site only after young of the year are observed above ground and during the main activity period for San Joaquin antelope squirrel (April 1 to September 30) and the main activity period for Tipton kangaroo rat (April 1 to June 30)<u>, unless otherwise approved by the Designated Biologist</u>. Following live trapping activities, any potential San Joaquin antelope squirrel and Tipton kangaroo rat burrows present within the portion of the project site or along project linear facilities shall be fully excavated by hand by the Designated Biologist. Any San Joaquin antelope squirrels, Tipton kangaroo rat, or other small mammals encountered in the excavated burrows during their active period shall be allowed to escape to the adjacent natural habitat or if captured shall be relocated to the CPM-approved release site. Any dormant San Joaquin antelope squirrels, Tipton kangaroo rats, or other special-status mammals encountered shall be collected and moved to an artificial burrow installed at the agency-approved release site.
BIO-15	**GIANT GARTER SNAKE IMPACT AVOIDANCE MEASURES** **BIO-15** The project owner shall implement the following measures during construction to avoid and minimize the potential for impacts to giant garter snake (GGS) that may occur in the project area…..	Giant garter snake is considered extirpated from Kern County by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). No mitigation should be required. Therefore, Applicant requests that this COC be deleted.
BIO-17	**SPECIAL-STATUS PLANT SPECIES IMPACT AVOIDANCE MEASURES** **BIO-17** The project owner shall perform the following measures to avoid impacts to special-status plants during construction and operation of the project: [see PSA/DEIS for items 1 and 2 of this condition] **Verification:** These special-status plant impact avoidance and minimization measures shall be incorporated into the BRMIMP as required under Condition of Certification **BIO-5** and reported in Monthly Compliance Reports. For each construction year and/or construction phase, if Kern mallow or other federally or state-listed plant species is identified during botanical surveys, the project owner shall immediately notify the CPM, USFWS's Sacramento Fish and Wildlife Office, and CDFW's Central Regional Office. At least 60 days prior to the start of any project-related ground disturbing activities or start of construction in a previously undisturbed area along a linear route, the project owner shall submit a letter report summarizing the results of focused botanical surveys, including GPS'ed locations of all	The immediate notification applies to state or federally listed plants—not special-status. Applicant proposes the following changes: **Verification:** These special-status plant impact avoidance and minimization measures shall be incorporated into the BRMIMP as required under Condition of Certification **BIO-5** and reported in Monthly Compliance Reports. For each construction year and/or construction phase, if Kern mallow or other federally or state-listed plant species is identified during botanical surveys, the project owner shall ~~immediately~~ notify the CPM, USFWS's Sacramento Fish and Wildlife Office, and CDFW's Central Regional Office within ~~48 hours~~ <u>60 days of the discovery</u>.

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	identified occupied rare plant areas. The report shall include a GPS mapping of all occupied rare plant areas, ESA locations, and installed protective fencing. The report shall include the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of plant and wildlife species observed and any other information included in CDFW's botanical field survey protocol (CDFG 2009). No less than 30 days prior to the start of any ground-disturbing activities or start of construction in a previously undisturbed area along a linear route, the Designated Biologist shall establish Environmentally Sensitive Areas (ESAs) around all identified rare plant locations that occur outside but within 200 feet of project construction areas. No less than 10 days prior to the start of any project-related ground disturbing activities, the project owner shall submit grading plans and/or construction drawings to the CPM showing the locations of all special-status plant Environmentally Sensitive Areas and fenced areas.	
BIO-19	**MITIGATION FOR STATE WATERS** **BIO-19** The project owner shall finalize and implement the following measures prior to the start of any project-related ground disturbance activities in order to avoid and minimize impacts to state jurisdictional waters: 1. Finalize and implement a Horizontal Directional Drilling (HDD) Plan inclusive of a frac-out plan following the Department of Water Resources (DWR) Encroachment Permit Guidelines and application and construction drawing requirements including, but not limited to details of each crossing location; type and dimensions of pipes, joints and sleeve casings; a description of drilling mud control measures; methods to control pipeline expansion and contraction; location of shutoff valves; and location of buried aqueduct communication control cables (URS 2012b, URS 2013d). 2. Implement Streambed Impact Avoidance and Minimization Measures. The following Best Management Practices (BMPs) shall be implemented during project construction and operation to minimize indirect impacts to ephemeral drainages and irrigation canals from HDD activities in the project area: a. Work Period. For any work proposed in ephemeral drainages along the carbon dioxide pipeline route, the time period for completing the work within the stream zone shall be restricted to periods of low stream flow and dry weather and shall be confined to the period of May 1 to October 1. Construction activities shall be timed with awareness of precipitation forecasts and likely increases in stream flow. Construction activities within the stream zone shall cease until all reasonable erosion control measures, inside and outside of the stream zone, have been implemented prior to all storm events. Revegetation, restoration and erosion control work is not confined to this time period. b. No equipment shall work in the water. **Verification:** These measures shall be incorporated into the BRMIMP as	Construction at canal crossings may require work in water, but would not have a significant impact on aquatic resources or water quality. Additionally, the required measures are only applicable to the two features that are under CDFW jurisdiction, which would be constructed using Horizontal Directional Drilling. Therefore, Applicant proposes the following changes to the introduction and item 2(b): **BIO-19** The project owner shall finalize and implement the following measures prior to the ~~start~~ initiation of any project-related ~~ground disturbance~~ HDD activities ~~in order to avoid and minimize impacts to~~ under any irrigation canals in the project areas, or any work in state jurisdictional waters: 1. Finalize and implement a Horizontal Directional Drilling (HDD) Plan inclusive of a frac-out plan following the Department of Water Resources (DWR) Encroachment Permit Guidelines and application and construction drawing requirements including, but not limited to, details of each crossing location; type and dimensions of pipes, joints, and sleeve casings; a description of drilling mud control measures; methods to control pipeline expansion and contraction; location of shutoff valves; and location of buried aqueduct communication control cables (URS, 2012b; URS, 2013d). 2. Implement Streambed Impact Avoidance and Minimization Measures. The following Best Management Practices (BMPs) shall be implemented during project construction and operation to minimize indirect impacts to ephemeral drainages and irrigation canals from HDD activities in the project area: a. Work Period. For any work proposed in ephemeral drainages along the carbon dioxide pipeline route, the time period for completing the work within the stream zone shall be restricted to periods of low stream flow and dry weather and shall be confined to the period of May 1 to October 1. Construction activities shall be timed with awareness of

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	required under Condition of Certification BIO-5 and reported in each Monthly Compliance Report during project construction. The project owner shall notify the CPM and CDFW, in writing, at least five days prior to the initiation of any project-related HDD activities under any irrigation canals in the project areas or work in jurisdictional state waters.	precipitation forecasts and likely increases in stream flow. Construction activities within the stream zone shall cease until all reasonable erosion control measures, inside and outside of the stream zone, have been implemented prior to all storm events. Revegetation, restoration, and erosion control work is not confined to this time period. b. ~~No equipment shall work in the water.~~
BIO-20	**COMPENSATORY HABITAT MITIGATION FOR UPLAND SPECIES** **BIO-20** To compensate for project impacts to covered species (San Joaquin kit fox, giant kangaroo rat, San Joaquin antelope squirrel, Tipton's kangaroo rat, and Swainson's hawk), non-covered species (blunt-nosed leopard lizard, western burrowing owl) and their habitat as indicated in the above conditions of certification (**BIO-7**, **BIO-8**, **BIO-9**, **BIO-11**, **BIO-13, and BIO-14**), the project owner shall permanently protect and perpetually manage compensatory habitat for these species. To meet this requirement, the project owner shall provide for both the permanent protection and management of CPM-approved Habitat Management (HM) lands that meet species habitat criteria for project impacts to 773 acres of habitat for San Joaquin kit fox; 192 acres of habitat each for giant kangaroo rat, San Joaquin antelope squirrel, Tipton's kangaroo rat, burrowing owl, and blunt-nosed leopard lizard; and 571 acres of impact for Swainson's hawk foraging habitat as described below. If all or a portion of the proposed HM lands meet habitat criteria for more than one covered or noncovered species listed above and meets the approval of the CPM, these habitat mitigation acreages may be nested. [see PSA/DEIS for items 1-4 of this condition]	As summarized in the September 2, 2013 Responses to Preliminary Staff Assessment (PSA)/Draft Environmental Impact Statement (DEIS) Information Requests, Set 2, compensatory mitigation for upland species will consist of two separate proposals: one for the HECA portion of the project and one for the OEHI portion of the project. HECA proposes to purchase credits from the Kern Water Bank Mitigation Bank for temporary impacts to habitats potentially used by the San Joaquin kit fox and Tipton's kangaroo rat. No blunt-nosed leopard lizards were detected in the HECA Project Area during protocol surveys conducted in 2011 and 2012. Therefore, compensatory mitigation for blunt-nosed leopard lizard should not be required. Likewise, giant kangaroo rats do not occur on the HECA portion of the project. In addition to the acquisition of credits, HECA proposes to provide permanent protection within a portion of the Controlled Area to provide Swainson's hawk foraging and nesting habitat. Based on HECA's proposed compensation and the small magnitude of the potential impacts to listed species, HECA proposes to acquire credits for land preservation and management from an approved mitigation bank. Suggested changes are provided below to clarify that this measure would apply to the OEHI portion of the project: **BIO-20** To compensate for project impacts to covered species (San Joaquin kit fox, giant kangaroo rat, San Joaquin antelope squirrel, Tipton's kangaroo rat, and Swainson's hawk), non-covered species (blunt-nosed leopard lizard, western burrowing owl) and their habitat as indicated in the above conditions of certification (BIO-7, BIO-8, BIO-9, BIO-11, BIO-13, and BIO-14), the project owner shall <u>acquire credits from a CPM-approved mitigation bank and establish permanent Swainson's hawk nesting habitat within the project vicinity, and OEHI shall</u> permanently protect and perpetually manage compensatory habitat for these species. OEHI proposes to implement separate compensation for impacts that will be described in a separate proposal to the CEC, CDFW, and USFWS. Regarding specific language in this COC, the summary of impacts provided in this COC is not clear. Suggested changes are provided below to clarify the impacts consistent with the Responses to PSA/DEIS Information Requests, Set 2. These impact totals should also be revised elsewhere in the document. Applicant proposes the following changes to the second paragraph of Condition **BIO-20**:

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		To meet this requirement, the project owner shall ~~provide for both the permanent protection and management of~~ acquire credits from a CPM-approved mitigation bank, and OEHI shall provide for both the permanent protection and management of Habitat Management (HM) lands that meet species habitat criteria for permanent project impacts to ~~773~~ 529 acres of cultivated lands that are potential habitat for San Joaquin kit fox that are also used by foraging Swainson's hawks; temporary and permanent impacts to ~~192~~ 93 acres of habitat ~~each for~~ potentially used by giant kangaroo rat, San Joaquin antelope squirrel, and blunt-nosed leopard lizard on the OEHI portion of the project area south of the California Aqueduct; and temporary impacts to 3.7 acres of ruderal and natural lands that are potentially used by Tipton's kangaroo rat within the HECA Project area north of the California Aqueduct~~, burrowing owl, and a total of 97 acres that are potentially blunt-nosed leopard lizard; and 571 acres of impact for Swainson's hawk foraging habitat as described below~~. If all or a portion of the proposed HM lands meet habitat criteria for more than one covered or noncovered species listed above and meets the approval of the CPM, these habitat mitigation acreages may be nested.
Land Use		
LAND-1	**LAND-1** The project owner shall mitigate at a 1:1 ratio for the conversion of 457.44 acres of prime agricultural land and 0.23 acre of farmland of statewide importance associated with HECA project site and associated off-site improvements (except for the rail road spur). The mitigation shall comply with one of the following strategies: 1. Payment of a mitigation in-lieu fee to Kern County or to the California Department of Conservation, along with a prepared Farmlands Mitigation Agreement. The payment shall be determined by contacting the Kern County Assessor's Office or a real estate appraiser selected by the project owner and approved by the CPM, to determine the current assessed value of the impacted prime agricultural farmland and farmland of statewide importance. 2. Securing the acquisition of an agricultural easement or otherwise creating or causing the creation of an agricultural easement for other farmland in the vicinity. Easements for prime farmland and farmland of statewide importance would be acquired based on the California Department of Conservation's FMMP maps, but in no case shall be less than a 1:1 ratio. The project owner shall designate preserved lands of substantially similar agricultural quality as the impacted lands and within Kern County. The project owner shall engage an established Land Trust to assist with the process of determining the location and suitability of lands to be placed in trust or under easement. **Verification:** Sixty days prior to the start of construction, the project owner shall provide documentation to the CPM demonstrating compliance with one of these options. For option (1), documentation shall consist of proof of mitigation fee payment	Applicant proposes the following additional text to this COC: The project owner shall mitigate at a 1:1 ratio for the conversion of 457.44 acres of prime agricultural land and 0.23 acre of farmland of statewide importance associated with HECA Project site and associated offsite improvements (except for the rail road spur). However, mitigation shall be based on the acreages of prime agricultural land and farmland of statewide importance that would be converted for the project and identified through final project design. **Verification:** ~~Sixty~~ Thirty days prior to the start of construction, the project owner shall provide documentation to the CPM demonstrating compliance with one of these options.

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	and a discussion of any land and/or easements purchased to date by the land trust with the mitigation fee money provided, and the provisions to guarantee that the land managed by the trust will be preserved for farming in perpetuity.	
LAND-2	**LAND-2** If the rail spur is constructed**,** the project owner shall mitigate at a 1:1 ratio for the conversion of 34.77 acres of prime agricultural land and 2.84 acres of farmland of statewide importance associated with the railroad spur. The mitigation shall comply with one of the following strategies: 1. Payment of a mitigation in-lieu fee to Kern County or to the California Department of Conservation, along with a prepared Farmlands Mitigation Agreement. The payment shall be determined by contacting the Kern County Assessor's Office or a real estate appraiser selected by the project owner and approved by the CPM, to determine the current assessed value of the impacted prime agricultural farmland and farmland of statewide importance. 2. Securing the acquisition of an agricultural easement or otherwise creating or causing the creation of an agricultural easement for other farmland in the vicinity. Easements for prime farmland would be acquired based on the California Department of Conservation's FMMP maps, but in no case shall be less than a 1:1 ratio. The project owner shall designate preserved lands of substantially similar agricultural quality as the impacted lands and within Kern County. The project owner shall engage an established Land Trust to assist with the process of determining the location and suitability of lands to be placed in trust or under easement. **Verification:** Sixty days prior to the start of construction, the project owner shall provide documentation to the CPM demonstrating compliance with one of these options. For option (1), documentation shall consist of proof of mitigation fee payment and a discussion of any land and/or easements purchased to date by the land trust with the mitigation fee money provided, and the provisions to guarantee that the land managed by the trust will be preserved for farming in perpetuity.	Applicant proposes the following additional text to this COC: If the rail spur is constructed**,** the project owner shall mitigate at a 1:1 ratio for the conversion of 34.77 acres of prime agricultural land and 2.84 acres of farmland of statewide importance associated with the railroad spur. <u>However, mitigation shall be based on the acreages of prime agricultural land and farmland of statewide importance that would be converted for the railroad spur and identified through final project design.</u> **Verification:** ~~Sixty~~ <u>Thirty</u> days prior to the start of construction, the project owner shall provide documentation to the CPM demonstrating compliance with one of these options.
LAND-6	**LAND-6:** To comply with Section 19.12.030(A)(2) of the Kern County Zoning Ordinance, the project owner shall restrict the chemical manufacturing product to fertilizers for agricultural use only. **Verification:** Within sixty days of commencement of commercial operation, the project owner shall submit in the Monthly Compliance Reports documentation demonstrating compliance with this requirement. The documentation shall include an attestation that all products are to be sold for agricultural use only, a list of products produced, and bills of sale.	Applicant proposes the following changes to this COC: To comply with Section 19.12.030(A)(2) of the Kern County Zoning Ordinance, the project owner shall restrict the ~~chemical manufacturing product to fertilizers for~~ <u>fertilizer manufacturing</u> to <u>fertilizers only for</u> agricultural use~~only~~.
Hazardous Materials		
HAZ-4	**HAZ-4** The two anhydrous ammonia storage tanks shall be double-walled tanks designed to API 620 Appendix R. The storage tanks shall be protected by a secondary containment basin capable of holding 125% of the storage volume and that drains to an underground vault. The final design drawings	Applicant proposes the following changes to this COC: The storage tanks shall be protected by a secondary containment basin capable of holding 125% of the storage volume <u>of the largest tank</u>~~and that drains to an underground vault~~. The final design drawings and specifications

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	and specifications for the ammonia storage tanks and secondary containment basin and vault shall be submitted to the CPM for review and approval. **Verification:** At least sixty (60) days prior to the planned start of production of anhydrous ammonia, the project owner shall submit final design drawings and specifications for the ammonia storage tanks and secondary containment basin/vault to the CPM for review and approval.	for the ammonia storage tanks and secondary containment basin ~~and vault~~ shall be submitted to the CPM for review and approval. **Verification:** At least sixty (60) days prior to the planned start of production of anhydrous ammonia, the project owner shall submit final design drawings and specifications for the ammonia storage tanks and secondary containment ~~basin/vault~~ to the CPM for review and approval.
HAZ-9	**HAZ-9** The project owner shall: a. Conduct process hazard analyses and prepare Process Safety Management Plans (PSM Plans) that includes hazard analyses specifically for the production, use, and storage of anhydrous ammonia, syngas, methanol, molten or liquid sulfur, liquid oxygen/nitrogen, nitric acid, and UAN solution. Such PSM Plans shall contain a hazard analysis using at least two different methodologies. One shall be a Hazard and Operability Study (HAZOP) and the other shall be chosen from the list in 8 CCR 5189 (e) (1) or one that is recognized by engineering organizations or governmental agencies and has the approval of the CPM. b. Retain an independent outside third party group of professionals to provide peer review and approval of the process hazard analyses and the PSM plans before they are submitted to the CPM. The outside third party shall have expertise in engineering and process operations, shall include at least one member who has experience and knowledge specific to the processes being evaluated, and shall also include one member knowledgeable in the specific process hazard analysis methodologies being used. c. Develop and implement a pipeline integrity management plan that is consistent with the U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) Liquid Pipeline Integrity Management in High Consequence Areas for Hazardous Liquid Operators (49 CFR Parts 195.450 and .452) rule, the recommendations of the U.S. Chemical Safety and Hazard Investigation Board in its report on the August 2, 2012 Chevron Richmond Refinery Fire, and the recommendations of the independent professionals retained as per the requirement in section "b" above. The final report containing the results of the hazard analysis for each process, the final PSM Plan, the pipeline integrity management plan, and the review and approval of the outside third party shall be submitted to the Kern County EHSD and Kern County Fire Department for review and to the CPM for approval. **Verification:** At least thirty (30) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final hazard analysis for each process, the final PSM Plan, the final pipeline integrity management plan, and the review, opinions, and approval of the outside third party to the Kern County EHSD and Kern County Fire Department for review and to the CPM for review and approval.	Applicant proposes the following changes: b. Retain ~~an~~ independent ~~outside third party group of~~ professionals to provide peer review and approval of the process hazard analyses and the PSM plans before they are submitted to the CPM. ~~The outside third party~~ <u>The independent professional</u> shall have expertise in engineering and process operations, shall include at least one member who has experience and knowledge specific to the processes being evaluated, and shall also include one member knowledgeable in the specific process hazard analysis methodologies being used. <u>It is our understanding that HECA uses an independent consultant for these reviews and that these reviews are being conducted at every stage of the design project. The independent reviewers are associated with the design team to provide meaningful comments to the process.</u> **Verification:** At least thirty (30) days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final hazard analysis for each process, <u>and</u> the final PSM Plan, the final pipeline integrity management plan~~, and the review, opinions, and approval of the outside third party~~ to the Kern County EHSD and Kern County Fire Department for review and to the CPM for review and approval.

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Noise and Vibration		
NOISE-4	**NOISE RESTRICTIONS** **NOISE-4** The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the noise levels due to operation of the project alone will not exceed: an hourly average of 37 dBA L90, measured at or near monitoring location LT-2 and an hourly average of 36 dBA L90, measured at or near monitoring location ST-5. 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 full operation, the project owner shall conduct a 25-hour community noise survey at monitoring location LT-2, or at a closer location acceptable to the CPM. This survey 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 short term survey of noise at monitoring location ST-5, or at closer locations acceptable to the CPM. The short-term noise measurements at this location shall be conducted during the nighttime hours of 10:00 p.m. to 7:00 a.m. The measurement of project 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 project (e.g., 400 feet from the project boundary) and this measured level then mathematically extrapolated to determine the project noise contribution at the affected residence. The character of the project noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of project noise. B. If the results from the noise survey indicate that the power project noise at the affected receptor sites exceeds the above noise limits, 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 survey shall take place within 30 days of the project first achieving full operation. 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 limits, 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.	Applicant proposes the following changes: **Verification:** The survey shall take place within ~~30~~ 90 days of the project ~~first achieving full~~ commencing commercial operation. Within ~~15~~ 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM.

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NOISE-9	**NOISE-9** The project owner shall measure project-related traffic noise levels at all identified noise-sensitive receptors (or their representative location[s]) within 1,000 feet of the project's transportation routes, from Wasco, CA to the project site, including the Tule Elk State Natural Reserve's visitor center. The measurement of 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 transportation route (e.g., 400 feet from the route) and this measured level then mathematically extrapolated to determine the noise contribution at the affected receptor(s). If the measurements show noncompliance with the criteria outlined in the following graph, the project owner shall implement one or more of the following mitigation measures, in order to reduce the noise levels propagated by project-related construction and operation traffic at the affected receptor(s), to a level at or below the threshold for a "severe impact" as shown in the following graph. [see PSA/DEIS for graph] Category 1 shown in this graph applies to the Tule Elk State Natural Reserve and Category 2 shown in this graph applies to residences and buildings where people normally sleep, including homes, hospitals and hotels. Mitigation Measures: a. The project owner shall request that Kern County reduce posted traffic speeds on the portion of the project's transportation route near the affected receptor. While it is the intent to reduce the noise from project related traffic, the reduced posted speed limit shall be a part of traffic and congestion management and not create any unsafe conditions on the portions of the roadway that have reduced speeds and the newly created speed limit transitions portions of the roadway. The project owner shall make all reasonable efforts to provide the county the information needed, and to assist the county in evaluating and implementing a reduced speed. The reduced speed limit is intended for the duration of the construction and operation period. b. The project owner shall construct a soundwall along the portion of the project's transportation route near the affected receptor. The wall shall be of adequate construction and materials to be safe and effective for the duration of project construction and operation. c. The project owner shall pay for roadway improvements, along the portion of the project's transportation route near the affected receptor. Examples of such improvements include repaving the road, and changing out traffic lights to smooth out the flow of traffic and to eliminate the need for frequent stops and starts. After implementing the mitigation measure(s), the project owner shall perform a noise survey at the affected receptor(s) to ensure compliance with the appropriate noise level requirement as determined from the above graph. **Verification:** If mitigation measure a. is to be implemented, the project owner	Applicant proposes the following changes to this COC: **NOISE-9** The project owner shall measure project-related traffic noise levels at ~~all identified~~ representative noise-sensitive receptors (or their representative location[s]) within ~~1,000~~500 feet of the project's transportation routes, from Wasco, CA to the project site, including the Tule Elk State Natural Reserve's visitor center. Applicant requests the following changes for bullets a-c: a. The project owner shall request that Kern County reduce posted traffic speeds on the portion of the project's transportation route near the affected receptor. While it is the intent to reduce the noise from project-related traffic, the reduced posted speed limit shall be a part of traffic and congestion management and not create any unsafe conditions on the portions of the roadway that have reduced speeds ~~and the newly created speed limit transitions portions of the roadway~~. The project owner shall make all reasonable efforts to provide the county the information needed, and to assist the county in evaluating and implementing a reduced speed. The reduced speed limit is intended for the duration of the construction and operation period. b. The project owner shall implement one or more of the following mitigation measures to reduce impacts to less than the threshold for a "severe impact," as defined by FTA guidelines: • Construct a soundwall along the portion of the project's transportation route near the affected receptor. The wall shall be of adequate construction and materials to be safe and effective for the duration of project construction and operation. • Reschedule trucks along the route adjacent to noise-sensitive receptors. • Reroute trucks from the proposed route in the vicinity of the noise-sensitive receptors. • Purchase noise easements from owners of noise-sensitive properties, at a price that is mutually agreeable between the owners. • Install acoustical insulation upgrades to impacted noise-sensitive structures. c. The project owner shall pay for roadway improvements, along the portion of the project's transportation route near the affected receptor. Examples of such improvements include repaving the road, and changing out traffic lights to smooth out the flow of traffic and to eliminate the need for frequent stops and starts.

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	shall notify the CPM of a formal request to Kern County to reduce posted speed limits, and provide a copy of the request to the CPM. This notification shall describe the expected noise level reduction at the affected receptor location, resulting from the implementation of this mitigation measure. If mitigation measure b. is to be implemented, 15 days prior to construction of the soundwall, the project owner shall submit to the CPM for review and approval a portfolio of the soundwall design specifying the expected reduction in noise level at the affected receptor location, resulting from the implementation of this mitigation measure. If mitigation measure c. is to be implemented, 15 days prior to start of roadway improvements, the project owner shall submit to the CPM a letter specifying the expected reduction in noise level at the affected receptor location, resulting from the implementation of this mitigation measure. Within 15 days after completing the post-mitigation survey, the project owner shall submit a summary report of the survey to the CPM.	
Paleontological Resources		
PAL-1	**PAL-1** The project owner shall provide the CPM with the resume and qualifications of its 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 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 shall have the equivalent of the following qualifications:	Applicant proposes the following changes to this COC: 5. At least ~~three~~ 2 years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities. • AS or AA in geology, paleontology, or biology and ~~four~~ 2 years' experience monitoring in California; or **Verification:** (1) At least ~~60~~ 30 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for onsite work.

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	• 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 onsite 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 onsite 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-4	**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, foremen 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 an initial in-person PRS training program, or may utilize a CPM-approved video or other presentation format, during the project kick off for those mentioned above. Following initial training, a CPM approved video or other approved training presentation/materials, or in 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	Applicant proposes the following changes to this COC: 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…

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	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 hard hats indicating that environmental training has been completed. **Verification:** (1) At least 30 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, to the CPM for review and approval. (2) At least 30 days prior to ground disturbance, the project owner shall submit the training program presentation/materials to the CPM for approval if the project owner is planning to use a presentation format other than an in-person trainer for training. (3) At least 30 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. (4) If the owner requests the use of 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. (5) 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 other approved presentation format) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.	
Public Health		
PUBLIC HEALTH-1	**PUBLIC HEALTH-1** Not less than sixty (60) days prior to the start of commissioning, the project owner shall prepare protocols describing the sampling and analysis of the Toxic Air Contaminants (TACs) listed below (source tests) and for the preparation of a Human Health Risk Assessments (HRA) and shall submit these protocols to the San Joaquin Valley Air Pollution Control District (SJVAPCD) for review and comment and to the CPM for review and approval. The source testing and HRA shall include the quantitative analysis and assessment of the following toxic air contaminants from all sources at the project site: arsenic, cadmium, hexavalent chromium, mercury, carbon disulfide, and hydrogen sulfide. **Verification:** Not later than sixty (60) days prior to the anticipated start of	It would be extremely onerous, and not practical, to measure Toxic Air Contaminants (TAC) emissions from all sources on site. Applicant proposes the following changes to this COC: **PUBLIC HEALTH-1** Not less than sixty (60) days prior to the start of commercial operations ~~commissioning~~, the project owner shall prepare protocols describing the sampling and analysis of the Toxic Air Contaminants (TACs) listed below (source tests) and for the preparation of a Human Health Risk Assessments (HRA) and shall submit these protocols to the San Joaquin Valley Air Pollution Control District (SJVAPCD) for review and comment and to the CPM for review and approval. The HRA protocol and risk factors shall be consistent with those used in the permitting process. The source

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	commissioning, the project owner shall provide a copy of the source test and human health risk assessment protocols to the SJVAPCD for review and comment and to the CPM for review and approval.	testing and HRA protocols shall include the quantitative analysis and assessment of the following toxic air contaminants ~~from all sources at the project site~~: arsenic, cadmium, hexavalent chromium, mercury, carbon disulfide, and hydrogen sulfide. The source testing shall include the following sources: HRSG, feedstock dryer, CO_2 vent, gasification fugitives, shift area fugitives, AGR fugitives, SRU fugitives, and SWS fugitives. **Verification:** Not later than sixty (60) days prior to the anticipated start of commercial operations ~~commissioning~~, the project owner shall provide a copy of the source test and human health risk assessment protocols to the SJVAPCD for review and comment and to the CPM for review and approval.
PUBLIC HEALTH-2	**PUBLIC HEALTH-2** Not later than sixty (60) days after the start of commissioning, the project owner shall conduct source tests as described by the protocol prepared as per the requirement of PH-1. Not later than thirty (30) days after the source test, the project owner shall prepare and submit the results of the source test and the Human Health Risk Assessment (HRA) to the SJVAPCD for review and comment and the CPM for review and approval. Not later than sixty (60) days after the start of commercial operations, the project owner shall conduct another source test and prepare a new HRA and submit those results to the SJVAPCD for review and comment and the CPM for review and approval thirty (30) days after the source test is completed. The project owner shall repeat the source test and HRA after 3 years of commencing commercial operations, and then every 5 years thereafter. **Verification:** Not later than sixty (60) days after the start of commissioning, the project owner shall provide a letter to the CPM that the source test has been completed and not later than thirty (30) days after the source test, copy of the source test results and the HRA results shall be provided to the SJVAPCD for review and comment and to the CPM for review and approval. Not later than seven (7) days after every subsequent source test, the project owner shall provide a letter to the CPM that the source test has been completed and not later than thirty (30) days after the source test, copy of the source test results and the HRA results shall be provided to the SJVAPCD for review and comment and to the CPM for review and approval.	Commissioning activities occur for short time frames, once in the life of the project; because the monitoring of TAC emissions is onerous and in some cases not feasible, it is not beneficial to measure TAC emissions during commissioning. Testing should only be performed during operations. If initial source testing shows emissions less than what was permitted, there is no need for follow-up source testing and Health Risk Assessments (HRAs). Applicant proposes the following changes to this COC: **PUBLIC HEALTH-2** ~~Not later than sixty (60) days after the start of commissioning, the project owner shall conduct source tests as described by the protocol prepared as per the requirement of PH-1. Not later than thirty (30) days after the source test, the project owner shall prepare and submit the results of the source test and the Human Health Risk Assessment (HRA) to the SJVAPCD for review and comment and the CPM for review and approval.~~ Not later than sixty (60) days after the start of commercial operations, the project owner shall conduct ~~a~~another source tests and prepare a ~~new~~ HRA and submit those results to the SJVAPCD for review and comment and the CPM for review and approval thirty (30) days after the source test is completed. If the initial source test shows emissions higher than what was permitted, the project owner shall repeat the source test and HRA after 3 years of commencing commercial operations~~, and then every 5 years thereafter~~. **Verification:** Not later than sixty (60) days after the start of ~~commissioning~~operations, the project owner shall provide a letter to the CPM that the source test has been completed and not later than ~~thirty~~sixty (60~~30~~) days after the source test, copy of the source test results and the HRA results shall be provided to the SJVAPCD for review and comment and to the CPM for review and approval. Not later than seven (7) days after every subsequent source test, the project owner shall provide a letter to the CPM that the source test has been completed and not later than ~~thirty~~sixty (60~~30~~) days after the source test, copy of the source test results and the HRA results shall be provided to the SJVAPCD for review and comment and to the CPM for review and approval.

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PUBLIC HEALTH-3	**PUBLIC HEALTH-3** Not later than sixty (60) days after the submittal to the CPM of the results of any source test and any human health risk assessment prepared using those source test results that shows the risks to be greater than 10 in one million or a Hazard Index of greater than 1.0, the project owner shall submit plans to address this matter by either submitting a protocol for a more refined health risk assessment or plans for the reduction in the emissions of certain TACs to the SJVAPCD for review and comment and to the CPM for review and approval. The project owner shall repeat this after every source test and HRA preparation. **Verification:** Not later than sixty (60) days after any source test and preparation of a HRA, the project owner shall provide a letter to the CPM stating whether or not the HRA results show the risks to be greater than 10 in one million and the Hazard Index to be less than 1.0. If either threshold is exceeded, the project owner shall submit plans to address this matter by either submitting a protocol for a more refined health risk assessment or plans for the reduction in the emissions of certain TACs to the SJVAPCD for review and comment and to the CPM for review and approval.	HECA requests clarification that this COC is only required if an HRA has been conducted and results are greater than 10 in one million cancer risk or a Hazard Index of greater than 1.0. Applicant proposes the following changes: **PUBLIC HEALTH-3** ~~Not later than sixty (60) days after the submittal to the CPM of~~ If the results of any ~~source test and any~~ human health risk assessment prepared using the ~~those~~ source test results ~~that~~ shows the risks to be greater than 10 in one million or a Hazard Index of greater than 1.0, the project owner shall submit plans within sixty (60) days after HRA submittal to the CPM to address this matter by either submitting a protocol for a more refined health risk assessment or plans for the reduction in the emissions of certain TACs to the SJVAPCD for review and comment and to the CPM for review and approval. The project owner shall repeat this after every source test and HRA preparation. **Verification:** Not later than sixty (60) days after any source test and submittal~~preparation~~ of a HRA, the project owner shall provide a letter to the CPM stating whether or not the HRA results show the risks to be greater than 10 in one million and the Hazard Index to be less than 1.0. If either threshold is exceeded, the project owner shall submit plans to address this matter by either submitting a protocol for a more refined health risk assessment or plans for the reduction in the emissions of certain TACs to the SJVAPCD for review and comment and to the CPM for review and approval.
Socioeconomics		
SOCIO-1	**PROPOSED CONDITIONS OF CERTIFICATION** **SOCIO-1** The project owner shall use best efforts to ensure as much sales and use tax revenue resulting from project construction and operation is attributed to Kern County. The project owner shall do the following: 1. Make a good-faith effort to have all transactions that will generate sales and use taxes, including transactions of project owner's contractors, occur in the unincorporated area of the county; 2. Encourage the contractors to establish a business location and tax resale account, and take other reasonable steps, to maximize receipt of sales and use tax revenues for the county; 3. Include in a master contract and any other contract for construction, language ensuring that the county will receive the benefit of any sales and use tax generated by the project to the fullest extent permitted by law; 4. Include the following provision from California Board of Equalization, Regulation 1806(b), in all construction contracts: *The jobsite is regarded as a place of business of a construction contractor or subcontractor and is the place of sale of "fixtures" furnished and installed by contractors or subcontractors. The place of use of "materials" is the jobsite.*	Applicant proposes the following changes to this COC: The project owner shall use best efforts to ensure that, to the extent any ~~as much~~ sales and use tax ~~revenue resulting from~~ is payable based on purchases by the project owner relating to project construction and operation, such tax is attributed to Kern County. To ensure this, t~~T~~he project owner shall adhere to ~~do~~ the following: 1. ~~Make a good-faith effort to have all transactions that will generate sales and use taxes, including transactions of project owner's contractors, occur in the unincorporated area of the county;~~Prior to the issuance of the first grading or building permit for the project, the Project Proponent shall apply for a local street address within the unincorporated portion of Kern County, and on receipt shall register this address with the State Board of Equalization. If permitted by applicable law and the terms of any applicable contract, the project owner shall direct its contractor to use such address for all activities related to the acquisition of construction materials and for all construction-related purchase and billing purposes associated with the project. The project owner shall allow the County to use this sales tax information publicly for reporting purposes. 2. ~~Encourage the contractors to establish a business location and tax resale~~

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	Accordingly, if the jobsite is in a county having a state administrated local tax, the sales tax applies to the sale of the fixtures, and the use tax applies to the use of the materials unless purchased in a county having a state-administrated local tax and not purchased under a resale certificate. 5. In all agreements related to the project, identify the jobsite as the project address, which is located within the unincorporated area of Kern County 6. If the project owner enters into a joint venture or other relationship with a contractor, supplier, or designer, the project owner shall either establish a buying company within Kern County under the terms and conditions of Board of Equalization Regulation 1699(h), to take possession of any goods on which sales and use taxes are applicable but are not defined by Regulation 1806 and shall include in it their requests for bids, procurement contracts, bid documents, and any other agreement whereby California Sales and Use Taxes may be incurred, that the sale occurs at that place of business in the unincorporated area of Kern County; or, alternatively, any entity that may sell goods on which sales taxes are applicable may establish its own place of business within the unincorporated area of Kern County where delivery is ultimately made to the project owner; principle negotiations for all such sales shall be carried on in Kern County; 7. Provide notice to all out-of-state suppliers of goods and equipment, no matter where originating, that Kern County is the jurisdiction where the first functional use of the property is made. **Verification:** At least 30 days prior to the start of any project-related preconstruction site mobilization, the project owner shall provide to the CPM (for review and approval, and to Kern County for review and comment), a signed and notarized statement from someone authorized to sign on behalf of the company, with language acceptable to the company and the CPM specifying the terms related to sales and use taxes	~~account, and take other reasonable steps, to maximize receipt of sales and use tax revenues for the county;~~The project owner shall continuously comply with the following during construction and operation: •~~3.~~ ~~Include in a master contract and any other contract for construction, language ensuring that the county will receive the benefit of any sales and use tax generated by the project to the fullest extent permitted by law;~~Make commercially reasonable efforts to include in a master contract and any other contract for construction, language intended to ensure that the county will receive the benefit of any sales and use tax generated by the project to the fullest extent permitted by law; •~~4.~~ Include the following provision from California Board of Equalization, Regulation 1806(b), in all construction contracts to which project owner is a party: *The jobsite is regarded as a place of business of a construction contractor or subcontractor and is the place of sale of "fixtures" furnished and installed by contractors or subcontractors. The place of use of "materials" is the jobsite. Accordingly, if the jobsite is in a county having a state administrated local tax, the sales tax applies to the sale of the fixtures, and the use tax applies to the use of the materials unless purchased in a county having a state-administrated local tax and not purchased under a resale certificate.* •~~5.~~ In all agreements related to the project, identify the jobsite as the project address, which is located within the unincorporated area of Kern County •~~6.~~ If the project owner enters into a joint venture or other relationship with a contractor, supplier, or designer, the project owner shall either establish a buying company within Kern County under the terms and conditions of Board of Equalization Regulation 1699(h), to take possession of any goods on which sales and use taxes are applicable but are not defined by Regulation 1806 and shall include in it their requests for bids, procurement contracts, bid documents, and any other agreement whereby California Sales and Use Taxes may be incurred, that the sale occurs at that place of business in the unincorporated area of Kern County; or, alternatively, any entity that may sell goods on which sales taxes are applicable may establish its own place of business within the unincorporated area of Kern County where delivery is ultimately made to the project owner; principle negotiations for all such sales shall be carried on in Kern County; •~~7.~~ Provide notice to all out-of-state suppliers of goods and equipment, no matter where originating, that Kern County is the jurisdiction where the first functional use of the property is made.

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SOILS		
SOILS-5	**SOILS-5:** The project owner shall comply with the requirements of the State Water Resources Control Board's NPDES General Permit for Discharges of Storm Water Associated with Industrial Activities (Order No. 97-03-DWQ, NPDES No. CAS000001) and all subsequent revisions and amendments. The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for project operation. The project owner may also submit a Notice of Non- Applicability (NONA) to the State Water Resources Control Board (SWRCB) to apply for an exemption to the general NPDES permit. **Verification:** At least thirty (30) days prior to operation, the project owner shall submit copies to the CPM of the operational SWPPP and shall retain a copy on site. Within 10 days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the SWRCB or Central Valley RWQCB about the general NPDES permit for discharge of storm water associated with this activity. This information shall include a copy of the Notice of Intent sent by the project owner to the SWRCB and the notice of termination. A letter from the SWRCB or 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.	Applicant proposes the following changes to this COC: The project owner shall comply with the requirements of the State Water Resources Control Board's NPDES General Permit for Discharges of Storm Water Associated with Industrial Activities (Order No. 97-03-DWQ, NPDES No. CAS000001) and all subsequent revisions and amendments. ~~The project owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for project operation. The project owner may also~~ Because the Project will have no discharges to Waters of the United States, the project owner shall submit a Notice of Non- Applicability (NONA) to the State Water Resources Control Board (SWRCB) to apply for an exemption to the general NPDES permit. **Verification:** At least thirty (30) days prior to operation, the project owner shall submit copies to the CPM of the NONA~~operational SWPPP and shall retain a copy on site. Within 10 days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the SWRCB or Central Valley RWQCB about the general NPDES permit for discharge of storm water associated with this activity. This information shall include a copy of the Notice of Intent sent by the project owner to the SWRCB and the notice of termination.~~ Alternatively, a letter from the SWRCB or the RWQCB indicating that there is no requirement for a general NPDES permit for discharges of stormwater associated with industrial activity would satisfy this condition.
Traffic and Transportation		
TRANS-2	**TRANS-2** The project owner shall construct intersection improvements needed to support construction and operational traffic so that intersections will operate at an acceptable LOS and/or will operate with reduced risk for accidents, including: • Intersection of SR 43 and Stockdale Highway: signalization of the current 4-way-stop intersection. • Intersection of SR 119 Tupman Road: signalization of the current 2-way-stop intersection. • Intersection of Dairy Road and Stockdale Highway: construct a separate left-turn lane on the westbound approach of Stockdale Highway, and a separate right-turn lane on the northbound approach of Dairy Road. Reconstruct to a three-way-stop intersection with flashing lights. • Intersection of Dairy Road and Adohr Road: reconstruct the intersection to accommodate the turning radius needed by large trucks to make required turns. Reconstruct to a four-way-stop intersection with flashing lights. • Intersection of Morris Road and Stockdale Highway: construct a separate left-turn lane on the westbound approach of Stockdale Highway, and a	Applicant proposes the following changes to this COC, consistent with the July 2013 Traffic Study Technical Memorandum (Revision 2) and ongoing coordination with the Kern County Roads Department and the California Department of Transportation: ~~The project owner shall construct intersection improvements needed to support construction and operational traffic so that intersections will operate at an acceptable LOS and/or will operate with reduced risk for accidents, including:~~ • ~~Intersection of SR 43 and Stockdale Highway: signalization of the current 4-way-stop intersection.~~ • ~~Intersection of SR 119 Tupman Road: signalization of the current 2-way-stop intersection.~~ • ~~Intersection of Dairy Road and Stockdale Highway: construct a separate left-turn lane on the westbound approach of Stockdale Highway, and a separate right-turn lane on the northbound approach of Dairy Road. Reconstruct to a three-way-stop intersection with flashing lights.~~ • ~~Intersection of Dairy Road and Adohr Road: reconstruct the intersection to accommodate the turning radius needed by large trucks to make~~

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	separate right-turn lane on the northbound approach of Morris Road. Reconstruct to a three-way-stop intersection with flashing lights. • Intersection of Station Road and Tupman Road: reconstruct to a three-way-stop intersection with flashing lights. The project owner shall construct intersection improvements needed to support operational traffic, with no rail spur, so that intersections will operate with reduced risk for accidents, including: • Intersection of J Street/H Street (in City of Wasco): reconstruct to a three-way-stop intersection. • Intersection of 9th Street/H Street (in City of Wasco): reconstruct to a three-way-stop intersection. • Intersection of 9th Street/J Street (in City of Wasco): reconstruct to a three-way-stop intersection. **Verification:** Prior to commencement of construction, the project owner shall provide to the CPM photographic evidence and coordination documents with Kern County Roads Department (e.g., approved drawings, encroachment permits) that these intersection improvements have been completed and are fully functional.	~~required turns. Reconstruct to a four-way-stop intersection with flashing lights.~~ • ~~Intersection of Morris Road and Stockdale Highway: construct a separate left-turn lane on the westbound approach of Stockdale Highway, and a separate right-turn lane on the northbound approach of Morris Road. Reconstruct to a three-way-stop intersection with flashing lights.~~ • ~~Intersection of Station Road and Tupman Road: reconstruct to a three-way-stop intersection with flashing lights.~~ Under an encroachment permit issued by the Kern County Roads Department or Caltrans, where applicable, the project owner shall construct the following improvements to Kern County/Caltrans standards: a. State Route 43/Enos Lane and Stockdale Highway – Install Traffic Signal and associated improvements. b. Interstate 5 Southbound Ramps and Stockdale Highway – Install Traffic Signal and associated improvements. c. Dairy Road and Stockdale Highway – Construct a westbound left-turn lane and a northbound right-turn lane. d. Dairy Road and Adohr Road – Reconstruct the intersection to accommodate the turning radius needed by large trucks to facilitate the necessary turning movements. e. Morris Road and Stockdale Highway – Construct a westbound left-turn lane and a northbound right-turn lane. f. Tupman Road and Adohr Road – Reconstruct the intersection to accommodate the turning radius needed by large trucks to facilitate the necessary turning movements. g. Tupman Road and Station Road – Reconstruct the intersection to accommodate the turning radius needed by large trucks to facilitate the necessary turning movements. h. Morris Road and Station Road – Reconstruct the intersection to accommodate the turning radius needed by large trucks to facilitate the necessary turning movements. According to the July 2013 Traffic Study Technical Memorandum, there would be no significant impacts at the intersections in the City of Wasco due to the HECA Project. The addition of multiple stop signs in the City of Wasco at currently stop-controlled intersections will cause unnecessary stops, resulting in additional vehicle start-up loss times, longer idling times, and more emissions and fuel consumption, and contributing to deterioration of LOS. Therefore, Applicant proposes that the following be deleted from the condition: ~~The project owner shall construct intersection improvements needed to support operational traffic, with no rail spur, so that intersections will operate with reduced risk for accidents, including:~~

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		~~• Intersection of J Street/H Street (in City of Wasco): reconstruct to a three-way stop intersection.~~ ~~• Intersection of 9th Street/H Street (in City of Wasco): reconstruct to a three-way stop intersection.~~ • ~~Intersection of 9th Street/J Street (in City of Wasco): reconstruct to a three-way stop intersection.~~
TRANS-3	**TRANS-3** The project owner shall conduct a pavement test of Adohr Road, Dairy Road, Morris Road, and Station Road, J Street, H Street, and/or 9th Street (in City of Wasco) that would be utilized for project-related construction and operation activities. Based on results of the pavement test, prior to the start of construction, the project owner shall redesign and repave Adohr Road, Dairy Road, Morris Road, and Station Road, J Street, H Street, and/or 9th Street as reasonably necessary to accommodate project-related construction activities that meet the minimum Caltrans standard for a roadway that accommodates heavy trucks. If Adohr Road, Dairy Road, Morris Road, and Station Road, J Street, H Street, and/or 9th Street are identified by the project owner or the affected jurisdiction as needing redesign and/or pavement replacement, the project owner shall notify the CPM and the affected jurisdiction(s) to identify the section of the public right-of-way to be redesigned and/or repaved to Caltrans standards. At that time, the project owner shall establish a schedule for completion and approval of the redesigning and/or repaving. **Verification:** Prior to the start of site mobilization, the project owner shall provide a copy of the pavement test to the CPM for review. Sixty (60) days prior to the start of the construction, the project owner shall establish a schedule for completion and approval of the redesigning and/or repaving. Following completion of any public right-of-way redesigning and/or pavement replacement, the project owner shall provide documentation of any public right-of-way redesigning and/or pavement replacement to Kern County for review and comment, and to the CPM for review and approval.	The Kern County Roads Department completed its traffic index analysis, based conservatively on Alternative 2 (Truck Option), and outlined mitigation measures for the HECA Project in their August 16, 2013, memorandum to Kern County Planning Department. Therefore, please revise this COC to be consistent with those recommendations. Applicant proposes the following changes to this COC: ~~The project owner shall conduct a pavement test of Adohr Road, Dairy Road, Morris Road, and Station Road, J Street, H Street, and/or 9th Street (in City of Wasco) that would be utilized for project-related construction and operation activities.~~ ~~Based on results of the pavement test, prior to the start of construction, the project owner shall redesign and repave Adohr Road, Dairy Road, Morris Road, and Station Road, J Street, H Street, and/or 9th Street as reasonably necessary to accommodate project-related construction activities that meet the minimum Caltrans standard for a roadway that accommodates heavy trucks.~~ ~~If Adohr Road, Dairy Road, Morris Road, and Station Road, J Street, H Street, and/or 9th Street are identified by the project owner or the affected jurisdiction as needing redesign and/or pavement replacement, the project owner shall notify the CPM and the affected jurisdiction(s) to identify the section of the public right-of-way to be redesigned and/or repaved to Caltrans standards. At that time, the project owner shall establish a schedule for completion and approval of the redesigning and/or repaving.~~ Prior to operations, the HECA project and/or their representatives shall comply with the following, if Project Operations Alternative 2 (Truck Option) is selected. If Project Operations Alternative 1 (Train Option) is selected, the following recommended improvements will be reevaluated to determine if they are still necessary: Under an encroachment permit issued by the Kern County Roads Department, the project owner shall reconstruct the following roads to Kern County standards as noted, this will include additional pavement at intersecting road returns to accommodate large truck turn movements, as necessary: a. Morris Road – Stockdale Highway to Station Road (Segment – 1.5 miles, 0.64 foot AC over 1.57 feet Aggregate Base). b. Station Road – Morris Road to Tupman Road (Segment – 1 mile, 0.63 foot AC over 1.55 feet Aggregate Base).

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		c. Dairy Road - Stockdale Highway to Adohr Road (Segment – 1 mile, 0.33 foot AC over 0.81 foot Aggregate Base). d. Adohr Road – Tupman Road to Dairy Road. (Segment – 1 mile, 0.35 foot AC over 0.86 foot Aggregate Base). Under an encroachment permit issued by the Kern County Roads Department, the project owner shall provide an asphaltic concrete overlay of the following roads to Kern County standards; this will include additional pavement at intersecting road returns to accommodate large truck turn movements: a. Stockdale Highway – State Route 43/Enos Lane to Interstate 5. b. Stockdale Highway – Interstate 5 to Dairy Road. Prior to and after construction, the HECA project and/or their representatives shall conduct a videotape survey of the following two roadway segments to document pre-construction and post-construction roadway conditions, and repair potential HECA construction related roadway wear and tear in coordination with Kern County Roads Department: a. Stockdale Highway – Dairy Road to Wasco Way (potential roadway repair to be determined by the comparative results of pre-construction and post-construction roadway conditions survey). b. Wasco Way – Stockdale Highway to State Route 58 (potential roadway repair to be determined by the comparative results of pre-construction and post-construction roadway conditions survey). **Verification:** ~~Prior to the start of site mobilization, the project owner shall provide a copy of the pavement test to the CPM for review.~~ Sixty (60) days prior to the start of the ~~construction~~ operations, the project owner shall establish a schedule for completion and approval of the redesigning and/or repaving. Following completion of any public right-of-way redesigning and/or pavement replacement, the project owner shall provide documentation of any public right-of-way redesigning and/or pavement replacement to Kern County for review and comment, and to the CPM for review and approval.
TRANS-4	**TRANS-4** The project owner shall coordinate with Kern County to restore all public roads, easements, and rights-of-way that have been damaged due to project related construction and operation activities. Restoration of significant damage which could cause hazards (such as potholes or deterioration of the pavement edges, damaged signage) must take place within two days after the damage has occurred. The restoration shall be completed to the road's original condition in compliance with the applicable jurisdiction's specifications. If damage to public roads, easements, or rights-of-way is identified by the project owner or the affected jurisdiction, the project owner shall notify the CPM within five days and the affected jurisdiction(s) to identify the section of the public right-of-way to be repaired. At that time, the project owner shall establish a schedule for completion and approval of the repairs. Following completion of any public right-of-way repairs, the project owner shall provide	Applicant proposes a replacement for this Condition of Certification based on discussions with the County. **TRANS-4** The project owner shall enter into a secured agreement with the Kern County Roads Department to contribute to a fair-share reimbursement for the cost of maintaining the improvements required by TRANS-2 and TRANS-3, respectively. The reimbursement will ensure that these improvements, if demonstrably damaged by project-related activities, are promptly repaired and, if necessary, paved, slurry-sealed, or reconstructed. A fair-share maintenance fee mechanism will be established in consultation with the applicant and the Kern County Roads Department to determine HECA's fair-share fee for the roadway upkeep required by TRANS-2 and TRANS-3. **Verification:** Thirty (30) days prior to operations the project owner shall submit a copy of the fair-share agreement to the CPM.

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	the CPM letters signed by the person authorized to accept the repairs in the affected jurisdiction(s) stating their satisfaction with the repairs. **Verification:** Prior to the start of site mobilization, the project owner shall photograph or videotape all of the affected public roads, easements, right-of-way segment(s), and/or intersections. The project owner shall notify affected jurisdictions that the project intends to start construction activities. The project owner shall provide the photograph or videotape to the CPM and the affected jurisdictions (California Department of Transportation (Caltrans) and Kern County). The purpose of this notification is to request that these jurisdictions consider postponement of any planned public right-of-way repair or improvement activities in areas affected by project construction until construction is completed, and to coordinate any concurrent construction related activities that cannot be postponed.	
TRANS-5	**TRANS-5** The project owner shall obtain the necessary permits and/or licenses from the California Highway Patrol, Caltrans District 6, and any relevant local jurisdictions for the transportation of hazardous materials. The project owner shall ensure compliance with all applicable regulations and implementation of the proper procedures. In addition, the owner shall ensure that hazardous materials deliveries occur outside of normal commute hours. **Verification:** In the Monthly Compliance Reports (MCRs), the owner shall provide copies of all permits/licenses obtained for the transportation of hazardous substances. At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the agencies, along with any changes to the proposed development plan, to the CPM for review and approval.	The Project will use licensed hazardous waste transporters, and as such the Project owner will not be responsible for obtaining permits or licenses. Therefore, the Applicant requests that this COC be removed.
TRANS-10	**TRANS-10** The project owner shall include power line marking balls on the 230 kV transmission line interconnect between the HECA site and PG&E Midway Substation along any segments adjacent to agricultural land uses utilizing crop dusting aircraft activities. **Verification:** Prior to start of commercial operation, the project owner shall provide to the CPM pictures of HECA project transmission line demonstrating that installation of marking balls has been completed.	Applicant proposes the following changes to this COC: If warranted, ~~T~~the project owner shall include power line marking balls on the 230 kV transmission line interconnect between the HECA site and PG&E Midway Substation along any segments adjacent to agricultural land uses utilizing crop dusting aircraft activities. The project owner will coordinate with the appropriate agencies to ensure that implementation of the marking balls is necessary or warranted based on the current use and practice of similar transmission line segments connecting to the PG&E Midway Substation.
Visual Resources		
VIS-2	**VIS-2 Landscaping** The project owner shall prepare and implement a landscape plan consistent with the zoning ordinances of Kern County, specifically section 19.86 et al. The project owner and/or the construction manager for landscaping shall review section19.86 et al to ensure compliance with all applicable sections of the ordinance. At a minimum, the landscape plan shall satisfy these criteria: a.) Minimum plant and tree sizes for landscaping are as follows: trees (15	Applicant proposes the following changes to this COC: The project owner shall consult with the County to either prepare and implement a landscape plan consistent with the zoning ordinances of Kern County, specifically section 19.86 et al., or to otherwise address this ordinance in accordance with County needs. If, after consultation with the County, it is determined that landscaping is needed, the project owner ~~and/or the construction manager for landscaping~~ shall review section 19.86 et al. to ensure compliance with all applicable sections of the ordinance. ~~At a~~

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	gallons), shrubs (5 gallons), and small shrubs and groundcovers (1 gallon). b.) A minimum of five percent of the developed area shall be landscaped. A maximum of one-half of the five percent may be turf or an alternative ground cover. c.) Within each planter or landscaped area, an irrigation system and landscaping shall be provided and maintained. d.) Landscaping materials and trees installed in planters or landscaped areas shall be selected based upon their adaptability to the climatic, geologic, and topographical conditions of the site. e.) Landscaping and irrigation for the project shall comply with the County's Water Efficient Landscape requirements. f.) Maintenance procedures shall be specified, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project. g.) A procedure for monitoring and replacing unsuccessful plantings for the life of the project shall be described. h.) After construction, areas where vegetation has been removed will be restored consistent with the surrounding area. **Verification**: Prior to commercial operation and at least 45 days prior to installing the landscaping plan, the project owner shall submit the landscaping plan to the CPM for approval and simultaneously to the Kern County Planning Director (Director) for comment. The project owner shall provide a copy of the Planning Director's comments to the CPM prior to the installation of the landscaping. The project owner shall allow the Director 30 days to provide comment on the submitted surface treatment plan. The project owner shall provide a copy of the Director's comments to the CPM. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM and the Director a plan with the specified revision(s) for review and approval by the CPM before the plan is implemented. Landscape elements and irrigation shall be installed prior to the start of commercial operation of the project. The project owner shall simultaneously notify the CPM and the Director that the landscaping is ready for inspection within seven days after completing installation of the landscaping. The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in the Annual Compliance Report for the project.	~~minimum, the landscape plan shall satisfy these criteria:~~ ~~a.) Minimum plant and tree sizes for landscaping are as follows: trees (15 gallons), shrubs (5 gallons), and small shrubs and groundcovers (1 gallon).~~ ~~b.) A minimum of five percent of the developed area shall be landscaped. A maximum of one-half of the five percent may be turf or an alternative ground cover.~~ ~~c.) Within each planter or landscaped area, an irrigation system and landscaping shall be provided and maintained.~~ ~~d.) Landscaping materials and trees installed in planters or landscaped areas shall be selected based upon their adaptability to the climatic, geologic, and topographical conditions of the site.~~ ~~e.) Landscaping and irrigation for the project shall comply with the County's Water Efficient Landscape requirements.~~ ~~f.) Maintenance procedures shall be specified, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project.~~ ~~g.) A procedure for monitoring and replacing unsuccessful plantings for the life of the project shall be described.~~ ~~h.) After construction, areas where vegetation has been removed will be restored consistent with the surrounding area.~~ **Verification**: Prior to commercial operation, the project owner shall submit a letter to the Kern County Planning Director, with copy to the CPM, verifying how the project will meet the ordinance. If the project owner will use landscaping, then and at least 45 days prior to installing the landscaping plan, the project owner shall submit the landscaping plan to the CPM for approval and simultaneously to the Kern County Planning Director (Director) for comment. The project owner shall provide a copy of the Planning Director's comments to the CPM prior to the installation of the landscaping.

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Waste Management		
WASTE-1	**WASTE-1** The project owner shall prepare and submit to the CPM a Soils Management Plan (SMP) prior to any earthwork. The SMP must be prepared by a California Registered Geologist or a California Registered Civil Engineer with sufficient experience in hazardous waste management. The SMP shall be updated as needed to reflect changes in laws, regulations or site conditions. An SMP summary report, which includes all analytical data and other findings, must be submitted once the earthwork has been completed. Topics covered by the SMP shall include, but not be limited to: • Land use history, including description and locations of known contamination. • The nature and extent of previous investigations and remediation at the site. • The nature and extent of unremediated areas at HECA. • A listing and description of institutional controls, such as the County's excavation ordinance and other local, state, and federal regulations and laws that would apply to HECA. • Names and positions of individuals involved with soils management and their specific role. • An earthwork schedule. • A description of protocols for the investigation and evaluation of historically related chemicals such as DDE and previously unidentified contamination that may be potentially encountered, including any temporary and permanent controls that may be required to reduce exposure to onsite workers, visitors and the public. • Requirements for site-specific Health and Safety Plans (HSPs) to be prepared by all contractors at HECA. The HSP should be prepared by a Certified Industrial Hygienist and would protect onsite workers by including engineering controls, personal protective equipment, monitoring, and security to prevent unauthorized entry and to reduce construction related hazards. The HSP should address the possibility of encountering subsurface hazards including hazardous waste contamination and include procedures to protect workers and the public. • Hazardous waste determination and disposal procedures for known and previously unidentified contamination. • Requirements for site specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc. • Copies of relevant permits or closures from regulatory agencies. **Verification:** At least 45 days prior to any earthwork, the project owner shall submit the SMP to the CPM for review and approval. The SMP shall also be submitted to the Sacramento office of the California Department of Toxic substances Control (DTSC) for review and comment. All earthworks at the	HECA, CEC Staff, and DTSC concur on an approach to future site characterization and—if necessary, based on site characterization—site remediation. This concurrence was reached during a March 2013 conference call, as summarized in DTSC's September 16, 2013, letter to the CEC (Docket TN# 200507). Therefore, Applicant proposes that WASTE-1 be replaced with the following: **WASTE-1** The project owner shall, in consultation with the California Department of Toxic Substances Control (DTSC), perform a Preliminary Endangerment Assessment (PEA) and a Human Health Screening Evaluation (HHSE) to determine if the condition of the site area is appropriate to allow for the proposed future use. In the event that the PEA determines the site is contaminated and requires cleanup, the project owner shall prepare a Removal Action Workplan (RAW) and a Site-Specific Health and Safety Plan (HASP) for DTSC's review and approval. Any cleanup would be conducted under DTSC's regulatory oversight. Furthermore, the project owner shall develop a Soils Management Plan (SMP) to identify potentially contaminated soil that could be encountered during excavation activities at the project site or the linear facilities. The SMP will provide procedures to identify contaminated soil and then to segregate, sample, and analyze soil, if necessary. Employee training will focus on the recognition of subsurface soil contamination, proper handling of waste related materials, and contingency procedures to follow to provide worker safety and protect the public. Handling of contaminated soil will comply with all federal, state, and local requirements. The SMP shall be updated as needed to reflect changes in laws, regulations, or site conditions. **Verification:** The PEA and HHSE will be prepared and submitted to DTSC and the CPM prior to ground-disturbing activities on potentially affected areas. If a RAW and HASP are prepared and approved by DTSC, copies will be provided to the CPM. At least 45 days prior to commencement of ground-disturbing activities, the project owner shall submit the SMP to the CPM for review and approval, and to the California Department of Toxic Substances Control (DTSC) for review and comment.

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	site shall be based on the SMP. A SMP summary shall be submitted to CPM and DTSC within 25 days of completion of any earthwork.	
WASTE-7	**WASTE-7** The project owner shall submit an Operation Waste Management Plan to the Compliance Project manager (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 on-site 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 CUPA and DTSC 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 section incorporating the Gasification Waste Diversion Plan;	Per Applicant's proposed edits to WASTE-8, please delete the fourth bullet, because a Gasification Waste Diversion Plan will not be prepared. **WASTE-7** The project owner shall submit an Operation Waste Management Plan to the Compliance Project manager (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 on-site 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 CUPA and DTSC 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 section incorporating the Gasification Waste Diversion Plan;~~
WASTE-8	**WASTE-8** During project operation the project owner shall periodically conduct waste characterization tests in accordance with Title 22, California Code of Regulations, Division 4.5, section 66262.10 on all coal and petcoke mixes being used for operation. The purpose of the testing is to determine whether the gasification solids would be hazardous or non-hazardous and if there is a change in characteristics when the source of coal or petcoke changes or the percentages used for power generation are changed. This information would also be used to develop a Gasification Waste Diversion Plan (GWDP) that would identify how and where the wastes would be disposed and whether it is feasible to market the solids for other uses. The GWDP would be submitted to Kern County for review and comment and the CPM for review and approval. The GWDP shall include a description of the waste stream, an evaluation of where the residual material is suitable for disposal, identification of facilities that would accept the volume of waste generated, a letter from the facility demonstrating they would accept the waste, and	Applicant proposes that WASTE-8 be modified as follows: **WASTE-8** During project operation, the project owner shall periodically conduct waste characterization tests in accordance with Title 22, California Code of Regulations, Division 4.5, section 66262.10 on ~~all coal and petcoke mixes being used for operation~~gasification solids produced. The purpose of the testing is to determine whether the gasification solids ~~would be~~are hazardous or non-hazardous. ~~and if there is a change in characteristics when the source of coal or petcoke changes or the percentages used for power generation are changed. This information would also be used to~~ develop a ~~Gasification Waste Diversion Plan (GWDP) that would identify how and where the wastes would be disposed and whether it is feasible to market the solids for other uses. The GWDP would be submitted to Kern County for review and comment and the CPM for review and approval. The GWDP shall include a description of the waste stream, an evaluation of where the residual material is suitable for disposal, identification of facilities that would~~

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	evidence the disposal of the waste would be in compliance with Kern County waste disposal requirements. If the project owner proposes to market the solids for use as Supplementary Cementitious Materials or other purposes, then a detailed report indicating what uses can be marketed and letters of intent from prospective purchases should be included. The test results, and method and location of gasification solid disposal shall also be reported in the Annual Compliance Report required in Condition of Certification **WASTE-7.** **Verification:** The project owner shall provide to the CPM 60 days prior to operation for review and approval a report detailing the general and chemical characteristics of the gasification solids after test runs of the plant with the planned fuel mixture have been completed. The project owner shall also provide an initial GWDP developed based on data from preliminary waste characterization tests and a preliminary plan for solids disposal and marketing based on these test results. The project owner shall provide to the CPM 60 days prior to a change in the fuel mixture or fuel source, a plan showing the proposed changes and a discussion of the anticipated changes in character of the waste solids and any new information that may be available indicating there would be no significant change in the waste character for CPM review and approval. The project owner shall provide to the CPM within 30 days a report summarizing the results of waste characterization tests and indicate whether they can continue to be disposed of as indicated in the GWDP or whether the GWDP should be updated to address new information. If the GWDP must be updated a draft GWDP shall be submitted to the CPM for review within 60 days of notification by the CPM.	~~accept the volume of waste generated, a letter from the facility demonstrating they would accept the waste, and evidence the disposal of the waste would be in compliance with Kern County waste disposal requirements. If the project owner proposes to market the solids for use as Supplementary Cementitious Materials or other purposes, then a detailed report indicating what uses can be marketed and letters of intent from prospective purchases should be included.~~ The test results, and method and location of gasification solids reuse or disposal shall ~~also~~ be reported in the Annual Compliance Report required in Condition of Certification **WASTE-7.** **Verification:** The project owner shall provide to the CPM 120~~60~~ days ~~prior to~~after commencement of operation for review and approval a report detailing the general and chemical characteristics of the gasification solids, and descriptions of any contracts with off-takers of the gasification solids. ~~after test runs of the plant with the planned fuel mixture have been completed~~. ~~The project owner shall also provide an initial GWDP developed based on data from preliminary waste characterization tests and a preliminary plan for solids disposal and marketing based on these test results.~~ The project owner shall provide to the CPM 3~~6~~0 days prior to a change in the ~~fuel mixture or~~ fuel source, a plan showing the proposed changes and a discussion of the anticipated changes in character of the ~~waste~~ gasification solids and any new information that may be available indicating there would be no significant change in the waste character for CPM review and approval. Following a change in fuel mixture or fuel source, ~~T~~the project owner shall provide to the CPM within ~~30~~ 120 days a report summarizing the results of waste characterization tests, and indicate whether ~~they can continue to be disposed of~~ any changes are needed for the gasification solids reuse or disposal. ~~as indicated in the GWDP or whether the GWDP should be updated to address new information. If the GWDP must be updated a draft GWDP shall be submitted to the CPM for review within 60 days of notification by the CPM.~~
Water Supply		
WATER-1	**WATER LEVEL MONITORING FOR IMPACTS TO NEIGHBORING WELLS** **WATER –1:** The project owner shall submit a Groundwater Level Monitoring, Mitigation, and Reporting Plan to the CPM for review and approval in advance of construction activities and prior to the operation of onsite groundwater supply wells. The Groundwater Level Monitoring, Mitigation, and Reporting Plan shall provide detailed methodology for monitoring background and site and off-site groundwater levels. The monitoring period shall include pre-operation and project operation. The plan shall establish pre-well-construction groundwater level trends that can be quantitatively compared against predicted trends near the project pumping wells and near potentially impacted receptors. **A. Prior to Project Construction** 1. A well reconnaissance shall be conducted to investigate and document the	Applicant's proposed revisions to WATER-1 are as follows: Addition to A.1. From the well reconnaissance, select key wells within a 1-mile radius and outlier wells within 1 to 3 miles, to monitor for project-specific changes in water levels. Select key wells would be outfitted with pressure transducers and data loggers for continuous water-level monitoring. Other select wells within the 1-mile radius and outlier wells would be monitored manually per the monitoring schedule outlined in WATER-1. Revisions to A.3.: As access allows, measure groundwater levels from the key and outlier ~~off-site and on-site~~ wells within the network ~~and background wells~~ to provide initial groundwater levels for pre-project trend analysis. Assess the significance of an apparent trend and estimate the magnitude of that trend using the Kendall test for trend (Kendall and Kendall, 1980), and the Sen's slope estimator (Sen, 1968), or other methods proposed by the project owner that are acceptable to the CPM.

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	condition of existing water supply wells located within 3 miles of the project site, provided that access is granted by the well owners. The reconnaissance shall include sending notices by registered mail to all property owners within a 3 mile radius of the project area, shall identify the owner of each well, and shall include the location, depth, screened interval, pump depth, static water level, pumping water level, and capacity of each well, The plan should include, as feasible, agreements from the owner of each well approving monitoring activities. 2. Monitor to establish pre-installation conditions. The monitoring plan and network of monitoring wells shall make use of existing and new monitoring wells installed by the project owner. All monitoring wells shall be installed to a depth that matches the depth of the project pumping wells. A plan for design and construction of any new monitoring wells and how they will be effective in evaluating project pumping impacts on domestic well owners shall be submitted to the CPM for review and approval prior to installation and monitoring. The projected area of groundwater drawdown shall be refined on an annual basis during project construction and every year during project operations using the data acquired through implementation of this condition. 3. As access allows, measure groundwater levels from the off-site and on-site wells within the network and background wells to provide initial groundwater levels for pre-project trend analysis. Assess the significance of an apparent trend and estimate the magnitude of that trend using the Kendall test for trend (Kendall and Kendall, 1980) and the Sen's slope estimator (Sen, 1968). **B. During Construction:** 1. Collect water levels from wells within the monitoring network on a monthly basis throughout the construction period and at the end of the construction period. Perform statistical trend analysis for water levels. Assess the significance of an apparent trend and estimate the magnitude of that trend using the Kendall test for trend (Kendall and Kendall, 1980) and the Sen's slope estimator (Sen, 1968). **C. During Operation:** 1. On a monthly basis for the first year of operation and quarterly thereafter for the life of the project, collect water level measurements from wells identified in the groundwater monitoring program to evaluate operational influence from the project. Operational parameters (i.e., pumping rate) of the water supply wells shall be monitored. 2. On an annual basis, perform statistical trend analysis of water level data and compare to predicted water level declines due to project pumping. Analysis of the significance of an apparent trend shall be determined and the magnitude of that trend estimated. Assess the significance of an apparent trend and estimate the magnitude of that trend using the Kendall test for trend (Kendall and Kendall, 1980) and the Sen's slope estimator (Sen, 1968).	Revisions to B.1.: ~~Collect~~ Measure water levels from wells within the monitoring network on a monthly basis throughout the construction period and at the end of the construction period. Key wells that are recording water levels continuously will also be measured to verify accuracy of pressure transducer data. Perform statistical trend analysis for water levels. Assess the significance of an apparent trend and estimate the magnitude of that trend using the Kendall test for trend (Kendall and Kendall, 1980) and the Sen's slope estimator (Sen, 1968), or other methods proposed by the project owner that are acceptable to the CPM. Wells that are recording water levels continuously will also be measured to verify accuracy of pressure transducer data. Perform statistical trend analysis for water levels. Revisions to C.2.: Sen's slope estimator (Sen, 1968), or other methods proposed by the project owner that are acceptable to the CPM. Revisions to C.3.: If water levels have been lowered more than 15 feet below preconstruction levels due to project-specific pumping at the nearest determined neighboring well… Revisions to C.3.b.: If groundwater monitoring data indicate project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10 percent or more of the pre-project average seasonal yield, while accounting for normal well or pump efficiency declines, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation. Should the well yield reductions be recurring, the project owner shall provide payment or reimbursement for periodic maintenance throughout the life of the project. If with treatment the well yield is incapable of meeting ~~110~~100 percent of the well owner's normal maximum daily demand, while accounting for normal well or pump efficiency decline, dry season demand, or annual demand, the well owner should be compensated by reimbursement or well replacement as described under Condition 3.c. Revisions to C.4.: Groundwater elevations shall be measured manually throughout the life of the project at least twice per year and reported to the CPM. Wells outfitted with pressure transducer/data loggers will be maintained to collect water level data continuously, with periodic (quarterly) manual water level checks to ensure that recorded water level measurements remain accurate. Revisions to C.7: …within ~~1~~30 days of being received by the project owner. Verification Bullet 2: At least ~~18~~90 days prior to ~~project~~ construction of the BVWSD well field, the project owner shall submit a plan showing the proposed design and construction of the new monitoring well network and existing wells that will be used to evaluate potential impacts to domestic well owners. The plan will include well design and installation methods. Verification Bullet 3: …quarterly reports shall be provided ~~30~~45 days

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	3. If water levels have been lowered more than 15 feet below preconstruction levels at the nearest determined neighboring well, and monitoring data provided by the project owner show these water level changes are different from background trends and are caused by project pumping, then the project owner shall provide mitigation to the impacted well owner(s). Mitigation shall be provided to the impacted well owners that experience 15 feet or more of project-induced drawdown if the CPM's inspection of the well monitoring data confirms changes to water levels and water level trends relative to measured pre-project water levels, and the well (private owner's well in question) yield or performance has been significantly affected by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline induced by the project, the type of impact, and site specific well construction and water use characteristics. If an impact is determined to be caused by drawdown from more than one source, the level of mitigation provided shall be proportional to the amount of drawdown induced by the project relative to other sources. In order to be eligible, a well owner must provide documentation of the well location and construction, including pump intake depth, and that the well was constructed and usable before project pumping was initiated. The mitigation of impacts shall be determined as follows: a. If project pumping has lowered water levels by 15 feet or more and increased pumping lifts, increased energy costs shall be calculated. Payment or reimbursement for the increased costs shall be provided at the option of the affected well owner on an annual basis. In the absence of specific electrical use data supplied by the well owner, the project owner shall use **WATER- 2** to calculate increased energy costs. b. If groundwater monitoring data indicate project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10 percent or more of the pre-project average seasonal yield, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation. Should the well yield reductions be recurring, the project owner shall provide payment or reimbursement for periodic maintenance throughout the life of the project. If with treatment the well yield is incapable of meeting 110 percent of the well owner's maximum daily demand, dry season demand, or annual demand, the well owner should be compensated by reimbursement or well replacement as described under Condition 3.c. c. If project pumping has lowered water levels to significantly impact well yield so that it can no longer meet its intended purpose, causes the well to go dry, or causes casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Payment or reimbursement shall be at an amount equal to the customary local cost of deepening the existing well or	following the end of the quarter.

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	constructing a new well of comparable design and yield (only deeper). The demand for water, which determines the required well yield, shall be determined on a per well basis using well owner interviews and field verification of property conditions and water requirements compiled as part of the pre-project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of meeting 110% of the well owner's maximum daily demand, dry-season demand, or annual demand – assuming the pre-project well yield documented by the initial well reconnaissance met or exceeded these yield levels. d. The project owner shall notify any owners of the impacted wells within one month of the CPM approval of the compensation analysis for increased energy costs. e. Pump lowering – In the event that groundwater is lowered as a result of project pumping to an extent where pumps are exposed but well screens remain submerged, the pumps shall be lowered to maintain production in the well. The project owner shall reimburse the impacted well owner for the costs associated with lowering pumps. f. Deepening of wells – If the groundwater is lowered enough as a result of project pumping that well screens and/or pump intakes are exposed, and pump lowering is not an option, such affected wells shall be deepened or new wells constructed. The project owner shall reimburse the impacted well owner for all costs associated with deepening existing wells or constructing new wells. 4. Groundwater elevations shall be measured throughout the life of the project at least twice per year, and reported to the CPM. 5. If mitigation includes monetary compensation, the project owner shall provide documentation to the CPM that compensation payments have been made by March 31 of each year of project operation or, if lump-sum payments are made, payment is made by March 31 following the first year of operation only. Within 30 days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition. 6. At the end of every subsequent five-year monitoring period, the collected data shall be evaluated by the CPM who will determine if the sampling frequency should be revised or eliminated. 7. During the life of the project, the project owner shall provide to the CPM all monitoring reports, complaints, studies and other relevant data within 10 days of being received by the project owner. **Verification:** The project owner shall do all of the following: • At least 60 days prior to operation of the site groundwater supply wells, the project owner shall submit to the CPM a comprehensive report presenting all the data and information required in item A. 1. above. The project owner shall submit to the CPM a report showing the results of the well reconnaissance,	

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	conditions of existing wells that will be used to evaluate potential project pumping impacts, and all calculations, assumptions, well logs, and reports made in development of the report data and interpretations. • At least 180 days prior to project construction the project owner shall submit a plan showing the proposed design and construction of the new monitoring well network and existing wells that will be used to evaluate potential impacts to domestic well owners. The plan will include well design and installation methods. • During project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in item B above. The quarterly reports shall be provided 30 days following the end of the quarter. The project owner shall also submit to the CPM all calculations and assumptions made in development of the report data and interpretations. • No later than March 31 of each year of construction or 60 days prior to project operation, the project owner shall provide to the CPM for review and approval, documentation showing that any mitigation to private well owners during project construction was satisfied, based on the requirements of the property owner as determined by the CPM. • During project operation, the project owner shall submit to the CPM applicable quarterly, semi-annual and annual reports presenting all the data and information required in item C above. Quarterly reports shall be submitted to the CPM 30 days following the end of the quarter. The fourth quarter report shall serve as the annual report and shall be provided on January 31 in the following year. The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, calculations, and assumptions used in development of any reports. After the first five year operational and monitoring period, the project owner shall submit a 5-year monitoring report to the CPM that includes all monitoring data collected and a summary of the findings. The CPM will determine if the water level measurements and sampling frequencies should be revised.	
WATER-4	**CONSTRUCTION AND OPERATIONS WATER USE** **WATER-4:** The proposed project's use of groundwater for all construction activities shall not exceed 12 acre-feet per year of construction. The proposed project's use of groundwater for all operations and domestic use activities shall not exceed 7,500 acre-feet per year or the reduced volume that may be identified as a result of the alternatives analysis. Prior to the use of groundwater for construction, the project owner shall install and maintain metering devices as part of the water supply and distribution system to document project water use and to monitor and record in gallons per month the total volume(s) of water supplied to the project from this water source. The metering devices shall be of an adequate design for the intended use and shall be operational for the life of the project. Metering devices shall be	Water for construction uses (e.g., compaction, dust control, and hydrotesting) will be supplied by West Kern Water District (WKWD). Water supplied by WKWD for construction at the Project site will be provided by 1) WKWD's wells east of the Project site via the proposed potable water pipeline, once constructed, and 2) WKWD water transported via truck. Water will be transported to the linear construction sites via truck. However, in the event that existing onsite irrigation wells should be used to provide construction water, the project owner would install a meter to measure the amount of water used. WKWD will also provide potable water for domestic use. Applicant proposes the following changes to this COC:

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	calibrated and maintained in accordance with the manufacturer's recommended procedures and schedule. **Verification**: Beginning six (6) months after the start of construction, the project owner shall prepare a semi-annual summary report of the amount of water used for construction purposes. The summary shall include the monthly water usage in gallons. The report shall also include photographs and documentation showing the type of meter selected and installed condition. The project owner shall prepare an annual summary report, which shall include daily usage, monthly range and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet by source. For years subsequent to the initial year of operation, the annual summary report shall also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" shall correspond to the date established for the annual compliance report submittal. The report shall also include reports on meter calibration and maintenance, and document that the meter is in working order.	**WATER-4:** The proposed project's use of ~~ground~~water for all construction activities shall not exceed 12 acre-feet per year of construction. Water for construction uses (e.g., compaction, dust control, and hydrotesting) will be supplied by West Kern Water District (WKWD). However, in the event that existing onsite irrigation wells should be used to provide construction water, the project owner shall install a meter to measure the amount of groundwater used. During construction, the project owner shall monitor and record in gallons per day the total volume of water supplied to the Project. Prior to the use of WKWD-supplied potable water and the use of onsite irrigation wells, the project owner shall either install and maintain metering devices as part of the water supply and distribution system; or verify that the water suppliers will provide metering, allowing the project owner to document project water use as required. The metering devices shall be operational for the life of the project. In the event that onsite groundwater is used during construction, then prior to the use of groundwater for construction, the project owner shall install and maintain metering devices ~~as part of the water supply and distribution system~~ to document project water use and to monitor and record in gallons per month the total volume(s) of water supplied to the project from this water source. The metering devices shall be of an adequate design for the intended use and shall be operational for the life of the project. Metering devices shall be calibrated and maintained in accordance with the manufacturer's recommended procedures and schedule. The proposed project's use of BVWSD-supplied groundwater for process water needs during ~~all~~ operations ~~and domestic use activities~~ shall not exceed 7,500 acre-feet per year ~~or the reduced volume that may be identified as a result of the alternatives analysis~~. Potable water will be supplied by WKWD, and shall not exceed 2 acre-feet per year). During operations, the project owner shall monitor and record in gallons per day the total volume of groundwater and potable water supplied to the Project. Prior to the use of WKWD-supplied potable water and the use of BVWSD-supplied groundwater, the project owner shall either install and maintain metering devices as part of the water supply and distribution system; or verify that the water suppliers will provide metering, allowing the project owner to document project water use as required. The metering devices shall be operational for the life of the project. **Verification**: Beginning six (6) months after the start of construction, the project owner shall prepare a semi-annual summary report of the amount of water used for construction purposes. The summary shall include the monthly water usage in gallons. If meters are installed, then t~~T~~he report shall also include photographs and documentation showing the type of meter selected and installed condition. After the first year of construction, t~~T~~he project owner shall prepare an annual

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		summary report, which shall include daily usage, monthly range, and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet by source. For years subsequent to the initial year of construction ~~operation~~, the annual summary report shall also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" shall correspond to the date established for the annual compliance report submittal. The report shall also include reports on meter calibration and maintenance, and document that the meter is in working order. After the first year of operations, the project owner shall prepare an annual summary report, which shall include daily usage, monthly range and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet by source. For years subsequent to the initial year of operation, the annual summary report shall also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" shall correspond to the date established for the annual compliance report submittal. The report shall also include reports on meter calibration and maintenance, and document that the meter is in working order.
WATER-6	**GROUND SUBSIDENCE MONITORING AND ACTION PLAN** **WATER–6** The project owner shall construct one monument monitoring station per production well or a minimum of three stations to measure potential inelastic subsidence that may affect structures near the proposed production wells, including the California Aqueduct. The project owner shall: A. Prepare and submit a Subsidence Monitoring Plan (SMP), including all calculations and assumptions. The plan shall include the following elements: 1. Construction diagrams of the proposed monument monitoring stations including size and description, planned depth, measuring points, and protection measures; 2. Map depicting locations (minimum of three) of the planned monument monitoring stations; 3. Monitoring program that includes monitoring frequency and reporting format. B. Prepare annual reports commencing three (3) months following commencement of groundwater production during construction and operations. The reports shall include presentation and interpretation of the data collected including comparison to the requirements and actions taken to comply with the elements developed in Item C. C. Prepare a Mitigation Action Plan that details the following: 1. How subsidence shall not be allowed to damage existing structures either on or off the site or alter the appearance or use of the structure; 2. How to avoid subsidence that may alter natural drainage patterns or permit the formation of lakes;	Applicant's proposed changes to WATER-6 are as follows: The project owner shall construct ~~one~~ three monument monitoring stations at locations agreed upon by the CPM ~~per production well or a minimum of three stations~~ to measure potential inelastic subsidence that may affect structures near the proposed production wells, including the California Aqueduct. Add bullet A.4: 4. Baseline and criteria to evaluate subsidence that could be attributed to project-specific pumping and nonproject-induced subsidence. Revisions to C.2: How to avoid subsidence that may alter natural drainage patterns or permit the formation of ~~lakes~~ depressions that may collect water; Revisions to C.3: If any subsidence attributable to project-specific pumping violates (C.1~~a~~) or (C.2~~b~~), the project owner shall investigate the need to immediately modify ~~or cease~~ project-specific pumping ~~for project~~ operations until the cause is interpreted and subsidence caused by project pumping abates and the structures and/or drainage patterns are stabilized and corrected. The project owner shall submit the Ground Subsidence Monitoring and Action Plan, prepared by an Engineering Geologist or Geotechnical Engineer registered in the State of California, thirty (30) days prior to the start of extraction of groundwater for construction or operation. Revisions to Verification 1: At least thirty (30) days prior to well field ~~project~~ construction,

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	3. If any subsidence violates (a) or (b), the project owner shall investigate the need to immediately modify or cease pumping for project operations until the cause is interpreted and subsidence caused by project pumping abates and the structures and/or drainage patterns are stabilized and corrected. The project owner shall submit the Ground Subsidence Monitoring and Action Plan, prepared by an Engineering Geologist or Geotechnical Engineer registered in the State of California, thirty (30) days prior to the start of extraction of groundwater for construction or operation. **Verification:** The project owner shall do all of the following: 1. At least thirty (30) days prior to project construction, the project owner shall submit to the CPM a comprehensive report presenting all the data and information required in item A above. 2. During project construction and operations, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in item B above. 3. The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations. After the first five (5) years of the monitoring period, the project owner shall submit a 5- year monitoring report to the CPM that includes all monitoring data collected and provides a summary of the findings. The CPM shall determine if the Ground Subsidence Monitoring and Action Plan frequencies should be revised, based on project-related consolidation around the well field, when and if it is detected.	
Worker Safety		
WS-5	**WORKER SAFETY-5** The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in its use and shall be on-site whenever the workers that they supervise are on-site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees shall be trained in its use. The training program shall be submitted to the CPM for review and approval. **Verification:** At least thirty (30) days prior to the start of site mobilization the project owner shall submit to the CPM proof that a portable AED exists on site and a copy of the training and maintenance program for review and approval.	Applicant proposes the following changes to this COC: During construction and commissioning, the following persons shall be trained in its use: ~~, and shall be on-site whenever the workers that they supervise are on-site:~~ the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. **Verification:** At least thirty (30) days prior to the start of construction, ~~site mobilization~~ the project owner shall submit to the CPM proof that a portable AED exists on site, and a copy of the training and maintenance program for review and approval.
WS-7	**WORKER SAFETY-7** The project owner shall develop and implement an enhanced Dust Control Plan that includes the requirements described in **AQ-SC3** and additionally requires: i) site worker use of dust masks (NIOSH N-95 or better) whenever visible	The monitoring requirement seems onerous and not based on science for the protection of workers. Applicant proposes the following changes to this COC: **WORKER SAFETY-7** The project owner shall develop and implement an

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	dust is present; ii) implementation of enhanced dust control methods (increased frequency of watering, use of dust suppression chemicals, etc. consistent with **AQ-SC4**) immediately whenever visible dust comes from or onto the site iii) no downwind PM10 ambient concentrations to increase more than 50 micrograms per cubic meter above upwind concentrations as determined by simultaneous upwind and downwind sampling. High volume particulate matter samplers or other EPA-approved equivalent method(s) for PM10 monitoring shall be used. Samplers shall be: a. Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate EPA-published documents for EPA-approved equivalent methods(s) for PM10 sampling; b. Reasonably placed upwind and downwind of the large operation based on prevailing wind direction and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized; and c. Operated during active operations. **Verification:** At least 60 days prior to the commencement of site mobilization, the enhanced Dust Control Plan shall be provided to the CPM for review and approval.	enhanced Dust Control Plan that includes the requirements described in **AQ-SC3** and additionally requires: i) site worker use of dust masks (NIOSH N-95 or better) whenever visible dust is present; ii) implementation of enhanced dust control methods (increased frequency of watering, use of dust suppression chemicals, etc. consistent with **AQ-SC4**) immediately whenever visible dust comes from or onto the site ~~iii) no downwind PM10 ambient concentrations to increase more than 50 micrograms per cubic meter above upwind concentrations as determined by simultaneous upwind and downwind sampling. High volume particulate matter samplers or other EPA-approved equivalent method(s) for PM10 monitoring shall be used. Samplers shall be:~~ ~~a. Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate EPA-published documents for EPA-approved equivalent methods(s) for PM10 sampling;~~ ~~b. Reasonably placed upwind and downwind of the large operation based on prevailing wind direction and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized; and~~ ~~c. Operated during active operations.~~ **Verification:** At least 30 days prior to the commencement of ~~site mobilization~~construction, the enhanced Dust Control Plan shall be provided to the CPM for review and approval.
WS-8	**WORKER SAFETY-8** The project owner shall on the date of site mobilization, as mitigation for direct and cumulative impacts, make a one-time payment of $2,000,000 to the Kern County Fire Department for capital improvements. Also as mitigation, the project owner shall make an annual payment of $850,000 for operations and maintenance commencing with the date of start of site mobilization and continuing annually thereafter on the anniversary until the final date of power plant decommissioning. The annual amount shall be off-set by the amount of property taxes paid each year by the HECA facility that would go to the Kern County Fire Department. **Verification:** At least sixty (30) days prior to the start of site mobilization the project owner shall provide to the CPM documentation that the one-time capital improvement payment of $2,000,000 and the first annual payment of $850,000 have been paid to the KCFD, and shall also provide a statement in the Annual Compliance Report that subsequent annual payments (less the share of property taxes paid that go to the KCFD) have been made.	Applicant proposes the following changes to this COC: **Verification:** At least sixty (30) days prior to ~~the start of~~ construction, ~~site mobilization~~ the project owner shall provide to the CPM documentation…

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Facility Design		
GEN-1	**GEN-1** The project owner shall design, construct, and inspect the project in accordance with the 2010 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 all other applicable engineering LORS (including the applicable Kern County engineering LORS) in effect at the time initial design plans are submitted to the 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. 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 2010 CBSC is in effect, the 2010 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 for any increment of construction, the project owner shall submit to the 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 for that increment of construction. The project owner shall provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO. Once the certificate of occupancy has been issued for any portion(s) of the completed facility, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on that portion(s) of the completed facility, if it requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.	Applicant proposes the following changes to this COC: In the event that the initial engineering designs are submitted to the CBO when the successor to the 2010 CBSC is in effect, the CBO shall decide which code provisions will be required after consultation with the CPM, the Kern County Building Department, and Applicant. ~~the 2010 CBSC provisions shall be replaced with the applicable successor provisions~~

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GEN-2	**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.	Applicant proposes the following changes to this COC: At least ~~60~~ 30 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.
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	Applicant proposes the following changes to this COC: 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~~. 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 and prepare a final soils grading report; ~~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 2010 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).~~ ~~D~~C. The design engineer shall: 1. Be directly responsible for the design of the proposed foundation structures and equipment supports;

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	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. 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, 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 RE 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; 3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2010 CBC (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 RE. 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. 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	**Verification:** At least 30 days (or 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, and soils (geotechnical) engineer ~~and engineering geologist~~ assigned to the project.

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	2010 CBC (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 RE 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 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 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-8	**GEN-8 Verification:** …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" (Adobe .pdf 6.0 or newer version) files, with restricted (password-protected) printing privileges, on archive quality compact discs.	Applicant proposes the following changes to this COC: Within 180 ~~90~~ days of the completion of construction

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CIVIL-1	**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. A construction storm water pollution prevention plan (SWPPP); 4. Related calculations and specifications, signed and stamped by the responsible civil engineer; and 5. Soils, geotechnical, or foundation investigations reports required by the 2010 CBC. **Verification:** At least 15 days (or 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.	Applicant proposes the following changes to this COC: 2. A~~n~~ temporary (during construction) erosion and sedimentation control plan;
STRUC-2	**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 (NDT) 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 2010 CBC. **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. 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	Applicant proposes the following changes to this COC: **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, as determined by the CBO to be necessary after consultation with the owner:

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	the revised corrective action to obtain CBO's approval.	
Compliance Conditions		
COM-13	**COM-13: INCIDENT REPORTING REQUIREMENTS** Within one (1) hour, the project owner must notify the CPM or COM, by telephone and email, of any incident at the power plant or appurtenant facilities that results or could result in any of the following:… The project owner must maintain all incident report records for the life of the project, including closure. After the submittal of the initial report for any incident, the project owner shall submit to the CPM copies of incident reports within twenty-four (24) hours of a request.	Applicant proposes the following changes to this COC: Within 24 hours ~~one (1) hour~~, the project owner must notify the CPM or COM, by telephone and email, of any incident at the power plant or appurtenant facilities that results or could result in any of the following…
COM-14	**COM-14: NON-OPERATION** If the facility ceases operation temporarily, either planned or unplanned, for longer than one (1) week (or other CPM-approved date), but less than three (3) months (or other CPM-approved date), the project owner must notify the CPM, interested agencies and nearby property owners. Notice of planned non-operation must be at least two (2) weeks prior to the scheduled date. Notice of unplanned non-operation must be provided no later than one (1) week after non-operation begins. For any non-operation, a Repair/Restoration Plan for conducting the activities necessary to restore the facility to availability and reliable and/or improved performance shall be submitted to the CPM within one (1) week after notice of non-operation is given. If nonoperation is due to an unplanned incident, temporary repairs and/or corrective actions may be undertaken before the Repair/Restoration Plan is submitted. The Repair/Restoration Plan shall include: 1. identification of operational and non-operational components of the plant; 2. a detailed description of the repair or restoration activities; 3. a proposed schedule for completing the repair or restoration activities; 4. an assessment of whether or not the proposed activities would require changing, adding, or deleting any conditions of certification or would cause noncompliance with any applicable LORS; and 5. planned activities during non-operation, including any measures to ensure continued compliance with all conditions of certification and LORS;. Written updates to the CPM for non-operational periods, until operation resumes, shall include: 1. progress relative to the schedule; 2. developments that delayed or advanced progress or that may delay or advance future progress; 3. any public, agency or media comments or complaints; and 4. projected date for the resumption of operation.	Applicant proposes the following changes to this COC: If the facility ceases operation temporarily, ~~either planned or~~due to an unplanned event, for longer than ~~one (1) week~~ 30 days (or other CPM-approved date), ~~but less than three (3) months (or other CPM-approved date),~~ the project owner must notify the CPM, interested agencies and nearby property owners. ~~Notice of planned non-operation must be at least two (2) weeks prior to the scheduled date.~~ Notice of unplanned nonoperation must be provided no later than ~~one (1) week~~30 days after non-operation begins. For any non-operation described above, a Repair/Restoration Plan for conducting the activities necessary to restore the facility to availability and reliable and/or improved performance shall be submitted to the CPM within one (1) week after notice of non-operation is given.

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	During non-operation, all applicable conditions of certification and reporting requirements remain in effect. If, after one (1) year from the date of the project owner's last report of productive Repair/Restoration Plan work, the facility does not resume operation or does not provide a plan to resume operation, the Executive Director may assign suspended status to the facility and recommend commencement of permanent closure activities. Within ninety (90) days of the Executive Director's determination, the project owner shall do one of the following: 1. If the facility has a closure plan, the project owner shall update, submit for CPM approval, and initiate the closure activities in the approved plan. 2. If the facility does not have a closure plan, the project owner shall submit one consistent with the requirements in this Compliance Plan, for CPM review and approval.	
COM-15	**COM-15: FACILITY CLOSURE PLANS** To ensure that a facility's closure and long-term maintenance do not pose a threat to public health and safety or to environmental quality, the project owner must coordinate with the Energy Commission to plan and prepare for eventual permanent closure. A. Provisional Closure Plan and Estimate of Permanent Closure Costs To assure satisfactory permanent closure and long-term site maintenance activities for "the whole of a project," the project owner must submit a Provisional Closure Plan and Cost Estimate (Provisional Plan), for CPM review and approval. The project owner must submit the Provisional Plan within sixty (60) days after the start of commercial operation. The Provisional Plan must consider applicable final closure plan requirements, including long-term, post-closure site maintenance costs, and reflect: 1. facility closure costs at a time in the facility's projected life span when the mode and scope of facility operation would make permanent closure the most expensive; 2. the use of an independent third party to carry out the permanent closure; and 3. no use of salvage value to offset closure costs. A closure/decommissioning services consultant should prepare the Provisional Plan, and must provide for a phased closure process, including but not be limited to: 1. comprehensive scope of work and itemized budget; 2. closure plan development costs; 3. dismantling and demolition; 4. recycling and site clean-up; 5. mitigation and monitoring direct, indirect, and cumulative impacts; 6. site remediation and/or restoration;	Applicant proposes the following change to COM-15: **COM-15: FACILITY CLOSURE PLANS** To ensure that a facility's closure and long-term maintenance do not pose a threat to public health and safety or to environmental quality, the project owner must coordinate with the Energy Commission to plan and prepare for eventual permanent closure. A. Provisional Closure Plan and Estimate of Permanent Closure Costs To assure satisfactory permanent closure and long-term site maintenance activities for "the whole of a project," the project owner must submit a Provisional Closure Plan and Cost Estimate (Provisional Plan), for CPM review and approval. The project owner must submit the Provisional Plan within sixty (60) days after the start of commercial operation. The Provisional Plan must consider applicable final closure plan requirements, including long-term, post-closure site maintenance costs, and reflect: 1. facility closure costs at a time in the facility's projected life span when the mode and scope of facility operation would make permanent closure the most expensive; 2. the use of an independent third party to carry out the permanent closure~~;~~ ~~and~~ ~~3. no use of salvage value to offset closure costs~~. A closure/decommissioning services consultant should prepare the Provisional Plan, and must provide for a phased closure process, including but not be limited to: 1. comprehensive scope of work and itemized budget; 2. closure plan development costs; 3. dismantling and demolition; 4. recycling and site clean-up; 5. mitigation and monitoring direct, indirect, and cumulative impacts;

Topic Area/COC	CEC Staff's PSA/DEIS COC	Applicant's Proposed Changes to COC
	7. post-closure monitoring and maintenance, including long-term equipment replacement costs; and 8. contingencies. The project owner must include an updated Provisional Plan in every fifth-year Annual Compliance Report for CPM review and approval. Each Provisional Plan update must reflect the most current regulatory standards, best management practices, and applicable LORS. B. Final Closure Plan Three (3) years prior to initiating a permanent facility closure, the project owner must submit for CPM review and approval, a Final Closure Plan (Final Plan), which includes any long-term, post-closure site maintenance and monitoring. Final Plan contents include, but are not limited to: 1. a statement of specific Final Closure Plan objectives; 2. a statement of qualifications and resumes of the technical experts proposed to conduct the closure activities, with detailed descriptions of previous power plant closure experience; 3. identification of any facility-related installations not part of the Energy Commission license, designation of who is responsible for these, and an explanation of what will be done with them after closure; 4. a comprehensive scope of work and itemized budget for permanent plant closure and long-term site maintenance activities, with a description and explanation of methods to be used, broken down by phases, including, but not limited to: a. dismantling and demolition; b. recycling and site clean-up; c. impact mitigation and monitoring; d. site remediation and/or restoration; e. post-closure maintenance; and f. contingencies. 5. a revised/updated Cost Estimate for all closure activities, by phases, including longterm, post-closure site monitoring and maintenance costs, and replacement of longterm post-closure equipments; 6. a schedule projecting all phases of closure activities for the power plant site and all apurtenances constructed as part of the Energy Commission-licensed project; 7. an electronic submittal package of all relevant plans, drawings, risk assessments, and maintenance schedules and/or reports, including an above- and below-ground infrastructure inventory map and registered engineer's or delegate CBO's assessment of demolishing the facility; additionally, for any facility that permanently ceased operation prior to submitting a Final Closure	6. site remediation and/or restoration; 7. post-closure monitoring and maintenance, including long-term equipment replacement costs; and 8. contingencies. The project owner must include an updated Provisional Plan in every fifth-year Annual Compliance Report for CPM review and approval. Each Provisional Plan update must reflect the most current regulatory standards, best management practices, and applicable LORS. B. Final Closure Plan Three (3) years prior to initiating a permanent facility closure, the project owner must submit for CPM review and approval, a Final Closure Plan (Final Plan), which includes any long-term, post-closure site maintenance and monitoring. Final Plan contents include, but are not limited to: 1 a statement of specific Final Closure Plan objectives; 2. a statement of qualifications and resumes of the technical experts proposed to conduct the closure activities, with detailed descriptions of previous power plant closure experience; 3. identification of any facility-related installations not part of the Energy Commission license, designation of who is responsible for these, and an explanation of what will be done with them after closure; 4. a comprehensive scope of work and itemized budget for permanent plant closure and long-term site maintenance activities, with a description and explanation of methods to be used, broken down by phases, including, but not limited to: a. dismantling and demolition; b. recycling and site clean-up; c. impact mitigation and monitoring; d. site remediation and/or restoration; e. post-closure maintenance; and f. contingencies. 5. a revised/updated Cost Estimate for all closure activities, by phases, including longterm, post-closure site monitoring and maintenance costs, and replacement of longterm post-closure equipments; 6. a schedule projecting all phases of closure activities for the power plant site and all apurtenances constructed as part of the Energy Commission-licensed project; 7. an electronic submittal package of all relevant plans, drawings, risk assessments, and maintenance schedules and/or reports, including an above- and below-ground infrastructure inventory map and registered engineer's or delegate CBO's assessment of demolishing the facility; additionally, for any facility that permanently ceased operation prior to

Topic Area/COC	CEC Staff's PSA/DEIS COC	Applicant's Proposed Changes to COC
	Plan and for which only minimal or no maintenance has been done since, a comprehensive condition report focused on identifying potential hazards; 8. all information additionally required by the facility's conditions of certification applicable to plant closure; 9. an equipment disposition plan, including: a. recycling and disposal methods for equipment and materials; and b. identification and justification for any equipment and materials that will remain onsite after closure; 10. a site disposition plan, including but not limited to: a. proposed rehabilitation, restoration, and/or remediation procedures, as required by the conditions of certification and applicable LORS, b. long-term site maintenance activities, and c. anticipated future land-use options after closure; 11. identification and assessment of all potential direct, indirect, and cumulative impacts and proposal of mitigation measures to reduce significant adverse impacts to a lessthan- significant level; potential impacts to be considered shall include, but not be limited to: a. traffic b. noise and vibration c. soil erosion d. air quality degradation e. solid waste f. hazardous materials g. waste water discharges h. contaminated soil 12. identification of all current conditions of certification, LORS, federal, state, regional and local planning efforts applicable to the facility, and proposed strategies for achieving and maintaining compliance during closure; 13. updated mailing list or listserv of all responsible agencies, potentially interested parties, and property owners within one (1) mile of the facility; 14. identification of alternatives to plant closure and assessment of the feasibility and environmental impacts of these; and 15. description of and schedule for security measures and safe shutdown of all non-critical equipment and removal of hazardous materials and waste (see conditions of certification for Hazardous Materials Management and Waste Management). If a CPM-approved Final Closure Plan is not implemented within one (1) year of its approval date, it must be updated and re-submitted to the CPM for supplementary review and approval. If a project owner initiates but then suspends closure activities, and the suspension continues for longer than one	submitting a Final Closure Plan and for which only minimal or no maintenance has been done since, a comprehensive condition report focused on identifying potential hazards; 8. all information additionally required by the facility's conditions of certification applicable to plant closure; 9. an equipment disposition plan, including: a. recycling and disposal methods for equipment and materials; and b. identification and justification for any equipment and materials that will remain onsite after closure; 10. a site disposition plan, including but not limited to: a. proposed rehabilitation, restoration, and/or remediation procedures, as required by the conditions of certification and applicable LORS, b. long-term site maintenance activities, and c. anticipated future land-use options after closure; 11. identification and assessment of all potential direct, indirect, and cumulative impacts and proposal of mitigation measures to reduce significant adverse impacts to a lessthan- significant level; potential impacts to be considered shall include, but not be limited to: a. traffic b. noise and vibration c. soil erosion d. air quality degradation e. solid waste f. hazardous materials g. waste water discharges h. contaminated soil 12. identification of all current conditions of certification, LORS, federal, state, regional and local planning efforts applicable to the facility, and proposed strategies for achieving and maintaining compliance during closure; 13. updated mailing list or listserv of all responsible agencies, potentially interested parties, and property owners within one (1) mile of the facility; 14. identification of alternatives to plant closure and assessment of the feasibility and environmental impacts of these; and 15. description of and schedule for security measures and safe shutdown of all non-critical equipment and removal of hazardous materials and waste (see conditions of certification for Hazardous Materials Management and Waste Management). If a CPM-approved Final Closure Plan is not implemented within one (1) year

Topic Area/COC	CEC Staff's PSA/DEIS COC	Applicant's Proposed Changes to COC
	(1) year, or subsequently abandons the facility, the Energy Commission may access the required financial assurance funds to complete the closure. The project owner remains liable for all costs of contingency planning and closure.	of its approval date, it must be updated and re-submitted to the CPM for supplementary review and approval. If a project owner initiates but then suspends closure activities, and the suspension continues for longer than one (1) year, or subsequently abandons the facility, the Energy Commission may access the required financial assurance funds to complete the closure. The project owner remains liable for all costs of contingency planning and closure.

Applicant's proposed changes to the Project Description as reflected in the PSA/DEIS

PROJECT DESCRIPTION

John Heiser
HECA Edits

INTRODUCTION

In September of 2011, SCS Energy California LLC (SCS Energy) acquired the Hydrogen Energy California (HECA) project from BP Alternative Energy North America Inc., and Rio Tinto Hydrogen Energy LLC. Because SCS Energy intended to make several modifications to the project – including the addition of fertilizer production capabilities – the National Environmental Policy Act (NEPA) and the California Energy Commission's regulatory processes were suspended until HECA submitted the Amended Application for Certification to the Energy Commission on May 2, 2012.

HECA, if approved, would be partially funded by the U. S. Department of Energy (DOE) as a demonstration project under the Clean Coal Power Initiative Round 3 (CCPI-3). The CCPI-3 solicitation sought projects that would demonstrate advanced coal-based electricity generating technologies which capture and sequester (or put to beneficial use) carbon dioxide emissions. The HECA project was selected in the first phase of Round 3. The agreement with DOE includes possible funding support through the design, construction and the first two years of commercial operations.

SCS Energy California, LLC, the new owner of Hydrogen Energy California, LLC, submitted an Amended Application for Certification (AFC) to the Energy Commission on May 2, 2012. Public Resources Code section 25540.6 exempts certain types of projects from filing a notice of intention prior to filing an application for certification. This project qualifies for such an exemption as a "thermal powerplant designed to develop or demonstrate technologies which have not previously been built or operated on a commercial scale" pursuant to subsection 25540.6(a)(5). Pursuant to this exemption, the project may not exceed 300 megawatts unless the Energy Commission has authorized a greater capacity pursuant to regulation. As of the date of publication of this document, the Energy Commission has not authorized a greater capacity. HECA LLC is proposing to construct and operate a polygeneration project. HECA would use Western sub-bituminous coal, most likely from New Mexico mines, and petroleum coke (petcoke) from southern California refineries as the basis for producing the ~~synthetic~~ synthesis gas (syngas) fuel source for the project. HECA would comprise an advanced integrated gasification combined cycle (IGCC) power plant. The gasification process would rely on a Mitsubishi Heavy Industries oxygen-blown dry feed gasifier, plus additional downstream gas processing units, that are designed to convert petroleum coke and coal into a carbon dioxide and hydrogen-rich synthesis gas (syngas) which would fuel a combustion turbine unit. Through a complex process, mercury, sulfur, hydrogen sulfide and carbon dioxide would be removed from the syngas leaving a hydrogen rich fuel for the combustion turbine. By directing steam produced in this process and the additional steam produced in the ~~to a~~ combined cycle heat recovery steam generator (HRSG) to a steam turbine that is connected, along with the combustion turbine engine, to the shaft powering the generator, HECA would produce up to 300 megawatts of net electrical output to the grid. The proposed manufacturing complex would produce approximately

one-million tons per year of ~~ammonia and~~ nitrogen-based fertilizer products. The plant would produce low carbon ammonia-based agricultural fertilizers by diverting hydrogen and carbon dioxide produced from the gasification process, and nitrogen from the air separation unit, to the manufacture of urea pastilles and urea-ammonium nitrate solution; both products are agricultural fertilizers. Intermediate ~~products~~ materials produced to make fertilizer products, but not to be sold as products, include anhydrous ammonia and nitric acid.

Additionally, approximately 90 percent of the carbon dioxide ($C0_2$) produced by HECA, estimated to be about ~~3~~ 3.5 million tons per year, would be captured. Approximately 2.~~6~~3~~6~~ million tons would be compressed and sent through a three-mile long, 12" diameter pipeline to the Occidental Elk Hills Oil Field $C0_2$ enhanced oil recovery (EOR) Processing Facility where it will be conditioned, and distributed to satellite locations and then to injection wells as part of an on-going enhanced oil recovery project. The CO_2 would be a key component of a water-alternating-gas process that displaces and moves oil and gas from the pore-spaces to the production wells and would result in the eventual sequestration (permanent geologic encapsulation) of the injected CO_2 within the reservoir's vacated pore-spaces. Approximately ~~0.4~~0.5~~4~~ million tons of CO_2 per year would be used in fertilizer production and not considered to be sequestered. HECA would be expected to have a 25 year life span, and Occidental Elk Hills, Incorporated (OEHI) EOR project would use the CO_2 from HECA for the life of the HECA project (see the **Sequestration and Greenhouse Gas** section of this document).

HECA has proposed two coal transportation alternatives: Alternative 1 is a proposed 5-mile private railroad spur that would connect with the existing San Joaquin Valley Railroad at Buttonwillow to HECA. Alternative 1 would allow for the delivery of coal and the possible transportation of the proposed manufactured products to commercial markets. Alternative 2 would involve transportation of the coal to HECA from the coal transloading facilities in Wasco using trucks, an approximately 27-mile route. Manufactured product would also require truck transport from the project site under Alternative 2. (**Project Description Figures 6, 7,** and **9**).

During construction, it is anticipated that there will be a maximum of approximately ~~traffic would range as high as~~ 1,230 construction worker vehicles ~~round trips~~ per day~~, with an additional~~ 50 truck deliveries per day, and 160~~60~~ soil deliveries to the site per day. During operations (post-construction) expected traffic levels were estimated for each of the two alternatives. Alternative 1- Rail Option, would likely have 154 operations and maintenance worker vehicles ~~round trips~~ per day ~~for operations staff~~, 104~~213~~ trucks ~~round trips~~ per day for transport of process materials (fertilizers and gasification solids), 7 trucks per day for maintenance and miscellaneous activities, and 53~~175~~ trucks per day for feed stock deliveries (predominantly petcoke and fluxant). Alternative 2- Truck Option would have 154 operations and maintenance worker vehicles ~~round trips~~ per day, 292~~399~~ trucks ~~round trips~~ per day for transport of process materials, 7 trucks per day for maintenance and miscellaneous activities, and 237~~910~~ trucks ~~round trips~~ per day ~~delivering~~ for delivery of feed stock (coal, petcoke and fluxant). The **Traffic and Transportation** and the **Land Use** sections of this document discuss these elements in more detail. Staff also analyzes the associated impacts from each transportation alternative further in the **Air Quality**, **Public Health**, and **Noise** sections of this document.

HECA proposes to use Mitsubishi Heavy Industries equipment to gasify petroleum coke (petcoke) from southern California refineries, bituminous coal from mines in New Mexico and limestone fluxant from California sources, producing a hydrogen-rich synthesis gas (syngas) to be used in a ~~combustion turbine and a steam turbine~~ combined cycle process ~~to drive a single-shaft generator~~ producing between 405 and 431 megawatts (MW) of gross base-load electricity, with up to 300 MW net electrical output, and would connect to the Pacific Gas and Electric (PG&E) 230kV transmission network at a new switchyard to be constructed approximately 2 miles east of the project site. The proposed transmission line would be approximately 2.8 miles in length from the on-site switchyard at the northwest portion of the project, with 0.8 miles of the line traversing eastward across the HECA site and buffer area.

HECA would gasify an approximately 75 percent coal and 25 percent petcoke fuel blend to produce synthesis gas (syngas) that would be processed and purified to produce a hydrogen-rich gas; the ~~syngas~~hydrogen-rich gas~~syngas~~ would be used to fuel the combustion turbine and the burners that provide supplemental fire to the heat recovery steam generator (HRSG). The hydrogen-rich gas is also used along with a portion of the recovered CO_2 and nitrogen from the ASU to produce nitrogen-based fertilizer products. The HRSG produces steam from the combustion turbine exhaust heat.

The Mitsubishi Heavy Industries (MHI) gasification system selected for this project produces a ~~synthetic~~synthesis gas that is further processed and cleaned to produce both CO_2 and a hydrogen-rich fuel used for power generation and ammonia synthesis to be used at the manufacturing complex, where the syngas would also be used in the manufacturing of low-carbon ammonia-based agricultural fertilizer products in the integrated manufacturing complex. **Project Description Figure 3** displays the principal features of the gasification, power generation, and manufacturing facilities proposed for HECA.

HECA would capture up to 90 percent of the CO_2 produced from these processes, then compress and send this via an approximately 3-mile pipeline to a facility to be developed by Occidental Petroleum Elk Hills, Inc. (OEHI) for use in a planned enhanced oil recovery (EOR) project. HECA would capture approximately ~~3~~ 3.5 million tons sequestering about ~~2.63~~6 million tons of CO_2 annually for enhanced~~aiding in increasing~~ oil production and eventual geologic sequestration in the Stevens Reservoir of the Occidental Elk Hills Oil Field (EHOF). The EHOF is owned and operated by Occidental Elk Hills, Inc. (OEHI) (**Project Description Figures 4 and 10**). The OEHI EOR project would apply separately for the required permits through the Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), and has provided initial information and begun discussions with that agency. Additional permits may also be required for certain project elements, such as roads, through Kern County requirements.

The CO_2 EOR Processing Facility would be located approximately 3-miles south of the HECA property, inside the EHOF (**Project Description Figure 10**). The Processing Facility and 13 satellites would be expected to occupy approximately 136 acres within the EHOF ~~and located approximately 3-miles south of the HECA property~~. The facility would use approximately 720 producing and injection wells, 570 existing wells and 150 new well installations. Approximately 652 miles of new pipeline would also be installed

in the EHOF during the 20-year proposed phase of the EOR project. Should HECA be approved, and begin operations, OEHI could extend the planned use of CO_2 in the EHOF's EOR process (HECA 2012a, Vol. I, Appendix A).

PROPOSED CONSTRUCTION TIMELINES

Project construction milestones have been affected by delays in the application process. The projected milestones below are based upon an approximately 7-month delay from those projected by the applicant in the May 2, 2012, AFC (Vol. I, page 2-11). However, the final schedule will be dependent upon the permitting process.

Table 1
Proposed HECA Construction and Commercial Operation Timeline

Commence preconstruction, construction activities	January 2014
Commence truck deliveries and ground disturbance	March 2014
Completion of construction	September 2017
Commence pre-commissioning activities	September 2016
Commencement of commercial operation	April 2018

PROJECT LOCATION AND JURISDICTION

As proposed, HECA would be located on a total of approximately 1,106 acres of privately-owned land in western unincorporated Kern County, California. The IGCC and the manufacturing complex and storage facilities, as well as the proposed coal, petcoke and fluxant storage facilities would be on 453-acres, with 653 acres adjacent to the project site allowing for a large buffer area with controlled access (**Project Description Figures 2, 3, 5** and **8**).

HECA would be located 20 miles west of the city of Bakersfield. It is 1.5 miles northwest of the unincorporated community of Tupman, and approximately 4 miles southeast of the unincorporated community of Buttonwillow. The project site address is 7361 Adohr Road, Buttonwillow CA 93106 (**Project Description Figure 1**).

The California State Water Project aqueduct lies to the south, and the Elk Hills Oil Field boundary is located approximately 1 mile south of the project site (**Project Description Figure 4**).

The western border of the Tule Elk State Natural Reserve (California state park) is located approximately 1,700 feet to the east of the project site. The nearest single-family dwellings are currently located approximately 370 feet to the northwest, 1,400 feet to the east, 3,300 feet to the southeast, and 4,000 feet to the north of the proposed project site (**Project Description Figure 5**). HECA has an option to purchase the dwelling in the northwest area of the project site (noted as 370 feet to the northeast).

The HECA site is located within Section 10 of Township 30 South, Range 24 East in Kern County. The project site Assessor's Parcel Numbers (APNs) are part of 159-040-

02, part of 159-040-16, and part of 159-040-18.The proposed controlled area APNs consist of all of 159-040-04, all of 159-040-11, all of 159-040-17, all of 159-190-09, remnant part of 159-040-02, remnant part of 159-040-16 and remnant part of 159-040-18.

Kern County would require merging the parcels for the proposed project as part of the county's approval process, the Energy Commission would require compliance with this requirement (see the **Land Use** Section of this document).

Current and Adjacent Land Use

The proposed facility site is currently in agricultural production including cultivation of cotton, alfalfa and onions and an approximately 72-acre tract is currently subject to a Williamson Act agricultural land preservation contract; the applicant is pursuing a contract cancellation with Kern County and a hearing scheduled for June 13, 2013, regarding this parcel. The buffer area is proposed to remain in agricultural use. Land use in the vicinity of the project site is primarily agricultural with almond, pistachio, grapes, tomatoes, corn, onions and alfalfa crops.

The West Side Canal ~~(~~and the Outlet Canal, ~~(~~the Kern River Flood Control Channel (KRFCC), and the California Aqueduct (State Water Project) are approximately 500, 700, and 1,900 feet south of the project site, respectively (See **Project Description Figures 5 and 10**).

State and Federal Jurisdiction

The Energy Commission has exclusive permitting jurisdiction for the siting of thermal power plants of 50 MW or more and related facilities in California. The Energy Commission also has responsibility for ensuring compliance with the California Environmental Quality Act (CEQA) through the administration of its certified regulatory program and is the lead agency under CEQA. Additionally, under 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 (California Code of Regulations, title 14, §15378). As a result, the Energy Commission analysis includes an environmental analysis of the proposed Occidental Elk Hills, Incorporated (OEHI) enhanced oil recovery (EOR) project that would be located within the Elk Hills Oil Field (EHOF). This EOR project and the related infrastructure would be the responsibility of the Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) as Lead Agency. This PSA/DEIS analyzes the proposed EOR as a part of the project, or the whole of the action, pursuant to CEQA.

This PSA/DEIS provides initial analysis of these elements and facilities as part of its CEQA responsibility. The analysis regarding the EOR process and the permitting expectations is discussed in **Land Use, Air Quality, Sequestration and Greenhouse Gas, Socioeconomics, Biological Resources**, and other technical sections of this document.

This Preliminary Staff Assessment/Draft Environmental Impact Statement (PSA/DEIS) is being prepared as part of the coordinated Energy Commission and Department of

Energy joint review process. Comments on this document, along with new information gathered by staff, will be included in a Final Staff Assessment/Final Environmental Impact Statement (FSA/FEIS).

Agency Coordination

Energy Commission staff, in cooperation with the Department of Energy, are coordinating with a wide range of federal and state agencies for the analysis of HECA. A brief summary of these efforts follows:

The Department of Energy (DOE) will issue joint documents with Energy Commission staff through the Final Staff Assessment and Final Environmental Impact Statement (FSA/FEIS) prior to issuing the federally-required Record of Decision (ROD) for the proposed HECA. The Amended Notice of Intent (ANOI) was published by DOE in the *Federal Register* on June 19, 2012 (77 FR 36519).

The U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (CDFW) are working with staff and with the DOE, and HECA, LLC regarding the biological analysis as well as the development of the required Biological Opinion, which will cover HECA and also the OEHI enhanced oil recovery project (EOR) that is planned within the OEHI's Elk Hills Oil Field (EHOF). The EOR would utilize approximately 3 million tons per year of the CO_2 produced by HECA, expecting that the project will result in sequestration of the CO_2 in permanently in the pore space vacated by the produced oil and gas. (See the **Biological Resources** and the **Sequestration and Greenhouse Gas** sections of this PSA/DEIS).

The DOE also has a responsibility under Section 106 of the National Historic Preservation Act to consult with the Native American tribes affected by HECA. This required effort parallels the requirement of the Energy Commission under the terms of the California Environmental Quality Act (CEQA). Efforts include coordination with the California State Historic Preservation Office (SHPO) to insure identification of the appropriate tribal entities, interested Native American individuals, and the possible location of important cultural resources in the vicinity of the proposed project. For detailed information on the process and the status of these efforts please see the **Cultural Resources** section of this document.

Coordination with Kern County will continue through this process, and through construction and operations should the project be approved. Through the efforts of the Kern County Planning and Community Development Department (PCDD) the Energy Commission staff and the applicant have independently sought clarification of the laws, ordinances, regulations and standards (LORS) which would govern the permitting of HECA but for the exclusive jurisdiction of the Energy Commission for powerplant applications proposing capacity of 50 MW or greater. The PCDD continues to provide input to staff, attending Energy Commission workshops and working with the Kern County Board of Supervisors to provide information on the County's LORS and recommended mitigation necessary to insure protection of the health and safety of the County residents. This input to date is reflected in the **Socioeconomics, Land Use, Traffic and Transportation**, and the **Worker Safety and Fire Protection** sections of this document.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) issued a Preliminary Determination of Compliance (PDOC) on February 7, 2013, held a public workshop in Bakersfield on April 2, 2013, and scheduled a second PDOC workshop held in Buttonwillow on May 17, 2013, with a comment period closing on May 30, 2013. The Final Determination of Compliance was issued on July 8, 2013. Work with the SJVAPCD continues throughout the process, and this also requires coordination with the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA). For a complete description of these efforts please see the **Air Quality** and the **Sequestration and Greenhouse Gas** sections of this document.

The Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) is coordinating with OEHI to review OEHI's Class II permit applications for the first phase of its CO_2 EOR proposal. DOGGR is still in the process of obtaining sufficient information regarding the proposal in order to deem the application complete and begin substantive evaluation. It is not likely that DOGGR will have made substantial permitting progress prior to Energy Commission and DOE action on a final Decision and Record of Decision. (See the **Sequestration and Greenhouse Gas** section of this PSA/DEIS).

California State Department of Parks and Recreation, Tehachapi District, Tule Elk State Natural Reserve is monitoring the project, and has provided staff with initial comments and planning its participation as the process moves forward. (See the **Biological Resources** section of this document).

The California State Water Board and the Regional Water Quality Control Board continue to provide information to staff, both agencies participated in the water supply workshop that was held in Sacramento on February 20, 2013.

General Agency Coordination: Staff continues to work with U.S. Environmental Protection Agency (U.S.EPA) staff to host a monthly agency roundtable discussion regarding HECA. The goal is to insure that agencies are kept apprised of the schedule for the project and that agencies may discuss regulatory and process concerns within the agency context. State and federal agencies have continued to make this forum a valuable source for information.

PROJECT DESCRIPTION, DESIGN AND OPERATION

This section describes HECA's conceptual design and various aspects of its proposed operation; **(Project Description Figure 3** shows the Site Plan and on-site project components**).**

FEEDSTOCK STORAGE, DRYING AND THE GASIFICATION UNIT

The petroleum coke and coal feedstock would be stored in separate piles inside a large storage building where it would be blended at a set rate and sent via an enclosed transfer conveyor system to the gasification system. The MHI oxygen-blown gasifier is a two stage design resulting in the production of syngas composed ~~of~~ mainly of ~~(~~hydrogen and carbon monoxide. A complex syngas treatment system further refines the product prior to its use as fuel for the turbine and feedstock for the chemical plant. Steam

produced as the syngas is cooled in this process is directed to the ~~heat recovery steam generator (HRSG)~~ combined cycle steam turbine to assist in power generation. The gasification system consists of equipment used to grind and dry the feedstock prior to its entering the two-stage MHI gasifier. The limestone fluxant is added to the feedstock as it moves to the gasifier. Feedstock would enter the gasifier at two stages. One stream is fed into the first stage of the gasifier and oxygen is added. In this lower first stage the feedstock and oxygen are gasified at high ~~heat~~ temperature, sufficient to melt the coal ash, and producing carbon monoxide (CO), H_2, CO_2 and other trace components. The molten coal ash flows down a protective membrane and is quenched in a water bath and then removed via a lock hopper system. The gas produced in the first stage rises to the second stage where the second stream of feedstock enters but no additional oxygen is added. In this second stage the gasification of unconverted feedstock ~~char to CO~~ occurs. The syngas produced in this stage exits through a syngas cooler, generating steam. This steam is directed to the ~~heat recovery steam generator (HRSG) and used~~combined cycle steam turbine for power generation. Downstream a cyclone and a filter collect the char and recycle the char back to the lower stage of the gasifier to increase the overall carbon conversion efficiency.

The syngas leaving the second stage is at approximately 2200 degrees Fahrenheit, which helps insure that negligible hydrocarbon gases and liquids are formed. This raw syngas would now go through an additional complex series of treatment processes including scrubbing to remove chlorides, minimizing potential for forming ammonium chloride inside downstream equipment as the syngas cools.

There are several complex downstream systems associated with processing the raw syngas so that it would become suitable to fuel the combustion turbine. Processes downstream remove sulphur, and in a Sour Shift Unit, the remaining CO and water go through a water-gas shift reaction which produces CO_2 and hydrogen (H_2). Additional systems remove mercury, acid gases (in a patented Rectisol® system) including hydrogen sulfide and CO_2, to produce very low carbon, essentially sulfur-free hydrogen-rich gas~~.~~

POWER BLOCK CTG AND THE HRSG UNIT

A cold startup of the coal gasifier and transitioning to start up of the combustion turbine and electrical generation system would begin with processing (grinding and drying) of the coal and blending with the petcoke and loading to the gasifier for production of the syngas. The syngas is further treated to produce hydrogen-rich gas which would be routed to the CTG and the HRSG. During startup operations the combustion turbine generator (CTG~~)/heat recovery steam generator (HRSG)~~ would be fired on natural gas and would transition to the hydrogen-rich fuel (syngas) approximately two and a half hours into the transition process. A startup sequence of the CTG and HRSG operating on natural gas is estimated to require approximately 4.5 hours. A complete system (CTG, HRSG, and gasification system) shutdown sequence is estimated to take 9 hours. The combined cycle power block would generate between 405 and 431 MW. The applicant's engineering team continues to work with the MHI engineering group and results of the final design may increase the efficient use of process excess heat, which may result in increasing the gross ~~CTG~~ generator output to the higher value. The applicant expects that HECA would be providing baseload electricity using the syngas

produced from the project's gasification unit. The power generation equipment is similar to conventional natural gas power plants; however, there is substantial heat integration with the gasification process where heat is recovered as useful energy for additional power generation. The combined cycle block would include a single-shaft MHI 501GAC® G-class, air-cooled combustion turbine/steam turbine generator configured to operate using hydrogen-rich fuel.

The power block also would include a heat recovery steam generator (HRSG) and a water cooled surface condenser. Exhaust gas from the turbine as well as supplemental hydrogen-rich fuel and other process off-gas for duct-firing would be sent to the HRSG to generate additional electricity. The HRSG would be equipped with emission control technology to reduce stack emissions. The HRSG would include a selective catalytic reduction system (SCR) and a separate catalytic oxidation system to meet best available control technology (BACT) requirements for nitrogen oxides (NO_X), volatile organic compounds (VOC), and carbon monoxide (CO). The SCR system would use ammonia injected upstream of the SCR catalyst. The SCR catalyst would be used to convert NO_X and ammonia into nitrogen and water. The oxidation catalyst will convert VOC and CO to CO_2 and water vapor without the injection of any additional reagents.

Proposed Operation of HECA

HECA is designed ~~to balance~~ allow a portion of the power production to be dispatched while maintaining constant, CO_2 capture and use, and fertilizer manufacturing plant output. ~~The electrical output and availability of maximum electricity production is, in part, balanced with the maximum manufacturing output.~~ HECA, in the AFC, has proposed that the ~~balance~~gross power production~~balance~~ would be approximately 16 hour per day at 405 MW, (per amended AFC application) when maximum electricity production ~~may be needed; and 8 hours per day at 295 MW~~is typically~~may be~~ needed; and 8 hours per day at 295 MW when the demand for power is typically lower. This electric power dispatch is accomplished by operating the gas turbine at part load during the off-peak hours. Surplus hydrogen-rich gas is used to produce additional ammonia (an intermediate product) which is stored during the off-peak hours and consumed during the on-peak hours. This allows the process units, other than the power block and the ammonia unit, to operate at constant production rates. ~~during hours when maximum fertilizer and ammonia production would be possible due to lessened demand for the electrical output.~~

The HECA assumption is that this variability provides an optimum balance for the combined operations. HECA also assumes that products that would result from operations of the above systems may have commercial value. These include the electricity produced (between 267 MW and 300 MW), the CO_2 (~~2.6~~36 million tons), the degassed liquid sulphur (up to 100 short tons per day (stpd) and the gasification solids (938 stpd dry basis~~). Additionally, bi-products from these processes would be diverted to the fertilizer manufacturing facility for the production of fertilizer products, these are discussed in that section.~~).

COOLING TOWERS

The Power Block Cooling Tower

The power block cooling tower would be used to facilitate removal of the waste heat from the steam power cycle portion of the combined cycle CTG/HRSG. Approximately 95,500 gallons per minute (gpm) of water would be circulated in the power block cooling tower.

The Process Block Cooling Tower

The process block cooling tower would be used for heat rejection from the CO_2 compressor and an acid gas removal (AGR) refrigeration unit, plus other non-power block cooling loads. The process block cooling tower circulation rate would be approximately 163,000 gpm of water.

The Air Separation Unit (ASU) Cooling Tower

The ASU cooling tower would reject waste heat from the ASU. The ASU cooling tower circulation rate would be approximately 45,000 gpm of water and would be equipped with a high efficiency drift eliminator. The ASU, including the ASU cooling tower, would be designed, built, owned, and operated by third party. However, for purposes of the analysis staff considers this unit as part of the HECA facility.

Zero Liquid Discharge System

HECA would rely on a zero liquid discharge system (ZLD) to ~~minimize~~ virtually eliminate the discharge of waste water and maximize water reuse~~.~~. Plant wastewater, cooling tower blowdown, water treatment reject, evaporative cooler blowdown, and water from plant drains would be evaporated and concentrated using a conventional mechanical vapor recompression brine concentrator followed by a brine crystallizer. Resulting filter cake would be dispose of appropriately. Water vapor in the evaporator exhaust would be condensed and reused in the process units. Additional discussion of waste will be found in the **Waste Management** section of this document.

MANUFACTURING PLANT

The proposed manufacturing complex includes an ammonia synthesis unit. The ammonia synthesis unit manufactures ammonia (NH_3) for urea pastilles and urea-ammonium nitrate (UAN) solution production. The ammonia synthesis unit uses nitrogen from the ASU and high purity hydrogen from the Pressure Swing Adsorption unit (PSA) to convert the nitrogen and hydrogen to ammonia. This exothermic conversion occurs over an iron-based catalyst. The effluent is used to generate steam in the waste heat boiler. ~~Cold liquid ammonia is stored in two vertical steel tanks housed in a second vessel~~ Anhydrous ammonia is stored in two double-integrity tanks (designed to API 620 Appendix R)~~and~~ equipped with combined impact barrier/ containment and a vapor recovery system to prevent losses. A leak detection and repair (LDAR) program has been proposed by the applicant to limit fugitive emission from the NH_3 streams.

The proposed urea unit would be used to produce a concentrated urea solution by combining a purified stream of CO_2 recovered in the Acid Gas Removal system with ammonia from the ammonia synthesis resulting in a concentrated urea solution. This solution would be used as feed to produce UAN solution and urea pastilles, commercial agricultural fertilizers. **(**See **Project Description Figure 3)**

LINEAR FACILITIES

Construction of proposed linear facilities would include installation of approximately 32 miles total of underground pipelines, as well as construction of a 2-mile long transmission line and a proposed 5-mile industrial railroad spur that would be built and owned by the applicant (see **Project Description Figure 4, 5, 6, 7, 9** and **10)**.

Construction of the underground pipelines would consist primarily of crews performing the following typical pipeline construction activities: hauling and stringing of the pipe along the route; welding; radiographic inspection; coating of the pipe welds; trenching; lowering of the pipe into the trench; backfill of the trench; hydrostatic testing of the pipeline; purging the pipeline; and cleanup and restoration of construction areas. Grade cuts would be restored to their original contours and affected areas would be restored to their original state to minimize erosion (HECA 2012bb, §A116).

At areas where pipes would cross certain watercourses and roadways, the applicant proposes to use horizontal directional drilling (HDD) to avoid direct disturbances at these locations. HDD involves drilling from the ground surface adjacent to the area of concern, such as a stream, using a technique that guides the direction of the drill to pass under the stream and emerge on the ground surface on the opposite side without disturbing the streambed. Staging areas are required at the entry and exit points of the drill, with each “entry pit” requiring a temporary disturbance area of approximately 120 feet by 100 feet and each “exit pit” requiring an area of approximately 75 feet by 100 feet (HECA 2012bb, §A116).

Construction and installation of the approximately 2.8-mile electrical transmission line would follow a sequence similar to that of underground facilities, with trench excavation being replaced by the augering of holes to facilitate placement of the reinforced concrete foundations for the tubular-steel transmission structures, followed by backfilling and compaction. Grade cuts would be restored to their original contours, and affected areas would be restored to their original state to minimize the potential for erosion. To the extent possible, the material excavated from trenches and auger holes would be used to backfill around the foundations and in the trenches. Additional excess material that cannot be reused along the easement corridor would be transported to another reuse area or disposed of at an offsite landfill facility (HECA 2012bb, §A116).

The means for delivery of coal (200 rail cars per day, maximum) would require staff to evaluate the applicant’s proposal for two Transportation Alternatives: Alternative 1, rail transportation would entail construction of an approximately 5-mile new industrial railroad spur that would connect the project site to the existing San Joaquin Valley Railroad (SJVRR), Buttonwillow railroad line located north of the project site. This railroad spur would also be used to transport HECA manufactured fertilizer products, gasified solids, as well as limestone fluxant and coal from the coal transloading facility

located in Wasco, northeast of the project site. Alternative 2 requires use of trucks for these transport needs. The truck route distance is approximately 27 miles. (HECA 2012bb, §A116). Staff and the applicant have initiated discussions with the California Public Utilities Commission (CPUC) staff regarding the appropriate measures for the permitting of two public road crossings that would require lights, signals and other required safety measures, as well as the disruption of several agricultural crossings which would require either developing an alternative routing or a private crossing of the rail line. Staff, the applicant and CPUC continue working on the appropriate means of permitting this spur. ~~Alternative 2 requires use of trucks for these transport needs.~~

Water Supply

The project would use a maximum of approximately 6.6 million gallons per day (mgd) of water ~~on a calendar year average basis~~, or approximately 7,427 acre-feet per year assuming peak power operation and operation 100% of the time. The anticipated annual water usage is about 5,700 acre-feet per year for mature operation with 16 hours per day at peak power output and 8 hours per day at off peak power output. ~~for process water needs.~~ Water usage in the project can be divided into six categories: power block cooling tower, process cooling tower, air separation unit cooling tower, manufacturing complex, gasification solids, and heat recovery steam generator stack. Approximately one-third of the raw water used by the Project would be for power block cooling purposes, which equates to approximately 0.25 gpm per kilowatt-hour. This process water would be supplied from the Buena Vista Water Storage District (BVWSD). Potable water would be supplied by Westland Kern Water District (WKWD) located east of the project site, along Morris Road north of Station Road. (Project Description Figure 4). A complete analysis of the proposed water supply is located in the Water Supply section of this document.

Electrical Transmission System

An approximately 3.6 ~~2.8~~-mile (1.5 ~~0.8~~ miles are on the HECA site) electrical transmission line using approximately 15 steel poles outside of the project site, would interconnect the HECA switch yard to the future PG&E switching station and then to the first point of interconnection with the 230 kilovolt PG&E grid. The electrical transmission line extends east from the proposed switch yard within the northwest portion of the project site, across Tupman Road, then Morris Road and then eastward to the proposed new PG&E switching station. The majority of the approximately 2-mile route is adjacent to road shoulders and within areas of active agriculture. (**Project Description Figure 4** and **5**).

At this time, HECA does not have a power purchase agreement (PPA), but is in negotiations with PG&E.

Carbon Dioxide Pipeline to Elk Hills Oil Field CO_2 Processing Facility

CO_2 resulting from the above processes would be compressed at HECA and transported by an approximately 3-mile pipeline south to the EHOF CO_2 Processing Facility. The CO_2 pipeline would pass under the Kern River Flood Control Channel, the

Buena Vista Water Storage District West Side Canal and the California Aqueduct. (**Project Description Figures 4, 6** and **10**).

Natural Gas Supply System

HECA would complete an approximately 13-mle natural gas interconnection with an existing PG&E pipeline north of the project. The interconnection will consist of one tap as well as a 100-foot by 100-foot metering station. This facility will be surrounded by a chain link fence. Also associated with this natural gas pipeline will be an additional metering station at the receiving end, located on the southwest side of the HECA project site (see **Project Description Figure 8**).

Industrial Rail Spur and Truck Route for Coal Transportation

Two alternative coal transportation routes would be evaluated: Alternative 1 would be a 5-mile private rail spur; Alternative 2 would be the truck route from the Wasco coal facility to HECA.

An approximately five-mile private rail spur, to be owned and maintained by HECA, is proposed to connect with the San Joaquin Valley Railroad in Buttonwillow. This rail spur, if constructed, would greatly reduce truck trips from the coal facility in Wasco to the project, approximately 27-miles one way using existing roads. This rail spur could also transport the fertilizer products from the proposed manufacturing facility to markets. The HECA site would also have a rail loop that would be capable of on-site holding of trains up to 1-mile in length prior to either unloading feed stock or on loading of manufacturing plant products (see **HECA Site Plan, Figure 6 and 9**).

Water Supply Pipelines

The raw water supply pipeline would be approximately 15-miles in length, connecting to ~~to~~ five new BVWSD groundwater wells. Potable water would be supplied by the West Kern Water District, via~~through~~ an approximately one-mile pipeline to the east of HECA **(see Project Description figures 4 and 9).**

SUPPORT INFRASTRUCTURE

Emergency Engines

The facility would have several emergency engines, all would be fueled using ultra-low sulfur diesel fuel. These would include two emergency standby diesel generators, each 2,000-kilowatt unit would be in an outdoor enclosure and connected by a stepdown transformer to supply emergency power to critical infrastructure including lube oil pumps, cooling pumps, gasification and auxiliary steam systems in the event of power loss from the project's generation equipment. Key infrastructure support would include the station battery chargers, uninterruptable power supply, heat tracing, control room, and other critical plant loads. An approximately 600-horsepower standby diesel-driven firewater pump would be located next to the firewater tank (HECA, 2012a).

Fire Protection

A detailed fire protection program is described in the AFC (HECA, 2012a, pps 2-41).The proposed program is evaluated in the **Worker Safety and Fire Protection** section of this PSA/DEIS. The proposed program includes design elements including conservative spacing between project elements. Discreet fire areas are used to identify potential hazards, protect personnel, and to control fire incidents within a confined area. Hard systems including a firewater storage tank, and distribution system, a dedicated fire loop with hydrants, and automatic fire-suppression systems would be in place. The system would include inert gas suppression systems, sprinkler and water spray systems depending on the type of risk associated with the fire area. In addition a variety of alarms and personnel training would be utilized to insure fire safety. All elements would be consistent with National Fire Protection Association recommendations. Please refer to the **Worker Safety and Fire Protection** section of this PSA/DEIS for more specifics related to fire response and emergency services proposed for HECA construction and operations.

Hazardous Materials

There would be a variety of hazardous materials used and stored during construction and operation of HECA.

Hazardous materials that will be used during construction include gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paints, compressed gas cylinders including oxygen, acetylene and argon. All hazardous materials used during construction and operation would be stored on site in storage tanks, vessels and containers that are specifically designed for the characteristics of the materials to be stored; as appropriate, the storage facilities would include the needed secondary containment in case of tank/vessel failure. As part of a risk management plan (RMP), Material safety data sheets (MSDS) for each chemical in use would be required to be on site during construction and operations, and all contractors and staff would be instructed in their use in avoiding associated materials accidents and responding appropriately should an accident or material related incident occur. Maintenance of up to date MSDS books and locations would be the responsibility of each contractor on the site.

Hazardous materials routinely used and stored on site during operation would include methanol, petroleum products, flammable and compressed gases, acids and caustics, ammonia, water treatment and cleaning chemicals. Storage of all hazardous materials would be in appropriately designed storage areas. All bulk tanks would be provided with secondary containment in case of spills or leaks.

The **Hazardous Materials Management** section of this PSA/DEIS provides additional data on the hazardous materials that would be used during construction and operation, including quantities, associated hazards and permissible exposure limits, storage methods, and special handling precautions.

Waste Management

While waste management is primarily the process whereby all wastes produced at the project site are properly collected, treated (if necessary), and disposed of; the technical area is also responsible for evaluating past activities on a proposed site, and the potential impacts associated with additional proposed actions at that site. For the HECA proposed property a series of Environmental Site Assessments (ESAs) were completed for the proposed project site. The last Phase I ESA was dated April 2012, prepared by URS for the 453 acre project proposed HECA site. The results of the preliminary soil sampling and analytical testing indicate that there are elevated concentrations of petroleum hydrocarbons and other contaminants affected by previous site activities on a former wash area immediately north of the HECA site. There is soil staining in various areas on the project site that is likely caused by handling of fuel, lubricating oils, and pesticides. Residual contaminants at the site include organochlorine pesticides, dieldrin, endrin, and endosulfan (HECA 2012e, page 5.13-3). Soil samples taken at the site indicate that concentrations of the pesticides dieldrin, endrin, and endosulfan exceed the Regional Water Quality Control Board (RWQCB) Environmental Screening Levels, but did not exceed the California Human Health Screening Levels (CHHSLs) (HECA 2012e, page 5.13-3)). The Department of Toxic Substances Control (DTSC) has indicated that additional site characterization is required to further define the level of contamination at the proposed site. Energy Commission staff is currently working with the applicant and DTSC to develop the necessary characterization information and a plan for addressing the potential issues associated with the past contamination.

Waste management for the proposed project would also insure that all wastes produced at the project site are properly collected, treated (if necessary), and disposed of. Wastes include process and sanitary wastewater, nonhazardous waste, and hazardous waste, both liquid and solid. The Project will produce~~se include the~~ gasification solids comprised of vitrified (glass-like) material produced by melting the mineral matter in the feedstock with small amounts of unconverted carbon. These gasification solids are expected to be non-hazardous and therefore could be~~would be stored for off-site transportation by rail or truck~~ beneficially reused. The applicant is exploring potential markets for this material which would reduce the impact of landfilling, the associated transport and disposal costs. Among the potential uses being explored are uses in cement production, as sand blasting grit and possibly as roofing granules. The **Soils and Surface Water** section of this PSA/DEIS discusses process wastewater and sanitary wastewater. For all other wastes, the **Waste Management** section of this PSA/DEIS would detail the process by which both hazardous and nonhazardous wastes from HECA construction and operation would be appropriately stored, transferred and disposed.

HECA AND THE ELK HILLS ENHANCED OIL RECOVERY AND CO_2 SEQUESTRATION PROJECT

As noted above, HECA is dependent upon the sale of CO_2 to Occidental of Elk Hills (OEHI), who plans to utilize CO_2 resulting from HECA operations to increase the effectiveness of its enhanced oil recovery program (EOR) by adding an injected CO_2 component to its existing waterflood method of sweeping the oil shale to increase oil

production. HECA CO_2 production and delivery to OEHI, utilized in a water alternating gas (WAG) process, would potentially result in the permanent geologic sequestration of substantial quantities of CO_2, and important greenhouse gas. (see the **Sequestration and Greenhouse Gas** section): Some key features of the proposed EOR program that would utilize the CO_2 from HECA are noted below.

The proposed HECA sequestration and enhanced oil recovery project would:

- Utilize CO_2 from HECA for enhanced oil recovery and carbon sequestration purposes;
- Utilize a water-alternating gas (WAG) technique for oil recovery;
- Develop a CO_2 EOR processing facility connecting with 13 satellite injection facilities that would be expected to occupy approximately 135.6 acres;
- Utilize an estimated total length of phased new pipeline of 652 miles, located in existing pipeline corridors and sited on disturbed acreage. At-grade pipelines would be up to 26 inches in diameter;
- The EOR may include approximately 720 producing and injection wells;
- Require well installation footprints of 130' x 280' (36,400 square feet or 0.84 ac.);
- The EOR proposes to use 107 million standard cubic feet/day (mmscfd) of CO_2 delivered from HECA (up to approximately ~~2.63~~6 million tons per year from HECA);
- This process would require OEHI to seek approval from DOGGR for the miscible gas injection project to use methane/ethane recovered gases from oil production combined with the CO_2 mixture;
- The project would employ injection wells drilled to approximately 5,000 feet below ground surface, sealed by the "Reef Ridge Shale" and within the "Monterey Formation" 4,500 to 10,000 feet below surface.
- The project proposes at least 20 years of CO_2 capture/delivery from HECA. This is equivalent to less than 5 percent of the useable reservoir pore volume above the free water level.
- The project would employ a closed loop fluid and gas recycle/reuse/reinjection process.

Energy Commission staff evaluates the EOR program in this PSA/DEIS as a part of the whole project (CEQA reference). It is an integral part of the HECA planned project, and the means by which geologic sequestration of a greenhouse gas (CO_2) is potentially accomplished. The actual permits associated with the EOR project will be issued by other agencies, including The Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR), Kern County, and the San Joaquin Valley Air Pollution Control District (SJVAPCD), each agency with specific regulatory authorities over the activities on the EHOF.

DOGGR would separately permit the wells, pipelines and associated structures, including the proposed CO_2 handling facility, with the OEHI EOR project. DOGGR has statutory responsibility under Division 3 of the Public Resources Code to regulate all oilfield operations in the state of California. DOGGR is authorized by law to approve the injection and extraction wells and associated well facilities, to regulate down-hole operations, and to be responsible for appropriate regulation of surface activities relating to the OEHI CO_2 EOR. The wells to be used for injection of the CO_2 would be permitted as Class II injection wells under the Underground Injection Control (UIC) program in the Federal Safe Drinking Water Act (SDWA), 42 United States Code § 300h-4. DOGGR has primacy to approve Class II injection wells in the state of California under Section 1425 of the SDWA, see U.S. Environmental Protection Agency (USEPA, 1983). The wells and associated well facilities for the OEHI CO_2 EOR will be permitted pursuant to authority provided to DOGGR in the Public Resources Code and the SDWA and in accordance with applicable DOGGR regulations.

PROJECT CONSTRUCTION AND CLOSURE

An Engineering, Procurement, and Construction (EPC) contractor would be responsible for the engineering, procurement, and construction of the project. The EPC contractor would select subcontractors for certain specialty work as required.

Mobilization: The EPC contractor would be expected to commence truck deliveries and ground disturbance as soon as possible should the project secure Energy Commission approval and a final Record of Decision (ROD) from the DOE. Project site preparation work would include site grading and storm water/erosion control. Gravel and road base material would be used for temporary roads, laydown, parking, and work areas. Construction planning would include the evaluation of existing county roads. The roads would be upgraded as necessary to handle the increased loads and traffic.

Project Site Construction: The overall cConstruction periodactivities for the project would occur throughout the would be 42- months construction period, which includes 18 months for commissioning. All construction laydown and parking areas would be located within the project site and the controlled area. On-site construction activities include clearing and grubbing, grading, hauling, layout of equipment, delivery and handling of materials and supplies, and Project construction and testing operations.

Commencement of commissioning activities would occur beginning at 34 months, and commercial operation would be expected at approximately 51 months.

Site Access: Construction site access would be via Dairy Road for truck deliveries and Adohr Road for construction craft vehicles arriving and departing the site. Dairy Road currently ends at Adohr Road, but would be extended during project construction. This extension would be permanent and would also be used for personnel access during operations. The peak construction site workforce levels and operations workforce estimates can be reviewed in the **Socioeconomics** section of this **PSA/DEIS.**

PROJECT CONSTRUCTION

General Grading, Leveling and Construction Facility Installation

The project site occurs in an area of relatively flat topography. Site grading would occur as necessary to form level building pads for major process units. Initial site preparation operations would include construction of temporary access roads, craft parking, laydown areas, office and warehouse facilities, installation of erosion control measures, and other improvements necessary for construction.

Storm Drainage System

Existing drainage patterns outside the site boundary would remain undisturbed. No runoff from outside the site boundary would flow onto the project site. The Project would collect onsite stormwater and use for various uses such as dust control during construction and makeup water during operations; therefore there would be no stormwater runoff discharged offsite. All surface runoff during and after construction would be controlled in accordance with the requirements of the Drainage, Erosion, and Sedimentation Control Plan, and all other applicable LORS.

Erosion and Sediment Control Measures

Protection of soil resources would be an important factor in the design of the erosion and sedimentation controls. Erosion control measures would include construction of storm water retention basins and related site drainage facilities to control runoff within the site boundary. Additional project site erosion control would be accomplished during construction through the use of strategically placed berms, swales, and culverts to redirect runoff toward the storm water retention basins. Sandbags, filter bales, and silt fences~~, and/or temporary dams~~ would be installed, as needed, to minimize the volume of sediment carried by storm runoff and to prevent ~~the~~ erosion ~~of slopes and temporary drainage facilities~~. Grades would be designed to prevent the effects of ruts and ponding.

Following each significant precipitation event, a site review of the effectiveness of the erosion control plan would take place. Storm water would be retained on site for impoundment in the storm water retention basins (please see the **Soils and Surface Water** section of this **PSA/DEIS** for full analysis).

Restoration of Temporary Disturbance

As proposed, temporarily disturbed areas will be restored to their preconstruction conditions. Temporary access roads used during construction will also be re-graded and restored to pre-existing function and grade.

PROJECT CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the setting for this project does not appear, at this time, to present any special or

unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure. Facility closure of the project can be either temporary or permanent. Facility closure would include plans for all structures on the 453 surface acres, underground objects, and associated linear facilities such as transmission lines, pipelines, and the railroad spur previously described.

The project closure process is described in detail in the **Compliance Conditions** section of this PSA/DEIS. This section describes at least three circumstances in which a facility closure can take place: planned closure, unplanned temporary closure and unplanned permanent closure. The section also details what would be required by the Energy Commission to protect public health and safety and the environment from adverse impacts in each of the above instances.

Recent Information Affecting the Project

As is often the case in a complex proceeding, ongoing project design produces features and information that could not be included in the Application for Certification, or was being developed in the ongoing process of project refinement. Recent information that staff has attempted to incorporate into this PSA/DEIS, but may require additional information from the applicant and a fuller discussion in the Final Staff Assessment/Final Environmental Impact Statement (FSA/FEIS), is noted below:

Proposed Addition of Limestone Fluxant

- Limestone fluxant will be added to the coal and petroleum coke feedstock; on average 175 ton/day or 59,000 tons/year of fluxant would be used;

- The average gasification solids flow rate increases from 850 tons/day to 938 tons/day. The properties of the gasification solids will not change. The options for eventual disposition of the gasification solids will not change due to the addition of fluxant;

- Fluxant will be delivered by truck and would be either tarped or enclosed, to eliminate potential fugitive dust from the material as it travels to the site;

- The fluxant will be stored in a silo that will be approximately 30 feet in diameter and 80 feet tall, to be located to the north of the proposed feedstock barn;

- The fluxant unloading and silo area would have a baghouse to control dust.

- The flux would be added to the feedstock on the conveyor at the point where it exits the feedstock storage barn;

- In the gasifier the limestone splits into two components, calcium oxide and carbon dioxide. The calcium oxide becomes part of the gasification solids. The carbon dioxide becomes part of the syngas stream and is captured in the Rectisol Unit;

- The additional CO_2 would flow to the EHOF enhanced oil recovery stream from HECA, and the CO_2 emitted from the turbine/feedstock dryer and CO_2 vent would also increase ~~proportionally~~ slightly.

- Carbon capture would be expected to remain at 90 percent or greater of the CO_2 in the syngas exiting the gasifier;

- For fluxant delivery, there will be a ~~M~~maximum of 7 ~~daily~~ trucks per day or 14 round trips per day. This is the same for both feedstock delivery alternatives. These truck trips are included in the truck trips summarized in the Introduction.

- For shipping of gasification solids, there will be a maximum of 10 trucks per day or 20 round trips per day~~increase by 10 fluxant trucks and 2 gasification solids trucks~~ under Alternative 1-with the rail spur. These truck trips are included in the truck trips summarized in the Introduction;

- For shipping of gasification solids, there will be a maximum of 38 trucks per day or 76 round trips per day~~Maximum daily trucks increase by 10 fluxant trucks and 9 gasification solids trucks~~ under Alternative 2-no rail spur. These truck trips are included in the truck trips summarized in the Introduction.

Inclusion of Electrical Demand for the Air Separation Unit

The Air Separation Unit (ASU) is proposed by the applicant to be owned and operated by a separate company, and as such, the applicant did not originally provide detailed information about its electrical demand. Staff considers the ASU to be part of the proposed project, subject to the Energy Commission's jurisdiction, and therefore included in staff's evaluation of project impacts and LORS conformance. On April 10, 2013, the applicant provided staff with the unit's electrical demand. Technical staff have incorporated the new information and developed preliminary assumptions that are reflected in the **Powerplant Efficiency** and the **Sequestration and Greenhouse Gas** sections. Staff now assumes that the proposed ASU power use should be factored into the project's anticipated parasitic load. The following information is being evaluated by staff:

- ASU On-Peak Power Demand: 109 MW

- ASU Off-Peak Power Demand: 103 MW

Final Design Criteria for the Electrical Generation Equipment

Staff will need final design criteria and a clear statement regarding the equipment's heat rate and a complete listing of all parasitic loads to be attributed to the project. The applicant's statement of the gross and net electrical production from HECA continues to fluctuate based on continued design refinement by the applicant and the equipment

manufacturer, Mitsubishi Heavy Industries. The information is reflected in a variable assessment of the gross and net electrical output for HECA. Gross output may vary as noted in information provided to the SJVAPCD and in the April 10, 2013 email to Energy Commission staff (URS, 2013):

- Gross electrical output 405 MW as noted in the AFC, and 431 MW in other documents;

- Net electrical output may vary from 300 MW as noted in the AFC, and 267 MW.

No information on the overall project heat rate and breakdown of auxiliary loads based on the 431MW figure has been provided to staff at this time. Staff evaluation of this preliminary information has a variable affect on the analysis contained in the **Powerplant Efficiency**, **Sequestration and Greenhouse Gas** and the **Air Quality** sections of this PSA/DEIS. A clear statement of the project information will be required prior to completion of the Final Staff Assessment/Final Environmental Statement. (See the sections noted above for additional analysis).

REFERENCES

HECA 2012e – SCS Energy California/Hydrogen Energy California, LLC /J. L. Coyle (tn 65049). Amended Application for Certification, Vols. I, II, and III (08-AFC-8A), dated 05/02/12. Submitted to CEC Docket Unit on 05/02/2012.

URS 2013. Shileikis, D. to R. Worl, CEC. (tn: 70376) Response Regarding MW and Limestone Fluxant. Dated 4/10/2013. Posted: April 17, 2013. (PDF File, 2 Pages, 82.9 kb)