

CALIFORNIA ENERGY COMMISSION

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California Energy Commission

DOCKETED
08-AFC-8A

TN # 67037

SEP 06 2012

September 6, 2012

Regarding: **HYDROGEN ENERGY CALIFORNIA PROJECT (08-AFC-8A), Staff's
Data Requests, A124 through A180**

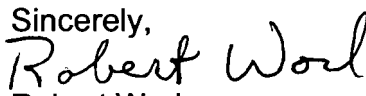
Dear Ms. Mascaro,

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

These data requests, numbered A124 through A180, are being made in the technical areas of Air Quality, Enhanced Oil Recovery (EOR) and Carbon Capture & Sequestration (CCS), Cultural Resources, Traffic & Transportation, Land Use and Agricultural, Socioeconomics, Greenhouse Gases Emissions and Visual Resources. Written responses to the enclosed data requests are due to the Energy Commission staff on or before October 10, 2012.

If you are unable to provide the information requested, need additional time, or object to providing the requested information, please send a written notice to the Committee and to me within 20 days of receipt of this notice. The notification must contain the reasons for the inability to provide the information or the grounds for any objections (see Title 20, California Code of Regulations, section 1716 (f)).

If you have any questions regarding the enclosed data requests, please call me at (916) 651-8853 or email me at Robert.Worl@energy.ca.gov, or you may also contact John Heiser at (916) 653-8236 at John.Heiser@energy.ca.gov.

Sincerely,

Robert Worl
Siting Project Manager

Enclosure (Data Request Packet)

cc: Docket (08-AFC-8A)
POS List

PROOF OF SERVICE (REVISED 8/28/12) FILED WITH
ORIGINAL MAILED FROM SACRAMENTO ON 9/6/12

DLS

HYDROGEN ENERGY CALIFORNIA
(08-AFC-8A)

Energy Commission Staff's Data Requests A124-A180

September 6, 2012

Technical Area:
Authors:

Air Quality
William Walters
Nancy Fletcher

BACKGROUND: COAL RAIL TRANSPORTATION EMISSIONS ESTIMATES

Staff's review of the applicant's coal transportation emissions estimates has found inconsistencies for rail miles by jurisdiction and total rail miles. For example staff's review of the rail route length within the Mojave Desert Air Quality Management District (MDAQMD) jurisdiction indicates a total rail distance of over 200 miles in comparison to the applicant's estimate of 150 miles. Staff's review indicates that route distances through the Arizona and Eastern Kern Air Pollution Control District (EKACPD) jurisdictions may also be underestimated. Also, the route distance differences between the applicant's project alternatives (train vs. trucking) are opposite from what would be expected for total coal train travel distance in the San Joaquin Valley Air Pollution Control District (SJVAPCD) jurisdiction. Specifically, staff's review suggests that the total rail route distance to the site would be longer than the route to the Wasco unloading facility that the applicant uses for the trucking alternative. Additionally, the criteria pollutant emissions presentation provided by the applicant was geared to General Conformity requirements but there was no presentation of the total rail criteria pollutant emissions for all criteria pollutants. Staff needs the applicant to confirm the rail route and distances, and as necessary revise the emissions estimates for all route distances. Additionally, staff needs the applicant to provide a clear summary of the total rail route criteria pollutant emission estimates for all criteria pollutants.

DATA REQUESTS

- A124. Please provide a route map or a detailed description of the rail routes for coal feedstock delivery and product delivery, for both project alternatives, and describe any corrections to the jurisdiction segment and total rail route lengths.
- A125. Please provide updated emissions for each jurisdiction segment and total train emissions for each alternative using the corrected route lengths.

BACKGROUND: PETROLEUM COKE TRANSPORTATION ASSUMPTIONS

Staff's review of the applicant's petroleum coke transportation emissions estimates has found that this amendment has significantly revised the assumption for the source of the petroleum coke. The former AFC assumed petroleum coke to be transported from a number of refinery locations, while the Amended AFC only shows petroleum coke being delivered from Los Angeles area refineries. Staff needs the applicant to confirm this major delivery route assumption change.

DATA REQUEST

- A126. Please confirm that the only source of petroleum coke will be Los Angeles Area refineries; or provide a detailed list of potential petroleum coke sources, their distance from the site, the route that trucks would take from each, and the amount of truck trips that could occur from each petroleum coke source.

BACKGROUND: PRODUCT RAIL/TRUCKING TRANSPORTATION EMISSIONS ESTIMATES

Staff's review of the assumptions used for product rail and trucking indicate that the applicant appears to have used inconsistent assumptions regarding product destinations. For example, the trucking distance for Urea and UAN is only 40 miles one-way, while when shipped by train these products go 628 miles and 264 miles one-way, respectively. Staff needs the applicant to supply additional information regarding the rationale for the selection of the travel distances and destinations for all of the shipped products, and if necessary correct emissions estimates so that the assumptions are both reasonable and logically consistent. Specifically, staff is concerned that the trucking alternative, where trucking should be less efficient than rail, isn't showing higher emissions for all pollutants directly related to fuel use.

DATA REQUESTS

- A127. Please describe the shipping destinations for products when being shipped by rail transportation and shipped by truck. This description needs to identify why the final destinations are not the same, or correct the destinations based on logically consistent final destinations.
- A128. Please provide updated product rail and trucking emissions for each of the applicant's alternatives, if necessary based on the answer to the preceding data request.

BACKGROUND: RAIL TRANSPORTATION SO₂ EMISSIONS ESTIMATES

It is staff's understanding that locomotives would have to meet a 15 ppm sulfur diesel fuel requirement and/or that all refiners would have to meet a 15 ppm sulfur diesel fuel requirement by 2014 (<http://www.epa.gov/otaq/standards/fuels/diesel-sulfur.htm>), so that higher sulfur diesel fuel would not be available for use by locomotives at the time the project starts rail transportation of coal and products. Staff's review indicates that sulfur dioxide (SO₂) emissions from rail transportation have been based on a sulfur fuel content assumption of approximately 300 ppm rather than 15 ppm.

DATA REQUEST

- A129. Please provide corrections to the total rail transportation emissions of SO₂ based on 15 ppm sulfur diesel fuel.

BACKGROUND: COAL TRANSPORTATION – FUGITIVE DUST EMISSIONS

The applicant has not estimated fugitive dust emissions from coal transport or provided any information regarding potential control of this emissions source. Staff needs the applicant to provide information that addresses this issue.

DATA REQUESTS

A130. Please indicate whether the applicant will stipulate to using covered coal hopper cars, or stipulate to another measure to control fugitive dust emissions from open coal hopper cars.

A131. If open coal hopper cars are proposed please estimate the fugitive coal dust emissions that occur during transport.

BACKGROUND: ONSITE ROADS – PAVED ROADS

Staff's review of the project description and construction/operation emissions estimates found that the applicant was proposing to pave all of the onsite roads regularly used during operation, but staff was unable to determine when during construction the applicant is proposing to pave these onsite roads. The applicant should be aware that staff will be recommending the use of soil binders on all onsite unpaved roads, including gravel roads, and onsite inactive disturbed areas. To complete our review of the fugitive dust emissions estimate staff needs additional information regarding the applicant's assumption regarding when the onsite roads will be paved.

DATA REQUEST

A132. Please identify the earliest date during construction that the applicant would be willing to pave the onsite roads.

BACKGROUND: CONSTRUCTION FUGITIVE DUST CONTROL

Staff's continued review of the construction emissions estimates has determined that emissions control for the fugitive dust emissions estimate for grading is being double counted by assuming both a high, or mitigated, soil moisture content and assuming additional control by watering. The emission factor equation for grading includes the soil moisture content, so additional emissions control should not be applied. Additionally, the emissions control for reduced speed should only be applied to unpaved roads, not to other fugitive dust causing activities, so please revise the fugitive dust control efficiencies to only include watering, where the current SCAQMD factor for watering three times daily is 61 percent control.

(http://aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html - Table XI-A).

DATA REQUESTS

A133. Please correct the grading emissions estimate by removing the added emission control efficiency that double counts the effect of grading watered/moist soil.

A134. Please correct the fugitive dust emissions control efficiency to only include watering efficiencies, using an agency referenced source for the control efficiency, for the fugitive dust causing activities that are not unpaved road travel.

BACKGROUND: MERCURY AND AIR TOXICS STANDARDS COMPLIANCE

The Amended AFC notes that the project will comply with USEPA Mercury and Air Toxics Standards (MATS) regulation, which has several emissions standards, including mercury emission limits. However, the Amended AFC provides no substantive comparison between the project's emissions and these standards. While the effectiveness of the new source emissions standards of this regulation have been stayed for three months while USEPA is reconsidering parts of the regulation, that stay is not based on the mercury emissions standards which USEPA does not intend to change (<http://epa.gov/airquality/powerplanttoxics/pdfs/20120727staynotice.pdf>).

Specifically, the notice of the stays indicates it is based on...

"...reconsideration on certain new source issues related to the emission standards issued under Clean Air Act section 112, including measurement issues related to mercury and the data set to which the variability calculation was applied when establishing the new source standards for particulate matter and hydrochloric acid."

Therefore, while USEPA is re-evaluating the particulate matter and hydrochloric acid emissions standards, they are only evaluating measurement issues related to mercury. Staff's review of the project's emissions and the MATS emissions standards indicates that the current estimate of all pollutants other than mercury emissions would comply with this regulation. Staff needs additional information from the applicant indicating how they will comply with the mercury emissions limit required by this regulation.

DATA REQUEST

A135. Please identify additional or augmented mitigation for the control of mercury emissions, provide a revised mercury emissions estimate, and compare the project's proposed emissions with all of the MATS emissions limits.

Technical Area: Air Quality/Enhanced Oil Recovery and Carbon Capture & Sequestration
Authors: William Walters
Nancy Fletcher

THE ENHANCED OIL RECOVERY (EOR) AND CARBON CAPTURE AND SEQUESTRATION (CCS)

BACKGROUND: BOILER/HEATER EMISSION FACTOR ASSUMPTIONS

Staff's review of SJVAPCD regulations (Rules 4307 and 4320) indicate that the emissions factor assumptions in Appendix A of the AFC will not meet rule requirements for nitrogen oxides (NOx) emissions at the time three of the proposed process heaters would be permitted. Staff needs clarification of whether there are any applicable exemptions assumed or if emissions should be re-evaluated based on Rule limits.

DATA REQUEST

A136. Please identify if there are any rule exemptions assumed for three heaters rated above 1 million Btu per hour heat input so that the Rule 4307 or 4320 requirements for NOx limits would not apply. If there are no applicable rule exemptions, then please update the emissions estimates for these three heaters based on compliance with the NOx emissions limits provided in District Rules 4307 and 4320.

BACKGROUND: PIPING SYSTEM FUGITIVE VOC EMISSION FACTORS

Staff has not been able to match all of the applicant's VOC fugitive emissions factor calculations, which were noted to come from Table 5-7 of the USEPA Protocol for Equipment Leak Emissions Estimates. Staff needs additional information to understand the rationale for the differences in the calculated emission factors or a corrected emissions estimate to be provided.

DATA REQUESTS

A137. Please review and as necessary correct the emission factor calculations/values and VOC emissions calculations for the following piping systems and component types provided in the Operational Phase Criteria Pollutant Emissions appendix to AFC Appendix A:

- a. Reinjection Compression Facility (RCF)
 - i. Gas/Light Liquid Valves
- b. Carbon Dioxide Recovery Plant (CRP)
 - i. Gas/Light Liquid Valves
 - ii. Heavy Crude Oil Valves
 - iii. Light Crude Oil Connectors

- c. Central Tank Battery
 - i. Gas/Light Liquid Valves
 - ii. Heavy Crude Oil Valves
 - iii. Light Crude Oil Connectors
- d. Production Satellite Settings
 - i. Gas/Light Liquid Valves
 - ii. Light Crude Oil Connectors
 - iii. Light Oil Open-Ended Lines
- e. Crude Oil and Natural Gas Production Wells
 - i. Gas/Light Liquid Valves
 - ii. Light Crude Oil Connectors
 - iii. Light Oil Open-Ended Lines
- f. CO₂ Injection Wells
 - i. Gas/Light Liquid Valves
 - ii. Light Crude Oil Connectors
 - iii. Light Oil Open-Ended Lines

A138. Please confirm that there are no piping components and/or zero VOC composition, or provide completed emissions calculations, for the following two piping component systems shown in the emissions calculations: Gathering System for Crude Oil and Natural Gas Production (p. 23 of 29); and CO₂ Intake and CO₂ Distribution System for Injection (p. 24 of 29). Please note that if fugitive VOC emission calculations are necessary for either of these piping systems the emissions factors need to address the issues identified above in data request 14.d through 14.f.

Technical Area:
Authors:

Cultural Resources
Melissa Mourkas
Elizabeth A. Bagwell
Thomas Gates
Gabriel Roark

INTRODUCTION

All responses to these Data Requests containing references to specific archaeological site location or information, or cultural resources of concern to Native Americans, should be submitted under a request for confidentiality.

BACKGROUND

The Energy Commission's siting regulations require applicants to survey project sites, substations, and staging areas plus an area not less than 200 feet surrounding these features for the presence of cultural resources. Additionally, the siting regulations state

that cultural resource surveys extend not less than 50 feet beyond the planned limits of proposed linear facilities. (20 California Code of Regulations [CCR], App. B[g][2][C].) Three portions of the applicant's archaeological resources study area have not been surveyed to these specifications because of access issues (Amended AFC, App. G-3, Figure 1, Sheets 4–5). These areas are:

Areas surrounding the Project Site and Controlled Area, consisting of:

- A 200-foot-wide area west of Dairy Road and the Project Site and south of Adohr Road.
- A 200-foot-wide area north of Adohr Road and the Controlled Area, between Dairy Road and Tupman Road.
- A 200-foot-wide area at the northeast corner of the Controlled Area.

East of the proposed natural gas and railroad spur corridor, consisting of:

- A 50-foot-wide swath extending north from the northeast corner of the Stockdale Highway–Dairy Road intersection to the East Side Canal.

The proposed natural gas pipeline corridor along State Route (SR) 58, vicinity of Bowerbank, consisting of:

- The natural gas pipeline corridor and a 50-foot-wide buffer to each side between the end point of the proposed railroad spur and Interstate 5 (I-5).

Staff needs descriptions of archaeological survey methods and survey results for these areas to adequately assess the proposed project's impacts on historical and unique archaeological resources.

DATA REQUESTS

A139. Please conduct pedestrian archaeological survey for unsurveyed portions of the proposed HECA project site, linear alignments, and associated buffer areas. In addition, if areas identified are still inaccessible, please provide a justification for continued access issues and an estimate of when requested surveys can be completed and survey results will be submitted.

A140. Please provide the following information in the survey reports for the requested pedestrian archaeological surveys:

- a. The methods used to identify cultural resources in the project linear alignments.
- b. The results of the records search and pedestrian survey.
- c. Descriptions of newly recorded cultural resources in the proposed project linear alignments.

- d. An assessment of impacts to cultural resources in the project linear alignments.
- e. Proposed mitigation measures for identified impacts.
- f. Department of Parks and Recreation (DPR) 523 forms for all cultural resources identified during the survey as being 45 years or older or of exceptional importance.
- g. Figures depicting survey coverage. The figures should also depict ground surface visibility in the survey areas, expressed as a percentage. Figures shall be on a 1:24,000-scale U.S. Geological Survey topographic quadrangle map. Previously and newly recorded cultural resources shall be mapped on the figures.

BACKGROUND

Five cultural resource inventories have been conducted along or overlapping the portion of the proposed CO₂ pipeline corridor that extends south of the California Aqueduct (Farmer 2008; Hamusek-McGann et al. 1997; Jackson et al. 1998; Peak & Associates 1991; Stantec 2011). Six archaeological resources have been identified in or less than 200 feet from the proposed pipeline within Section 22: P-15-6776 (CA-KER-5041), HECA-6, HECA-7, HECA-8, HECA-12, and Isolated Artifact 1. Archaeological sites HECA-7 and HECA-12 have been recommended as California Register-eligible resources (Farmer 2008:5-8, 5-10). P-15-6776 has been found ineligible for listing on the National Register of Historic Places, but recent work indicates that the significance of the site needs to be reconsidered (Jackson et al. 1998: Table 8.2; Stantec 2011:8). No archaeological resources have been found in the proposed pipeline alignment south of Section 22.

The findings of these previous inventories raise three issues. First, there is a disparity between the results of survey work in Section 22 and south of Section 22. Second, the boundaries of P-15-6776 and other archaeological sites in or adjacent to the proposed pipeline corridor are incompletely defined. Third, the proposed pipeline would intersect at least one previously identified archaeological resource, necessitating test excavation to determine resource significance and possibly mitigation measures.

Concerning the different survey results in Section 22 and south of it, the methods employed by archaeologists to identify archaeological resources appear unsuited to the visibility of archaeological materials south of Section 22. Consequently, archaeological resources are incompletely defined along this portion of the proposed CO₂ pipeline. If not corrected, significant impacts to cultural resources will likely result and could include discoveries of archaeological materials during construction.

The purpose of archaeological survey varies with the goals of the survey. The context of the Energy Commission's environmental review focuses on the discovery of archaeological objects, sites, places, and areas (14 California Code of Regulations 15064.5[a][3]). The typical unit of archaeological discovery is the individual feature (for

instance, a house pit depression or mining tailings) or artifact (such as an arrow point or bottle). Artifacts or features that are found close to one another are grouped into archaeological sites for the purposes of future study and management. Archaeological sites in turn may be grouped into larger units (places or areas)—usually termed archaeological districts or landscapes—if the sites show functional, chronological, or other connections (Office of Historic Preservation 1995:1–3).

In planning and conducting an archaeological survey, important considerations include the visibility and obtrusiveness of archaeological resources in the study area. Visibility refers to the ease with which archaeological materials can be seen. During the typical pedestrian archaeological survey, factors affecting archaeological visibility include lighting, weather, the attentiveness and experience of surveyors, the pace of survey, the presence of flood deposits or other soil cover atop archaeological resources, and the density and type of vegetation in the study area. Obtrusiveness of archaeological materials refers to the ease with which the archaeologist can recognize materials as archaeological. For instance, a large and dense scatter of stone-tool debris is easier to encounter and recognize during a survey than one that is small, sparse, or both. Standing structures or their ruins are easier to recognize as archaeological or cultural materials than are house pit depressions. Without exception, as the visibility and obtrusiveness of archaeological materials decreases, the archaeologist must increase the intensity of survey in order to identify archaeological materials. Greater intensity—and probability for finding and accurately describing the range of archaeological materials—can be achieved in several ways. Most commonly, the spacing between surveyors (transect interval) is reduced or set no wider than the minimal dimension of archaeological resources in the study area. For example, in an area where the average diameter of archaeological sites is 60 feet, transect intervals in a survey should be no wider than 60 feet. Another reasonable way of increasing survey intensity in areas with dense vegetation is to clear vegetation at regular intervals. (Feder 1997:46–49, 54–55.)

Energy Commission staff find that the survey methods employed in the proposed CO₂ pipeline corridor do not conform to the standards described above and are probably responsible for the lack of archaeological resources found south of Section 22. A review of previous surveys in the immediate vicinity will make the situation plain.

In 1991, Peak & Associates surveyed the eastern half of Section 22 in 60-foot transect intervals. Where the ground surface was not clearly visible, Peak & Associates cleared the ground surface at 60-foot intervals. The survey report does not state how obscured the ground surface was before the decision was made to scrape away vegetation, nor how large the surface scrapes were. Survey of this area identified a scatter of freshwater mussel shells, a gray chert chopper¹, two flakes, and a single bowl mortar². (Peak & Associates 1991:45, 64, 88, 112, Figure 6.) This site was later designated P-15-6776 (CA-KER-5041).

¹ A large pebble, cobble, or core tool that is flaked to form an axe-like cutting edge; it is used for chopping and cleaving work.

² A stone or wooden bowl-like artifact in which seeds, berries, meat, pigment, and other substances are pulverized or ground with a pestle.

Jackson and colleagues revisited the area in 1997, surveying after a wildfire had burned the area. The wildfire produced excellent ground surface visibility since most of the vegetation succumbed to the fire. Say Jackson et al. (1998:72), “The excellent ground surface visibility resulting from the wildfire revealed constituents [artifacts] that otherwise would lie obscured beneath continuous vegetation.” These materials were identified near Peak & Associates’ recordation of P-15-6776.

In 2008, URS archaeologists surveyed the northern half of Section 22, overlapping with Peak & Associates (1991) and Jackson et al.’s (1998) survey coverage (Farmer 2008). The survey was conducted by 2–6 persons walking transects spaced 50 feet apart. Ground surface visibility ranged from 50–100 percent, with the “vast majority” of the survey area being free of vegetation. Once an archaeological site was located, the survey crew walked 15-foot transects over the site to determine its boundaries. URS identified four archaeological resources and one historic structure (road) in or within 200 feet of the current proposed CO₂ pipeline: HECA-6, HECA-7, HECA-11, HECA-12, and KRM-010H. (Farmer 2008:4-1.)

At archaeological site P-15-6776, URS found that the site contained far more surface artifacts than were recorded by previous investigators and that the site extended further south and west. Two potential house-pit depressions were also observed on the site surface. URS attributed their additional finds to surveying after recent field disking and 10 years of erosion since the site was last recorded. (Farmer 2008:5-21, 6-1.)

In February 2011, Stantec archaeologists surveyed the current proposed CO₂ pipeline by walking parallel transects spaced 50 feet between surveyors. Ground surface visibility was poor throughout the proposed pipeline corridor (10–20 percent) and Stantec does not describe attempts to improve the ground surface visibility by clearing vegetation. Stantec reports that archaeological site P-15-6776 extends west (into the proposed pipeline corridor) and north of the previously identified site boundaries. Given the clear track record shown in previous investigations of the pipeline vicinity, the amount of ground cover—and whether one clears obscuring vegetation—strongly conditions the reliability of archaeological survey results. In the context of 10–20 percent visibility and no vegetation clearing, the results of survey south of Section 22 appear unreliable.

The second issue with the archaeological survey for the proposed pipeline corridor is that archaeological site boundaries within and adjacent to the pipeline corridor are incompletely defined. This is particularly true of P-15-6776, which Stantec (2011:Figure 2) maps as extending into areas mapped as archaeological sites HECA-8, HECA-BUF-1, HECA-7, HECA-ISO-1, and HECA-ISO-2 (Farmer 2008). The Stantec (2011) report contains no reference to these archaeological sites or to URS’s survey (Farmer 2008), indicating that Stantec was unaware that these five resources were recorded near one another and to P-15-6776. Stantec (2011:8) states that “further survey, and possibly additional testing [should] be conducted in the area of site number PS-15-006776 [sic] when the exact pipeline corridor is established and ground visibility has improved.”

Third, the proposed pipeline corridor would probably affect at least one archaeological resource, P-15-6776. Although Jackson et al. (1998) recommended P-15-6776 as

ineligible for listing on the National Register, they did not evaluate the site for California Register eligibility and subsequent researchers found additional surface artifacts and features at the site in sufficient numbers to warrant reconsideration of its boundaries and significance (Farmer 2008:5-20, 5-21, Table 5-2; Stantec 2011:8). For Energy Commission staff to determine whether the proposed project would result in a substantial adverse change to historical or unique archaeological resources, staff needs to know whether archaeological site P-15-6776 qualifies as a historical or unique archaeological resource. This matter is solvable by conducting a test excavation program at the site.

DATA REQUESTS

A141. Please conduct an archaeological survey in the proposed CO₂ pipeline corridor south of Section 22, incorporating the following practices.

- a. Fifty-foot-wide or narrower transect intervals.
- b. Where the ground surface visibility is 50 percent or less in the proposed pipeline corridor due to vegetation, clear vegetation in 3-feet-by-3-feet patches at 50-foot intervals to inspect the ground surface.

A142. Please prepare and submit an addendum to Amended AFC Appendices A-1 and A-2, Attachment B, that describes or contains:

- a. The methods used to identify cultural resources in the proposed pipeline corridor.
- b. The identity and qualifications of the personnel conducting the survey and report preparation.
- c. The results of the archaeological survey.
- d. Descriptions of newly recorded cultural resources in the proposed pipeline corridor.
- e. An assessment of impacts to cultural resources in the proposed pipeline corridor.
- f. Proposed mitigation measures for identified impacts.
- g. Department of Parks and Recreation (DPR) 523 forms for all cultural resources identified during the survey as being 45 years or older or of exceptional importance.
- h. Figures depicting survey coverage. The figures should also depict ground surface visibility in the survey areas, expressed as a percentage. Figures shall be on a 1:24,000-scale U.S. Geological

Survey topographic quadrangle map. Previously and newly recorded cultural resources shall be mapped on the figures.

A143. Please provide a recommended avoidance plan describing and graphically demonstrating how impacts on specific archaeological resources in the proposed CO₂ pipeline corridor will be avoided. The plan should include:

- a. Descriptions of the resource(s), with particular attention to the depth or thickness of archaeological materials and the resource boundaries.
- b. Maps depicting the site boundaries and locations of any previous test excavation units for each resource. Maps shall meet the requirements laid out for DPR 523 Sketch Maps, but do not need to be generated on the site form template (see Office of Historic Preservation 1995:15).
- c. Overlay the proposed pipeline corridor and all associated work areas and access roads onto the aforementioned sketch map.
- d. Similar exhibits showing, plan and profile, the proposed methods for avoiding identified archaeological resources.

A144. If archaeological sites along the proposed CO₂ pipeline corridor cannot be avoided per data request 143, please provide, for staff review and approval, an archaeological testing plan that conforms to the standards described in Office of Historic Preservation (1991). The purpose of the testing plan is to determine whether archaeological resources in the proposed pipeline corridor meet CEQA's definition of a historical or unique archaeological resource. The research design shall be prepared by an archaeologist that meets the Secretary of the Interior's professional standards for archaeologists (see *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*, 36 Code of Federal Regulations 61). The research design must include the following.

- a. A statement of the problem and research goals.
- b. A statement of methods to achieve the research goal.
- c. A statement regarding how the results will be reported.
- d. Maps depicting the site boundaries and locations of any previous test excavation units for each resource. Maps shall meet the requirements laid out for DPR 523 Sketch Maps, but do not need to be generated on the site form template (see Office of Historic Preservation 1995:15).
- e. Overlay the proposed pipeline corridor and all associated work areas and access roads onto the aforementioned sketch map.
- f. A schedule for implementation of the research design.

- g. The preparer's résumé and the résumés of other key staff that are expected to implement the research design.

A145. Upon staff's approval of the research design described in data request 144 immediately above, please implement the archaeological investigation consistent with the approved research design.

A146. Following completion of the archaeological investigation specified in data request 145 above, please provide, for staff's review and approval, an archaeological evaluation report that identifies the methods employed and results of the investigation. The report shall contain the following.

- a. A description of the research design and the methods employed during the study.
- b. A description of the study results.
- c. Recommendations as to eligibility for consideration as a historical or unique archaeological resource for each resource investigated.
- d. A location map on a U.S. Geological Survey, 7.5-minute topographic quadrangle.
- e. For archaeological resources that appear to meet the criteria of historical or unique archaeological resource, describe whether the proposed pipeline would result in impacts to them. Supplement the impact discussion with exhibits and quantify the estimated quantity of archaeological materials that would be damaged or removed.
- f. Proposed mitigation measures for impacted archaeological resources. Supplement the mitigation discussion with exhibits as needed.
- g. A Sketch map (see data request 143 above) that depicts the sampling locations and the location of any newly identified archaeological features.
- h. Revised DPR 523 forms.

BACKGROUND

The proposed process water pipeline would extend through the vicinity of recorded sites P-15-89 (CA-KER-89/H), P-15-171 (CA-KER-171), P-15-179 (CA-KER-179), P-15-2485 (CA-KER-2485), P-15-6725, P-15-7176, P-15-13717, HECA-2008-1 (JM-BVWD-1), HECA-2009-09, HECA-2009-10, BS-BVWD-1, BS-IF-001, BS-IF-002, BS-IF-003, BS-IF-005, JM-IF-001, JM-IF-004, KRM-IF-002, KRM-IF-003, KRM-IF-004, KRM-IF-005, KRM-IF-006, and KRM-IF-007. The Amended AFC states that the process water pipeline would be placed in fill sediments and that impacts on cultural resources would be negligible (Amended AFC Section 5.3, pp. 27–29). The Amended AFC, however,

does not state its source of information regarding the depth of fill in the vicinity of these resources.

DATA REQUEST

- A147. Provide more detailed engineering drawings, showing where exactly the process water pipes will be placed in cross-section of levee. Provide proof, such as historic documents or test results, demonstrating the depth of fill used to build the levee, thereby proving that the sites along the pipeline will be successfully avoided.

BACKGROUND

Information on cultural resources in the project vicinity is distributed among about 12 reports, including six cultural resource reports prepared specifically for HECA and connected actions (Farmer 2008; Hale and Laurie 2009; Hale et al. 2012; JRP Historical Consulting 2009, 2012; Stantec 2011). None of these reports document or graphically display the location of the entire proposed project with previous studies and recorded cultural resources. Energy Commission staff's efforts to assess the potential environmental impacts of the project are hindered by the lack of comprehensive mapping of the project, cultural resource studies, and recorded cultural resources.

DATA REQUEST

- A148. Please provide a revised map showing the entire project and connected actions. On the same map, depict the locations of previous studies labeled with their California Historical Resources Information System study numbers. Also include the limits of URS's 2008, 2009, and 2012 archaeological survey coverage. The revised map must include the locations of all previously and newly recorded cultural resources. Prepare the map as a single oversize sheet, not as a series of smaller sheets.

BACKGROUND

It is unclear whether the applicant's archaeological consultants surveyed a 200-foot buffer surrounding the Controlled Area, future electrical transmission switchyard, proposed railroad laydown yard, the proposed meter/natural gas valve station, and horizontal directional drilling (HDD) entry and exit pits, as required by Appendix B(g)(2)(C) of the Energy Commission's Siting Regulations. The archaeological consultant's archaeological resources study area (ARSA) is described both narratively and graphically (Amended AFC Section 5.3, p. 3, Figure 5.3-1; Amended AFC App. A-2, Attachment B, p. 1, Figure 1; Confidential App., Railroad and Natural Gas Linears, p. 5.3-1, Figure 5.3-1). Figures depicting the ARSA do not identify the locations of the proposed railroad laydown yard, future electrical transmission switchyard, or the HDD entry and exit pits. The narrative descriptions of the ARSA and survey coverage do not indicate whether a 200-foot buffer was surveyed surrounding the Controlled Area, meter/natural gas valve station, or HDD entry and exit pits (Amended AFC App. G-3, pp. 33, 37–38).

DATA REQUEST

A149. Please provide survey coverage figures on a 7.5-minute topographic quadrangle base (set at 7.5-minute scale). The figures must include all project elements and boundaries of the areas actually surveyed.

BACKGROUND

The Amended AFC does not state the depth of excavation for several ground-disturbing activities. This information is necessary to assess the proposed project's potential impacts on cultural resources.

DATA REQUESTS

A150. Please provide the depth of excavation involved in constructing the following project elements:

- a. CO₂ transfer facility.
- b. Natural gas pipeline (also state the diameter of this pipe).
- c. Railroad spur.
- d. Electrical transmission line towers.
- e. Electrical transmission switchyard.
- f. Natural gas meter/valve station.
- g. Potable water line.
- h. Process water line.
- i. Confirm whether excavation within the Project Site will be confined to 5–10 feet below current grade.
- j. Confirm whether pile foundations would be used and whether such piles would extend 40–60 feet below ground surface.

BACKGROUND

The detailed geoarchaeological study provided as Data Response 77 convincingly argues that much of the proposed project is to be located in areas with high sensitivity for buried cultural resources. The project footprint, process water pipeline, and transmission line are all planned for Quaternary Alluvium (Qa), which has high cultural resources sensitivity. The CO₂ pipeline would cross three soil types (Qb, Qa, and QTt), which have high, medium, and low sensitivity, respectively. The new natural gas pipeline route would also extend across multiple soil types (Qb and Qoa), resulting in

one-third of the route crossing areas of high sensitivity and the remainder in areas of low sensitivity (Data Response 77, Table 77-1 and Fig. 77-5). Based on previous archaeological survey and excavation in the HECA project vicinity, it is clear that as-yet-unidentified buried sites are likely to be prehistoric village sites with human remains.

Staff assumes parts of the project site and project linear facilities rights-of-way (ROWS) have been disturbed by agriculture to a depth of three feet, but considerable proposed project ground disturbance would exceed that depth. The ground disturbance resulting from the construction of equipment installations at the plant site would be likely to extend as deep as 10 feet below the surface. The CO₂, natural gas, and process water pipelines would be installed at least five feet below grade. The amount of relatively deep ground disturbance proposed in an area sensitive for archaeological resources is considerable.

Because of the high archaeological sensitivity through much of the project site and along project linear facilities rights-of-way (ROWS), staff expects that archaeological monitoring will be required during construction. During the April, 2010 Workshop, staff proposed selected geoarchaeological field sampling within the project area to obtain more project-specific information. Energy Commission staff believes this would help focus the monitoring effort and would result in better protection for the resources (per the State Historic Preservation Office).

The applicant should also be aware that once geoarchaeological field sampling has refined our understanding of the parts of the project area with the highest archaeological sensitivity, a subsurface inventory survey employing backhoe trenches may be required in some of these areas to identify extremely sensitive resources.

The applicant agreed to design a plan and conduct geoarchaeological field sampling “once a development plan has been finalized for the Project Site” (April, 2010 Workshop Response 23). As of the date of this filing, staff has not received this plan. While staff understands that some of the project elements are still being refined, staff considers most of the project elements to be sufficiently developed for a plan to be prepared and field sampling to take place. Staff must establish a factual basis for the assessment of potential effects to buried deposits within the project impact areas and development of monitoring conditions for the project.

DATA REQUESTS

- A151. Please prepare a primary geoarchaeological field study research plan for the project plant site and linear facility corridors. The plan must be prepared by a prehistoric archaeologist who, at a minimum, meets the U.S. Secretary of Interior’s Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and whose résumé includes the completion of graduate-level coursework in geoarchaeology, physical geography, geomorphology, or Quaternary science, or education and experience acceptable to cultural resources staff. A résumé demonstrating the geoarchaeologist’s qualifications should be included with the proposed plan. The plan shall include soil profiling within the Project Site

where the deepest trenching would occur and along the linear facilities at old stream or water crossings. Submit the research plan for staff approval.

A152. Once staff has approved the plan, please have the qualified geoarchaeologist conduct the field study and prepare a report of the results. The primary study and resulting report should, at a minimum, include the following elements:

- a. A map of the present landforms in the project area at a scale of not less than 1:24,000; the data sources for the map may be any combination of published maps, satellite or aerial imagery that has been subject to field verification, and the result of field mapping efforts;
- b. A sampling strategy to document the stratigraphy of the portions of the landforms in the project impact areas where the construction of the proposed project will involve disturbance at depths greater than 3 feet;
- c. Data collection necessary for determinations of the physical character, the ages, and the depositional rates of the various sedimentary deposits and paleosols that may be beneath the surface of the project impact areas to the proposed maximum depth of ground disturbance. Each landform must be sampled. Data collection at each sampling locale should include a measured profile drawing and a profile photograph with a metric scale, and the screening of a small sample (three 5-gallon buckets) of sediment from the major sedimentary deposits in each profile through 0.25-inch hardware cloth. Data collection should also include the collection and assaying of enough soil humate samples to reliably radiocarbon-date a master stratigraphic column for each sampled landform; and
- d. An analysis of the collected field data and an assessment, based on those data, of the likelihood of the presence of buried archaeological deposits in the project impact areas, and, to the extent possible, the likely age and character of such deposits.

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Stantec. 2011. *Cultural and Paleontological Resources Survey for Modified Alignment of CO₂ Supply Line*. April. Stantec Consulting Corporation. Appendix A in *Amended Application for Certification for Hydrogen Energy California (08-AFC-8), Kern County, California*, by URS Corporation, May 2012. Prepared for Hydrogen Energy California. Submitted to U.S. Department of Energy and California Energy Commission, Sacramento. Docket No. 08-AFC-8A.

Technical Area: **Traffic and Transportation**
Author: John Hope

BACKGROUND

As identified in the amended AFC, the proposed project could operate under one of two alternatives for transporting coal to the project site, either by truck or train. Appendix E-3 of the revised AFC provides a summary of transportation vehicles and routes that would be used during operations. However, Appendix E-3 does not provide information for truck shipments or truck routes related to coal.

DATA REQUESTS

A153. In Appendix E-3, please provide the missing data under the column "Coal" and the row "Truck Shipments."

A154. In Appendix E-3, please identify the truck route(s) for coal.

BACKGROUND

As identified in Table 5.10-12 of the revised AFC, the California Public Utilities Commission (CPUC) administers numerous requirements for design and operation of a railroad. Table 5.10-12 also lists number "9" as the agency contact for these CPUC requirements and refers the reader to Table 5.10-13 which does not list a number "9" or the CPUC as an agency contact. *It is noted that the footnote at the end of Table 5.10-12 incorrectly refers the reader to Table 5.10-11.*

DATA REQUESTS

A155. Please provide the name(s) of the individuals contacted at the CPUC.

A156. Please provide a record of conversation(s) with staff of the CPUC.

A157. Please provide a record of conversation(s) with staff of the Kern County Roads Department.

BACKGROUND

As identified on page 5.10-6 of the amended AFC, "... the Project does not plan to use SR 119 as the primary access route during construction and operation activities ... [to] minimize Project-added traffic ..."

DATA REQUEST

A158. Please identify how the project would determine whether or not to use SR 119 as the primary access route.

BACKGROUND

The amended AFC on pages 5.10-5 through 5.10-8 provides information related to regional and local roadway facilities (e.g., Interstate 5, Stockdale Highway). As part of this information, the revised AFC identifies the annual average daily traffic (AADT) for regional roadway facility segments in the study area. However, the information does not identify the AADT for local roadway facilities.

DATA REQUEST

A159. Please provide the AADT volumes for all local roadway facilities that would experience project-related traffic during construction and operation activities (Alternatives 1 and 2).

BACKGROUND

The amended AFC provides an analysis of peak-hour intersection levels of service (LOS) for the "no project" and with the project construction and operation conditions (Alternatives 1 and 2). The amended AFC concludes that two intersections (SR 43/Stockdale Highway, SR 119/Tupman Road) would be significantly affected by construction and operation activities.

As identified in the amended AFC in Tables 5.10-3 and 5.10-5, construction and operation of the proposed project would result in a peak of 3,720 and 2,906 passenger-car-equivalent (PCE) vehicle trips per day, respectively. In addition, footnote number 4 in Table 5.10-5 of the amended AFC identifies a break in coal trucking activities would occur during the evening peak hour to minimize roadway conflicts with heavy vehicles and identifies coal trucking activities would resume immediately after the peak evening traffic has dissipated.

DATA REQUESTS

A160. Please provide a LOS analysis based on AADT for all roadway segments located in Kern County affected by project construction and operation activities.

A161. Please identify how the project would determine when the peak hour begins and when the peak evening traffic has dissipated.

Technical Area: Land Use and Agricultural
Author: Jonathan Fong

BACKGROUND:

Land Use and Agriculture Tables

All page numbers, figures, and tables cited in this document refer to the 2012 HECA Amended Application for Certification (08-AFC-8A) (AFC), unless otherwise stated. In the definition of terms in Section 5.4 of the AFC, the “Project Site” is defined as the 453 acre parcel of land on which the HECA facility will be located.

Table 5.4-2 of “Existing Land Uses in the Study Area” provides an inventory of the land uses on the Project Site and in the Project Vicinity. Table 5.4-2 identifies the Project Site as 446.4 acres. This deviates from the 453 acre Project Site as defined in Section 5.4 and throughout the AFC.

Table 5.4-3 “Crop Types in the Study Area” provides an inventory of the crop types on the Project Site and in the Project Vicinity. Table 5.4-3 identifies the Project Site as 430.7 acres. This deviates from the 453 acre Project Site as defined in Section 5.4 and throughout the AFC.

DATA REQUEST

A162. Please revise Tables 5.4-2 and Table 5.4-3 to be consistent with the AFC project site acreage of 453 acres or provide clarification of the discrepancy.

Technical Area: Socioeconomics
Authors: Candace M. Hill
Aaron J. Nousaine

BACKGROUND: DIRECT, INDIRECT, AND INDUCED ECONOMIC IMPACTS

The amended Application for Certification (AFC) presents the estimated direct, indirect, and induced economic impacts of the Hydrogen Energy California (HECA) project derived from an application of the IMPLAN economic modeling software using economic data specific to Kern County for 2009. The amended AFC does not provide a clear explanation of the assumptions and input values used in the IMPLAN economic model. To undertake an independent assessment of the economic impacts of the proposed project, California Energy Commission staff requires a complete project budget that identifies major expenditures for construction and operation of all major project components. This should include all aspects of both the HECA and the Occidental of Elk Hills, Inc. (OEHI) projects. It should also identify the value and percentage of total spending within each expense category that will be spent locally within Kern County.

Because the impact estimates reported in the AFC include the impacts of both the HECA and OEHI projects combined, it is not possible to evaluate the independent economic impacts of each project. The economic impact estimates in the AFC also report indirect and induced construction and operations impacts as combined figures. For example, the AFC states on page 5.8-12 that the two projects combined will produce approximately \$1.67 billion in labor income, of which approximately \$294 million would represent the indirect and induced effects of construction related activities. To fully understand the economic impacts of the two projects it is necessary that the economic impact estimates be reported separately. The direct, indirect, and induced economic impacts also need to be reported independently because each represents a different type of economic effect.

The AFC also does not report the estimated fiscal impacts of purchases associated with project operations and maintenance. According to the data provided on page 5.8-23 of the AFC, the HECA project is expected to generate approximately \$77.4 million in taxable sales (7.25 percent sales tax on \$1.06 billion worth of locally purchased materials) during project construction. However, no data is provided on the estimated amount of state and local sales taxes that are likely to be generated by project operations.

DATA REQUESTS

- A163. Provide a detailed list of assumptions and input values used in the IMPLAN economic impact model to derive the economic impact estimates reported in the AFC. This should include the activity type (e.g. industry change, commodity change, labor income change, etc.), the IMPLAN sector, and the event input value used to model each impact event. Any modifications that were made to the IMPLAN data should also be clearly noted.
- A164. Provide staff with a complete project budget for construction, operations, and maintenance for both the HECA and OEHI projects. This should include details by expense category and estimated timelines for construction, operations and maintenance of each project component.
- A165. Report economic impact estimates for the HECA and EOHI projects separately. This should include individual estimates of the estimated direct, indirect, and induced economic impacts on jobs, labor income, output, and value added for each phase of project construction and operation. For each type of impact, please indicate the number of years over which the impact is likely to occur.
- A166. For the employment impacts, please indicate the likely average number of jobs generated by the project for each year of construction and operations.
- A167. Report the estimated state and local sales tax revenues that result based on estimates of annual operations and maintenance expenditures.

BACKGROUND: PROPERTY TAXES

The net assessed value of the HECA project parcels is reported on page 5.8-15 of the AFC and on page 5.8-22, the property tax rate (1.07 percent) and estimated property tax yield based on the net assessed value of the project parcels is reported and identified as the estimated property tax the project would annually yield. The value of the property would be reassessed as new construction occurs on the project site. The estimated property tax has not been reported for a project operational year. The AFC does not report the property tax assessment process applicable to the project. Also, there is no property tax information provided for the properties where the railroad spur would be constructed under Alternative No. 1 for transportation of goods.

DATA REQUESTS

A168. Please report the estimated annual property tax the project would generate during operations. This includes the HECA project site and railroad spur properties (report separately).

A169. Please report the property tax rate(s) for the properties the railroad spur would be constructed upon.

A170. For both the HECA project and railroad spur alternative, please discuss the property assessment process applicable to the project, including the agency tasked with assessing the project property and the agency tasked with setting the tax rate and collecting the property taxes due.

Technical Area:

Greenhouse Gas Emissions

Authors:

Tad W. Patzek

Mike Conway

BACKGROUND

With suitable oil density and reservoir pressure, injected carbon dioxide mixes with the oil it contacts, such that the interfacial tension between these two fluids goes to zero. The CO₂-oil miscibility occurs above the minimum miscibility pressure (MMP). The higher the reservoir temperature is, the higher the MMP. Crude oil composition plays a crucial role. Usually the more intermediate components there are, the lower the MMP. Intermediate content is expressed variously as C₅+ molecular weight, C₁-C₃₀ content, etc. In effect, for lighter crudes, whose API gravity is more than 22⁰, viscosity less than 3 cp at reservoir conditions, and at reservoir depths above 3,000 ft, the crudes are usually miscible with CO₂ at first contact. If CO₂ is only partially miscible with the crude, as may be the case in Elk Hills, the total composition in the CO₂-crude mixing zone can change to develop miscibility in situ. Regardless of whether the displacement is first-contact miscible or develops later, the CO₂ must immiscibly displace any mobile water present with the oil and gas in the reservoir. Since CO₂ has a higher mobility than water, this immiscible displacement is usually very inefficient, creating viscous fingers of CO₂.

As a result, the injected CO₂ bypasses some water and oil. In addition, CO₂ is the least dense fluid in the reservoir and flows to the top (“overrides”), bypassing again significant quantities of oil and water below. Water slugs are injected in between CO₂ slugs to lower the unfavorable mobility ratio.

Based on the available data from 21 field CO₂-injection projects, it appears that at steady state that will follow CO₂ breakthrough in all wells, for each 1 volume of fresh CO₂ injected, 1 volume of CO₂ will be produced, separated, recompressed and reinjected on average. Therefore, with time, each gas injection well may have to inject two volumes of CO₂ per each volume of fresh CO₂ from the plant. The remainder of the injected CO₂ will fill an expanding zone of trapped CO₂. Oxy’s assumed 2/3 volume of CO₂ produced for each volume of CO₂ injected seems low, given the expected high injection pressure and full-interval injection. Staff needs data demonstrating the sequestration of the claimed volume will be sequestered given past experience that shows this may likely not be the case.

DATA REQUEST

A171. Please provide data that demonstrate that each volume of injected CO₂ produces only 2/3 that volume of CO₂ at the production wells.

BACKGROUND

The minimum miscibility pressure for the Elk Hills conditions is approximately 3,000 psi, and the maximum injection pressure (overburden pressure) is close to 5,000 psi. Given the high and constant injection rate of CO₂, 2,000 psi of incremental pore pressure may be insufficient to put away the required volume of CO₂. This constraint will lead inevitably to the very high injection pressures at or above the overburden pressure, and a distinct possibility of activating faults and breaching the overlaying shale barriers. These increased pressures could fracture the rock and lead to leakage or compromise the formation’s ability to store CO₂. Staff needs information on the proposed injection pressures and rates necessary to achieve sequestration.

DATA REQUESTS

A172. Please provide current estimates of CO₂ and water injection pressures required during the life of the project.

A173. Please provide representative downhole well injection rates of CO₂ and water at these injection pressures.

A174. Please provide geomechanical data/calculations/simulations showing the state of stress of the reservoir rock and overburden just above the reservoir during CO₂ injection.

A175. Given 4, what are the current predictions of fault activation and reservoir cap rock integrity? Please provide analysis.

A176. Please provide a thorough description of actual or modeled boundaries of the targeted injection reservoirs (size and type of patterns, number of injectors and producers as a function of time, etc.).

BACKGROUND

The CEC may have the need of verifying the emissions of CO₂ from the HECA power plant and from the sequestration activities in the Elk Hills. The CEC requires knowledge of the Elk Hills oil field and sequestration activities. The CEC cannot rely on the applicant's assessment alone to make this determination, nor does the CEC expect the DOGGR Class II permit review process to completely verify proposed sequestration volumes or oil field adequacy.

The submitted MRV plan contains a great deal of information necessary for the CEC to perform a complete analysis, but staff requires the following documents, which were prepared specifically for the HECA project and concern issues of implementation, scheduling, and design.

- *Pre-FEED Engineering Study, Process Design Basis, Mustang Engineering, April 15, 2010.*
- *Preliminary Project Description (Pre-FEED Stage), ManageTech Solutions, April 16, 2010.*
- *Pre-FEED Engineering Study, Execution Schedule, Mustang Engineering, April 23, 2010.*
- *Pre-FEED Engineering Study, Overall Design Basis, Mustang Engineering, April 28, 2010.*
- *Pre-FEED Engineering Study, Project design drawings, Mustang Engineering, misc dates.*

The documents listed above contain "Extensive information" about "the Elk Hills Oil Field, CO₂ EOR Project, and HECA Project."

DATA REQUEST

A177. Please submit all of the documents listed above.

Technical Area:
Author:

Visual Resources
Elliott Lum

BACKGROUND

According to the Supplemental Environmental Information (SEI) package for the Occidental of Elk Hills, Inc. (OEHI) CO₂ Enhanced Oil Recovery (EOR) project, OEHI is proposing to utilize carbon dioxide from the HECA project to facilitate oil production in its Elk Hills Unit operations.

As stated in the Aesthetics section of the SEI, the project's Processing Facility will be visible in views from the City of Tupman. Additionally, some small components of the proposed project would be visible from the communities of Dustin Acres, Valley Acres, and motorists on portions of Elk Hills Rd, SR 58, Tupman Road, and SR 119 (see Section 4.1).

Six KOPs were selected to evaluate the visual impacts of the proposed project. Each impact discussion for the above KOPs confirms that components of the proposed project may be visible. The visual impacts to all six of the aforementioned KOPs have been characterized as less than significant (see Section 4.1-17 to 19). However, Energy Commission staff has concluded that additional project information is necessary before a significance conclusion can be reached.

DATA REQUESTS

- A178. Please provide revised photographic simulations for each of the six KOP viewpoints reflecting the new aboveground elements of the Processing Facility, including the satellites, pipelines, and any other related aboveground structures that may be visible from the six KOPs.
- A179. Please provide electronic and paper copies of 11-inch by 17-inch color photographic simulations at life size scale for each of the six KOP viewpoints.
- A180. Please provide information on the dimensions (i.e. height and width) of all the proposed above ground structures.



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
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***AMENDED APPLICATION FOR CERTIFICATION FOR THE
HYDROGEN ENERGY CALIFORNIA PROJECT***

**Docket No. 08-AFC-08A
(Revised 8/28/12)**

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DECLARATION OF SERVICE

I, Diane L. Scott, declare that on September 6, 2012, I served and filed a copy of the attached **HYDROGEN ENERGY CALIFORNIA PROJECT (08-AFC-8A), Staff's Data Requests, A124 through A180**, dated September 6, 2012. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at: http://www.energy.ca.gov/sitingcases/hydrogen_energy/index.html

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

For service to all other parties:

- ☒ Served electronically to all e-mail addresses on the Proof of Service list;
- ☐ Served by delivering on this date, either personally, or for mailing with the U.S. Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses marked ***"hard copy required"** or where no e-mail address is provided.

AND

For filing with the Docket Unit at the Energy Commission:

- ☒ by sending one electronic copy to the e-mail address below (preferred method); **OR**
- ☐ by depositing an original and 12 paper copies in the mail with the U.S. Postal Service with first class postage thereon fully prepaid, as follows:

CALIFORNIA ENERGY COMMISSION – DOCKET UNIT
Attn: Docket No. 08-AFC-08A
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.ca.gov

OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:

- ☐ Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission
Michael J. Levy, Chief Counsel
1516 Ninth Street MS-14
Sacramento, CA 95814
michael.levy@energy.ca.gov

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Originally Signed By:

Diane L. Scott
Siting, Transmission and Environmental Protection Division