State Of California | The Resources Agency of California

Memorandum

Date: July 10, 2012
Telephone: (916) 651-8853

California Energy Commission
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08-AFC-8A
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To: Commissioner Karen Douglas, Presiding Member
Commissioner Andrew McCallister, Associate Member
Hearing Officer, Raoul Renaud

From: **California Energy Commission –** Robert Worl, Project Manager
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: **HYDROGEN ENERGY CALIFORNIA PROJECT (08-AFC-8A) ISSUES IDENTIFICATION REPORT**

Attached is staff's Issues Identification Report for the Hydrogen Energy California project's Amended Application for Certification (08-AFC-8A). This report serves as a preliminary scoping document that identifies the issues that the California Energy Commission staff believes will require careful attention and consideration. Energy Commission staff will present the Issues Identification Report at the Informational Hearing and Site Visit to be held on Thursday, July 12, 2012.

This report also provides a proposed schedule pursuant to the 12-month Application for Certification process.

cc: Docket (08-AFC-8A)
Proof of Service List

Attachment: (1) Issues Identification Report

PROOF OF SERVICE (REVISED 6/4/12) FILED WITH
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DLS

HYDROGEN ENERGY CALIFORNIA

(08-AFC-8A)

ISSUES IDENTIFICATION REPORT

July 10, 2012

CALIFORNIA ENERGY COMMISSION
Siting, Transmission and Environmental Protection Division

ISSUES IDENTIFICATION REPORT
HYDROGEN ENERGY CALIFORNIA PROJECT
(08-AFC-8A)

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ISSUES IDENTIFICATION REPORT

This report has been prepared by the California Energy Commission staff to inform the Hydrogen Energy California (HECA) Committee and all interested parties of the potential issues that have been identified in the review of the Amended Application for Certification thus far. These issues have been identified as a result of staff's discussions with federal, state, and local agencies, and our review of the HECA Amended Application for Certification, docket number 08-AFC-8A. The Issues Identification Report contains a project description, summary of potentially significant environmental issues, and a discussion of the proposed project schedule. Staff will continue to address these issues and inform the Committee about progress made towards their resolution by submitting monthly status reports to the Committee.

PROJECT DESCRIPTION

Project History

The original AFC (08-AFC-8) was filed with the Energy Commission on July 31, 2008; and a Revised AFC was submitted in 2009 to reflect a change of the project site to an alternative location. In 2011, Hydrogen Energy California, LLC, (HECA) was acquired from the previous owners by SCS Energy California, LLC. On May 2, 2012, SCS Energy, LLC, submitted an Amended Application for Certification (08-AFC-8A) reflecting several changes to the original project design.

The new Amended Application for Certification (AFC) has been assigned a separate distinguishing docket number, 08-AFC-8A. The Amended AFC for the project supersedes and replaces all previous submissions, and incorporates all relevant information from the previous versions of the HECA proceedings. The applicant intends to construct and operate an Integrated Gasification Combined Cycle (IGCC) power generating facility called Hydrogen Energy California (HECA).

The proposed HECA project would gasify blends of 75 percent western coal and 25 percent petroleum coke from California refineries to produce hydrogen to fuel a combustion turbine operating in combined-cycle mode. The amended project incorporates a proposed manufacturing complex that would produce urea in both liquid and pellet form, and other byproducts for agricultural and manufacturing uses.

For power generation, a Mitsubishi Heavy Industries MHI 501GAC® CT combustion turbine has been selected. The combined cycle power block would generate approximately 405 MW of gross power and would provide a nominal 300-megawatts of electricity to the grid. The gasification block would also capture approximately 90 percent of the carbon from the raw syngas (the direct end of the gasification process) at steady-state operation, which would be transported to a custody transfer point at Elk Hills Oil Field for CO_2 enhanced oil recovery (EOR) and sequestration. Due to the complex gasification and sequestration (storage) process, there is a larger than usual parasitic electrical load.

The U.S. Department of Energy, (DOE) is providing financial assistance to HECA, LLC for the definition, design, construction and demonstration of the HECA project. DOE selected the HECA project through a competitive process under the Clean Coal Power Initiative Round 3 program (CCPI). Because HECA is receiving federal funding it is subject to the National Environmental Policy Act (NEPA) process. Energy Commission staff are working closely to coordinate both the environmental analysis and schedule for the HECA project with the DOE team.

Project Location

The proposed project would be located on a 453-acre site (currently used for agricultural production of alfalfa, cotton, and onions). HECA, LLC also has an option on 653 acres adjacent to the project site, which would allow for controlled access and land use. The project site would be located in western unincorporated Kern County, approximately 7 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. An irrigation canal (California State Water Project aqueduct) lies to the south and the Elk Hills Oil Field is located approximately 1 mile south of the project site.

The project site is currently subject to a Williamson Act agricultural land preservation contract. The applicant is currently pursuing a contract cancellation process with Kern County. 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 located approximately 370 feet to the northwest, 1,400 feet to the east, 3,300 feet to the southeast of the proposed project site, and 4,000 feet to the north.

Project Description

Highlights of the project include:

- The Amended HECA facility proposes to operate with 25 percent petroleum coke from California refineries blended with 75 percent western bituminous coal. Transportation of petroleum coke and coal to the project would be by either a truck route, or via an alternative rail spur proposed to be built and owned by the applicant.

- The feedstock (coal and petroleum coke) would be gasified to produce a synthesis gas (syngas) that would be processed and purified to produce a hydrogen-rich gas, which would be used to fuel the combustion turbine for electric power generation and burners that provide supplemental fire to the heat recovery steam generator (HRSG) that produces steam from the combustion turbine exhaust heat.

  At least 90 percent of the carbon in the raw syngas would be captured in a high-purity carbon dioxide stream during steady-state operation, which would be sold to Occidental Petroleum, compressed and transported by pipeline off-site to the nearby Elk Hills Oil Field for injection into deep underground oil reservoirs for enhanced oil recovery (EOR) and sequestration.

- Project greenhouse gas emissions (e.g., carbon dioxide) are proposed to be reduced through the use of the EOR CO_2 sequestration process.

- Brackish groundwater will be supplied by the Buena Vista Water Storage District and treated on site for process use. Potable water would be supplied by West Kern Water District for drinking and sanitary purposes.

Several basic Project components remain unchanged, including the following:

- The project continues to use IGCC technology.

- State-of-the-art emission controls are included in the design.

- Zero Liquid Discharge technology is used in the project design for process and waste water.

- Liquid oxygen and nitrogen are produced in the air separation unit, and supplied to the gasification unit, the combustion turbine, sulfur recovery unit and other process components of HECA.

Some notable project changes are proposed in the Amended AFC, including the following:

- Mitsubishi Heavy Industries (MHI) oxygen-blown dry feed gasification technology has been selected.

- A MHI 501GAC® Combustion Turbine and Steam Turbine has been selected.

- A new, integrated manufacturing complex (IMC) will produce approximately 1 million tons per year of low-carbon nitrogen-based products, including urea ammonium nitrate and anhydrous ammonia, to be used in agricultural and industrial applications.

- Coal transportation. HECA proposes to use two alternatives for transferring coal to the project site:

  Alternative 1, Rail Transportation. An approximately 5-mile new industrial railroad spur would connect the project site to the existing San Joaquin Valley Railroad, Buttonwillow railroad line, north of the project site. This railroad spur would also be used to transport some IMC products to customers.

  Alternative 2, Truck Transportation. Truck transport would be via existing roads from an existing coal transloading facility northeast of the project site. The truck route distance is approximately 27 miles.

The routes of the natural gas pipeline, potable water pipeline, and electrical transmission have been refined as follows:

- An approximately 13-mile new natural gas pipeline will interconnect with an existing Pacific Gas and Electric Company (PG&E) natural gas pipeline located north of the Project Site.

- Potable water will be delivered via an approximately 1-mile pipeline from a new West Kern Water District potable water production site east of the project site.

- An approximately 2-mile electrical transmission line will interconnect with a future PG&E switching station east of the project site.

If approved, construction of the project is proposed to begin 2013, with completion of construction in 2017, and commencement of commercial operation by the end of 2017.

POTENTIAL MAJOR ISSUES

This portion of the report contains a discussion of the potential major issues that staff has identified to date. Discovery has not yet taken place and potentially interested parties have not yet had an opportunity to identify their concerns. The identification of the potential issues contained in this report is based on comments of other government agencies received to date and on staff's judgment of whether any of the following circumstances will occur:

Potential significant impacts that may be difficult to mitigate;

Potential areas of noncompliance with applicable laws, ordinances, regulations or standards (LORS);

Areas of conflict between the parties; or

Areas where resolution may be difficult or may affect the schedule.

The table on the following page lists all the subject areas evaluated and notes those areas where major issues have been identified. Although most technical areas are identified as having no potential issues, it does not mean that an issue will not arise in the future. In addition, disagreements regarding the appropriate conditions of certification may arise between staff and applicant that would require discussion at workshops and potentially during subsequent hearings.

Subject Area	Major Issue	Subject Area	Major Issue
Air Quality/Green House Gases	Yes	Noise and Vibration	No
Alternatives	No	Paleontological Resources	No
Biological Resources	Yes	Public Health	No
Cultural Resources	Yes	Socioeconomics	No
Efficiency and Reliability	No	Soil & Water Resources	Yes
Facility Design	No	Traffic and Transportation	Yes
Geological Resources	No	Transmission Line Safety	No
Hazardous Materials	No	Transmission System Engineering	No
Worker Safety and Fire Protection	No	Visual Resources	No
Land Use	No	Waste Management	Yes
Project Description	No	Water Resources	Yes

This report does not limit the scope of staff's analysis throughout this proceeding, but acts to aid in the identification and analysis of potentially significant issues that HECA poses. The following discussion summarizes major issues, identifies the parties needed to resolve the issue, and outlines a process for achieving resolution.

JURISDICTION AND SCOPE OF REVIEW

Energy Commission Review of Occidental Petroleum's CO_2 Enhanced Oil Recovery Activities

The Energy Commission has "the exclusive power to certify all sites and related facilities in the state." (Pub. Resources Code §25500.) A related facility is defined as including "any equipment, structure, or accessory dedicated to and essential to the operation of the thermal powerplant." (Cal. Code Regs., tit. 20, §1702(n).) Staff believes that the CO_2 pipeline extending from the HECA facility to the enhanced oil recovery (EOR) processing facility clearly falls within the definition of related facility and, thus, is subject to the Energy Commission's jurisdiction and permitting authority.

The Energy Commission is obligated to analyze the potential environmental impacts of Occidental Petroleum's CO_2 EOR activities as they clearly fall within the "whole of the action" of the proposed project pursuant to the California Environmental Quality Act (CEQA). Staff will need Occidental Petroleum's continued participation and cooperation to ensure that we obtain the necessary information to complete the required environmental analysis. Staff will also need to work closely with the permitting agencies

to ensure that any recommended mitigation measures are applied to these activities or, alternatively, condition the HECA project to ensure that such mitigation occurs. It remains to be seen whether this approach will provide enough assurances to allow staff to conclude that the project will successfully sequester the necessary quantity of CO_2.

The Division of Oil, Gas, and Geothermal Resources (DOGGR), will be implementing the federal Underground Injection Control program and providing Occidental Petroleum with the necessary project approval for the injection wells that will be used for the EOR and sequestration activities. Even though DOGGR will not be permitting the sequestration aspect of Occidental Petroleum's EOR proposal, these wells and the underlying permits are integral to staff's analysis of whether the project will successfully sequester its carbon dioxide. As such, it is critical that DOGGR's permitting process run in tandem with the Energy Commission's permitting of HECA. Occidental Petroleum has not yet indicated when it intends to file a permit application with DOGGR. DOGGR has informed staff that, once a permit application is determined to be complete, it would need anywhere between three to four months and one to two years to approve a project, depending upon the complexity of the proposal and the responsiveness of the applicant in providing additional needed information. Therefore, it is important that Occidental Petroleum file its application with DOGGR as soon as possible. Staff does not believe that it will be able to reach any conclusions with regard to the project's sequestration proposal unless the DOGGR permit is at or near completion.

In addition, staff is concerned that since DOGGR has indicated they do not have jurisdiction for the sequestration component of the EOR project, staff will be responsible for permitting this element. This may require staff to develop and implement a program to measure and monitor, report, and verify (MRV) CO_2 sequestered during operations, in accordance with statutory requirements. Sequestration on the scale proposed for this project has not been conducted in the US. Nationwide experience in implementing permanent sequestration is very limited. Staff does not have the necessary technical expertise in house to develop and implement this program and will largely rely on consultants to complete the analysis. Additional staff resources may also be required to carry out an MRV program if the project is licensed to sequester CO_2.

AIR QUALITY AND GREENHOUSE GASES

BACKGROUND AND MAJOR ISSUE

Staff reviewed the Amended Application for Certification (Amended AFC) for Hydrogen Energy California and has identified four potential air quality or greenhouse gas issues that could cause compliance issues with state law or delay the Energy Commission review process.

Secondary Emission Impacts

The applicant has proposed two options for coal delivery – unit train alone, and a train-truck hybrid option. In either case, the project would require a large number of truck and train trips for feedstock (fuel) delivery and for transporting products produced in the IMC. The significance of these regional emission impacts from this potentially large secondary emission source is unclear. Additionally, the assumptions used for train emissions may significantly underestimate the train shipping emissions by estimating engine sizes that are too small and by using unrealistic engine emissions control (engine tier) assumptions.

Greenhouse Gas Emission Impacts

Staff has not yet performed a greenhouse gas (GHG) emission analysis for this type of project. Although the project, as proposed, is designed to reduce power plant operational GHG emissions through CO_2 capture and sequestration, it is unclear how to consider fuel transportation-related GHG emissions. Additionally, staff will need to carefully evaluate the certainty of the project achieving sequestration through EOR.

Additional information and description is needed to complete the GHG regulatory compliance assessment and impact assessment. For example the applicant has not fully addressed the compliance requirements with ARB's new CO_2 Cap and Trade regulation. The facility would participate under Electric Power Generation and also as a CO2 Supplier, and perhaps other source categories depending on how the process units are separated as required by this regulation.

Staff is currently unsure if this project will be in LORS compliance with the SB 1368 Emission Performance Standard given the difficulty in addressing the ongoing demonstration of CO_2 sequestration. Additionally, it is possible that under the California Environmental Quality Act (CEQA), significant GHG emissions impacts may be determined once all of the direct (primary and secondary) and indirect emission sources are fully detailed.

PSD Permitting/Determination of Complance Schedule

The San Joaquin Valley Air Pollution Control District (District) is in the process of obtaining State Implementation Plan (SIP) delegation of Prevention of Significant Deterioration (PSD) permitting from the U.S. Environmental Protection Agency (USEPA). The USEPA published a proposed approval of the District's portion of the SIP in the June 1, 2012 Federal Register. The timing of that transfer of permitting responsibility could affect the timing of the (new) Preliminary Determination of

Compliance (DOC) or require a supplement to the new Preliminary DOC once the PSD delegation transfer occurs.

BIOLOGICAL RESOURCES

BACKGROUND AND MAJOR ISSUES

The HECA project and linear facilities would develop approximately 800 acres of agricultural lands interspersed with areas of disturbed, native scrub habitats, in western Kern County. An additional 1,700 acres of disturbed, native habitat would be developed on the Elk Hills Oil Field for the carbon dioxide injection portion of the HECA project, including approximately 650 miles of new pipeline routes on the Elk Hills. Collectively, these lands are known to support several special-status species including the state and federally listed San Joaquin kit fox, blunt-nosed leopard lizard, western burrowing owl, Swainson's hawk, several listed small mammal species, and special-status plant species.

The HECA project is proposed for an area located in a San Joaquin kit fox Core Recovery Area that provides critical connection routes between San Joaquin kit fox satellite populations in the Elk Hills, Buena Vista Valley, and Lokern Natural Areas. Several sensitive plant species considered rare or threatened by the California Native Plant Society are also known to occur in the project area. The blunt-nosed leopard lizard, a state and federally endangered species and a California Fully Protected species, is known to occupy the Elk Hills Oil Field. The project may also impact jurisdictional waters of the U.S. consisting of a system of canals and ditches in a highly agricultural area, areas that may also fall under Section 401 of Clean Water Act, and state waters covered by Section 1600 of the California Fish and Game Code.

Potentially significant biological resources issues for this project include:

- Insufficient sensitive plant and wildlife species survey data for revised linear facilities;
- Loss of San Joaquin kit fox habitat and individuals from project traffic road mortality and mitigation for those impacts;
- Project impacts to the regional movement of San Joaquin kit fox in a Core Recovery Area;
- Lack of a field delineation and impact assessment of state waters (California Department of Fish and Game has indicated previously that horizontal directional drilling activities beneath canals would require a Section 1600 Lake or Streambed Alteration Agreement and agency-approved frac-out plan); and
- Development of impact avoidance measures to avoid impacts to blunt-nosed leopard lizard individuals and habitat, a California Fully Protected and no-incidental-take species, during project construction, operation, and maintenance activities along the project's linear facilities.

For the carbon dioxide injection portion of the HECA project that would take place on the Elk Hills Oil Field and be permitted by the State Department of Conservation,

Division of Oil, Gas, and Geothermal Resources (DOGGR), but still analyzed by Energy Commission staff, the potentially significant biological resources issues include the following:

- Identifying species impacts and mitigation associated with the EOR activities. For example, since blunt-nosed leopard lizard is known to occur on Elk Hills in large numbers, yet incidental take is not possible under the California Endangered Species Act, would take avoidance measures for the OEHI project be covered under the Energy Commission license and conditions of certification or would the measures be included in another agency's permit? In addition, avoiding impacts and incidental take of sensitive plants and wildlife species over the long-term, phased construction schedule proposed for the OEHI project will require close coordination between the applicant and agencies.

- Identifying habitat impacts and a compensatory mitigation proposal for the loss of habitat values associated with the OEHI project. In addition, the draft Habitat Conservation Plan for the Elk Hills Oil Field identifies mitigation lands (current and proposed mitigation parcels) and avoidance of the conservation lands will require close coordination amongst the applicant and agencies.

- Additional information must be provided on the occurrence of federal or state jurisdictional waters in the Elk Hills Oil Field, along with an impact assessment, and mitigation discussion.

CULTURAL RESOURCES

Missing Information – Based on staff's examination of the AFC and the supplemental environmental information provided, the standard cultural resources information required in Appendix B of the Energy Commission Siting Regulations has not been provided for the OEHI project site (aside from the CO_2 pipeline). Specifically, cultural resources information is lacking for the CO_2 EOR processing facility, the 13 processing satellites, 150 new wells, and 652 miles of new pipeline. In order to complete the analysis, staff will require the following information:

- A discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

- A summary of the ethnology, prehistory, and history of the region with emphasis on the area within no more than a 5-mile radius of the project location. Please note that the project location includes all access roads and linear facilities, as well as the CO_2 EOR processing facility, the 13 processing satellites, 150 new wells, and 652 miles of new pipeline identified above.

- The results of a literature search to identify cultural resources within an area not less than a 1-mile radius around the project site and not less that than one-quarter (0.25) mile on each side of the linear facilities.

- A report presenting the results of pedestrian surveys of the CO_2 linear route and any proposed facilities, staging areas or injection points.

- Copies of all technical reports whose survey coverage is wholly or partly within 0.25 mile of the area surveyed for the project.

- Copies of California Department of Parks and Recreation (DPR) 523 forms for all cultural resources identified in the literature search as being 45 years or older or of exceptional importance.

- A copy of the USGS 7.5' quadrangle map of the literature search area delineating the areas of all past surveys.

- A map at a scale of 1:24,000 U.S. Geological Survey quadrangle depicting the locations of all previously known and newly identified cultural resources compiled through the research discussed above.

- It is anticipated that collecting the above missing information would require 3 to 6 months to complete and approximately 2 months for staff to incorporate into our analysis. Therefore, these studies should begin as soon as possible or there is a possibility that the licensing schedule could be delayed.

- Predicting Buried Sites - The HECA site footprint and linear alignments are proposed to be built in deposits considered to have a high potential to contain well-preserved, buried cultural materials. These materials would be expected within 35 feet of the modern ground surface. Therefore, all of the HECA project's proposed ground-disturbing activities have the potential to substantially and adversely change the California Register of Historical Resources eligibility of archaeological deposits that may lie buried in the project area(s) of analysis (PAAs.). Additional geoarchaeological field explorations will be required to establish a factual basis for the assessment of potential effects to buried deposits within the project limits. Without these additional field studies, staff cannot adequately predict potential impacts to buried resources or design appropriate mitigation measures. It is anticipated that these geoarchaeological field studies would require 3 months to complete and approximately 1 month for staff to incorporate the results into their analysis. Therefore, these studies should begin as soon as possible or there is a possibility that the licensing schedule could be delayed.

- Native American Consultation - The Energy Commission is required to consult with Native American tribal representatives under the Governor's Executive Order B-10-11 (Sept. 19, 2011). Staff's initial review of information provided in the AFC indicates that resources of particular interest to Native Americans are present within the PAA, or likely to be discovered during construction. These

include burials and archaeological sites identified as possessing important cultural values during consultation with Native American communities during previous projects in the region (Jackson et al. 1999). Based on previous consultation with some of the affected tribes, it appears that the current project has the potential to visually degrade the integrity and significance of these resources. Tribal input is essential to the accurate identification of the impacted resources and the nature or significance of the impacts. In addition, the development of effective mitigation can best be accomplished in consultation with tribal members who understand the cultural value of the resources. Energy Commission staff is consulting with Native American tribes and organizations that maintain an interest and knowledge of cultural resources in the project vicinity. Energy Commission cultural resources staff will also need to coordinate with the Department of Energy (DOE) regarding Section 106 consultation to ensure that the Commission's impact analysis is fully informed and consistent with DOE's impact analysis.

SOIL AND WATER RESOURCES

WATER SUPPLY

A fundamental requirement for a power plant and related facilities reviewed by the Energy Commission is to demonstrate that its water use is reasonable relative to current technology, recently permitted projects, and local, regional, and state water needs. The applicant must demonstrate that its design minimizes water use and that they propose to use the lowest quality water available. Though the HECA project was originally submitted some time ago, the Amended AFC will be reviewed and compared with recently permitted projects and evaluated for its compliance with current state water policy. The Kern County subbasin is in overdraft and is relied upon by residents for domestic uses and for agriculture. The project's proposed onsite use of up to 7,500 acre-feet per year (AFY) of water will be evaluated carefully because of its value in the regional context, and for induced impacts to water supply and quality.

The proposed project would use water produced through the Buena Vista Water Storage District's (BVWSD) Brackish Groundwater Remediation Program (BGRP). The water produced through the BGRP is described by the BVWSD as providing a sufficiently degraded source of water for the HECA project while also preventing the migration of saline water into the aquifer from the west. Staff is particularly concerned with understanding water quality and supply risks associated with this proposal. Staff will carefully evaluate how this proposed water supply might degrade the local aquifer, which is currently in a state of overdraft and an important water supply source for local residents. Staff anticipates significant time will be required to conduct technical workshops and ensure sufficient discovery to ensure there are no significant impacts from the proposed groundwater pumping.

Another potentially significant issue for the proposed project is its failure to evaluate alternative sources of water that could be significantly more degraded in terms of quality. The project's preferred alternative should be evaluated against reasonable

alternatives. For example, Buena Vista Water Storage District's Final Environmental Impact Report (FEIR) describes that the second phase of their proposed Brackish Groundwater Remediation Program (BGRP) could provide up to 4,500 AFY of brackish groundwater. The water source for this alternative is shallow groundwater that is already problem water and is impacting crop yield. This alternative source is worthy of consideration for industrial supply water for the HECA plant. In light of this alternative and the fact that the project proposes to use 7,500 AFY, staff expects a more thorough analysis of its viability.

A thorough description of proposed construction and operational water uses at the Occidental Petroleum oil field was not submitted with the AFC but may be required for staff's analysis. In this case, staff will require a significant amount of time for analysis.

WASTE DISCHARGE REQUIREMENTS

The HECA project proposes to collect potentially contaminated storm water from inside the process plant area and drain it into HDPE-lined retention basins. Storm water that comes in contact with exposed equipment and/or surfaces can potentially result in contaminated runoff. Potential pollutants in the runoff could come from the feedstock and solid waste material from the gasifier and co-product processes, oil, thinners, chemical reagents, solvents, and other contaminants. The applicant proposes that after runoff ponds and solids have settled, the collected water would be tested then transferred to either the water treatment plant for reuse or the wastewater treatment plant for disposal via the Zero Liquid Discharge system. Although the retention ponds are not intended to function as final disposal locations (i.e. evaporation ponds), the potentially contaminated water may be considered "designated waste" as defined by California Water Code Section 13173. The applicant has not provided any information demonstrating that the waste would not be considered a designated waste. If the waste streams are so designated, the applicant would be required to comply with waste discharge requirements (WDR) developed jointly by the Regional Water Quality Control Board and the Energy Commission in accordance with our in-lieu permit authority. In order to determine whether the waste must be regulated under WDRs the applicant must file a report of waste discharge to the Energy Commission and RWQCB for review and determination. The applicant is of the opinion that WDRs are not required for this project, but staff believes that this determination should be made by the RWQCB and Energy Commission staff. This process should be initiated by the applicant submitting a Report of Waste Discharge (Form 200) with the necessary supplemental information to the Regional Board. The RWQCB and Energy Commission staff would then determine whether to recommend the adoption of WDRs, prohibition of discharge, or waiver of the WDRs. If WDRs are required, then Energy Commission staff would incorporate these requirements into conditions of certification as part of the Final Staff Assessment. The process for developing WDRs could take three to six months, which could potentially delay publication of the Preliminary Staff Assessment.

Elk Hills Enhanced Oil Recovery and Carbon Sequestration

The Amended HECA project provides a substantial new body of information regarding the Elk Hills enhanced oil recovery (EOR) and carbon sequestration (CS) project, which is directly dependent on CO_2 delivery from the HECA power plant. Staff is therefore required to perform a complete environmental analysis of the EOR activities. In order to complete this analysis staff must work closely with Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) who will also be permitting the EOR activities under their delegated authority from USEPA. The applicant has not provided DOGGR with the necessary application to start the review process. In order to get DOGGR started on their review, at a minimum, the applicant must provide them an engineering report, geology report, and an injection plan to satisfy their requirements for EOR/CS permitting. The engineering report would require additional analysis of the oil reservoir characteristics, reservoir fluid data, and well construction and operation parameters. The geologic study would be needed to address questions about the injection zone cap rock/confining layer. This would include both analysis of the possibility of micro-fractures in the cap rock and whether such fractures could allow the CO_2 to migrate outside of the zone of injection and seismic study related to the injection of the large volumes of CO_2 and the effects on local faulting. Completion of these reports and plans could significantly impact the project schedule particularly since much of the information may be proprietary and may be difficult to obtain from the applicant.

Staff also has significant questions about the monitoring, reporting, and verification of CO_2 sequestration and notes the following items could create additional delays in the process of the project analysis.

1. The applicant has not provided data to substantiate their claim that the reservoir can accept CO_2 at the proposed injection rate. Due to the complexity of understanding the CO_2 life cycle from power plant to EOR working fluid to final sequestration, staff will require time to build a consensus among the stakeholders and interested parties.

2. No mechanism is suggested by the applicant to trace CO_2 under the ground. The proposed mass balance approach may not prove that CO_2 is sequestered in a known location. Staff will require extra time to resolve this issue, which has yet to be addressed by the applicant.

3. The applicant has yet to provide a mechanism for tracing CO_2 injected into the ground. The proposal either assumes all CO_2 remains beneath the Reef Ridge shale "cap rock" or relies on surface leakage alone to account for lost CO_2. Some CO_2 may be lost via alternative mechanisms that need to be identified to ensure a complete accounting.

4. Staff requires significantly more technical data regarding reservoir pressure profiles at depth within the proposed injection reservoirs including the Stevens reservoir.

5. Given the lack of information about oil-production-induced reservoir deformation at Elk Hills, staff will require additional time to build a monitoring program to track surface and subsurface structural changes caused by CO_2 injection, and effects on wells, oil production and carbon sequestration.

HAZARDOUS MATERIALS MANAGEMENT POTENTIAL ISSUES

The proposed project is a complex facility with chemical processes that include many different types of reactor vessels, storage vessels, treatment units, piping, valves, and flanges as well as transfer and transport facilities which would, if considered separately, each constitute a stand-alone industrial plant. The project proposes to use, store, create, and transport large volumes of several highly toxic hazardous materials. Furthermore, in addition to the actual facilities owned and operated by Hydrogen Energy California, staff will conduct the environmental review for the high-pressure CO_2 pipeline and enhanced oil recovery and carbon sequestration facility to be owned and operated by Occidental of Elk Hill, Inc.

While staff does not currently envision any un-resolvable issues in this area, staff resources may be stretched, and time-schedules difficult to meet, in order to prepare an adequate, thorough, and complete environmental review of hazardous materials management for this project. The different processes and large volume hazardous materials that will require diligent review include the following:

1. A coal/pet coke gasification plant.
2. An air separation unit producing cryogenic materials (1200 tons of liquid oxygen and 100 tons of liquid nitrogen).
3. A syngas scrubber, sour shift, low-temperature gas cooling, sour water treatment facility.
4. A mercury removal unit.
5. An acid gas removal (Rectisol process) unit.
6. An ammonia synthesis unit that produces and stores up to 3.8 million gallons of anhydrous ammonia.
7. An anhydrous ammonia transfer unit (to tanker trucks).
8. A urea unit
9. A urea pastillation unit.
10. A urea pastille handling and transfer unit.
11. A urea ammonium nitrate complex that produces nitric acid, ammonium nitrate, and urea
12. A sulfur recovery unit that includes the storage of up to 1.4 million pounds (700 tons) of liquid sulfur at an unknown temperature.
13. A 13-mile natural gas pipeline.
14. A 3-mile pressurized CO_2 pipeline.
15. An Enhanced Oil Recovery Facility
16. Additional large volumes of hazardous materials including:
    a. sodium hydroxide (60,000 gallons of 5-50% concentration)
    b. sodium hypochlorite (7,000 gallons of unknown concentration)
    c. diesel fuel (2000 gallons)
    d. gasoline during construction (4000 gallon)

e. 300,000 gallons of methanol in a storage tank plus an additional 250,000 gallons within the process vessels
f. ~6000 pounds per year of activated carbon containing unknown amounts of mercury removed from the syngas downstream of the sour shift/ low-temperature gas cooling unit and stored on-site as waste for an unknown period of time until transported off-site to a Class III hazardous waste facility.

TRAFFIC AND TRANSPORTATION

As one option for transporting coal to the project site, the applicant is proposing to construct a 5 mile railroad spur directly to the project. Depending on the number of railcars, trains have the potential to block road crossings (i.e., Adohr Road, Stockdale Highway) for extended periods of time. Based on average length of railcars (i.e., gondolas), anticipated number of railcars used per day to deliver coal, and preliminary design of the project site, train loads have the potential to block roadways. Staff will work with the applicant to determine onsite railcar storage needs, to determine railroad spur design, and to resolve any issues.

As an alternative to the rail spur, the applicant has proposed use of trucks to transport coal to the HECA site from Wasco. This would require a high number of daily heavy truck trips (average of 183 per day) on local roadways and highway overpasses. Also, according to the AFC, 50 trucks would be used on a daily basis for heavy equipment deliveries for construction of the project. The effect of heavy weight loads on local roadways and highway overpasses is unknown at this time. Staff will work with Kern County, Caltrans, and the applicant to determine roadway and overpass weight limits and to resolve any issues.

The applicant is required to notify the Federal Aviation Administration (FAA) of the construction of any structures with a height greater than 200 feet from grade as part of completing FAA Form 7460. As part of the previous project, the applicant obtained from the FAA a Determination of No Hazard to Air Navigation, stating that all HECA structures would pose no safety impact to aircraft operations. As identified in the revised AFC, the maximum height of certain structures would increase from 260 feet to 305 feet. Specifically, the feedstock dryer and gasification structure would be 305 feet in height. It is also anticipated that the crane structures would exceed the structure heights.

The increase in structure heights as part of the revised AFC requires the applicant to resubmit FAA Form 7460 and receive another Determination of No Hazard to Air Navigation prior to start of construction. The applicant's status of resubmitting FAA Form 7460 is unknown at this time.

WASTE MANAGEMENT

Hydrogen Energy California (HECA) is proposing an Integrated Gasification Combined Cycle polygeneration project. The project will gasify a fuel blend of 75 percent coal and 25 percent petroleum coke to produce synthesis gas (syngas). Syngas produced via gasification will be purified to hydrogen-rich fuel, and used to generate a nominal 300

megawatt (MW) of baseload electricity in a combined-Ccycle power block, nitrogen-based products in an integrated manufacturing complex, and carbon dioxide (CO_2) for use in enhanced oil recovery. The gasifier will produce 246,016 cubic yards per year of solid vitrified by-product called “gasification solids”, which will be recycled or disposed in a landfill.

The 246,016 cubic yards per year (277,000 tons per year) of gasification solids is approximately the same amount as the gasifier solids figures provided for the previous iteration of the project. The applicant is speculating that the solids will be nonhazardous or covered by regulatory exclusion and can be disposed of by conventional means. A characterization of the waste has not been provided so staff must do further research and evaluation to determine what type of waste the process may produce. Depending on the characterization of the waste and given the very significant volume of waste there could be a significant impact to the remaining capacity of landfills appropriate for disposal. In 2010, the applicant was in the process of negotiating with the county to mitigate the amount of material that would be disposed in Kern County. Staff will contact both Kern County and CalRecycle to confirm that there will be no impact from the project. In a recent meeting, the applicant indicated the waste would be shipped to Utah via railcar. Staff could find no mention of this disposal method in the AFC. Resolution of these issues could affect the schedule for project analysis.

ENERGY COMMISSION STAFF'S PROPOSED SCHEDULE

HYDROGEN ENERGY CALIFORNIA PROJECT (08-AFC-8A)

	ACTIVITY	Calendar Day
1	Amended Application for Certification determined was submitted	05-02-12
2	Preliminary issue resolution and data request workshop	06-20-12
3	Staff files Issues Identification Report	07-10-12
4	Staff files 1st Round Data Requests	07-10-12
5	Information hearing and site visit	07-12-12
6	Applicant files Data Responses (round 1)	07-20-12
7	Data response and issue resolution workshop (round 2)	08-16-12
8	Staff files data requests (round 2, if necessary)	08-22-12
9	SJVAPD issues Preliminary Determination of Compliance (PDOC)	08-31-12
10	Applicant provides data responses (round 2, if necessary)	09-24-12
11	Applicant submits supplemental information resulting from workshops	09-24-12
12	Preliminary Staff Assessment filed	10-24-12
13	SJVAPD issues Final Determination of Compliance (FDOC)	10-30-12
14	Preliminary Staff Assessment workshop(s)	11-14-12
15	Comments on PSA are due	11-28-12
16	Final Staff Assessment filed	01-11-13
17	Prehearing Conference*	TBD
18	Evidentiary hearings*	TBD
19	Committee files Presiding Member's Proposed Decision*	TBD
20	Hearing on the PMPD*	TBD
21	Commission issues final Decision	TBD
***Items 17 thru 21 will be scheduled by the Committee**		

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

AMENDED APPLICATION FOR CERTIFICATION
FOR THE HYDROGEN ENERGY CALIFORNIA PROJECT

Docket No. 08-AFC-08A
(Est. 6/4/2012)

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*indicates change

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DECLARATION OF SERVICE

I, Diane Scott, declare that on July 10, 2012, I served and filed a copy of the attached HYDROGEN ENERGY CALIFORNIA PROJECT (08-AFC-8A) ISSUES IDENTIFICATION REPORT, dated July 10, 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:

_X_ Served electronically to all e-mail addresses on the Proof of Service list;

_X_ 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 NOT marked "e-mail preferred."

AND

For filing with the Docket Unit at the Energy Commission:

_X_ 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
Diane Scott
Siting, Transmission and Environmental Protection Division