

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET
SACRAMENTO, CA 95814-5512
www.energy.ca.gov



March 4, 2010

DOCKET	
08-AFC-8	
DATE	MAR 04 2010
REC'D	MAR 04 2010

Mr. Elliot Heide
Assistant General Council
Occidental Petroleum Corporation
10889 Wilshire Boulevard
Los Angeles, California 90024

Re: February 2, 2010, Occidental Letter on behalf of the Hydrogen Energy California Project Application for Certification (08-AFC-8)

Dear Mr. Heide,

Thank you for providing the California Energy Commission (Energy Commission) with an outline of information regarding Occidental Petroleum Corporation's (Oxy) carbon dioxide (CO₂) enhanced oil recovery (EOR) project, as it pertains to the Application for Certification for the Hydrogen Energy California (HECA) project. We are looking forward to receiving the information listed below, which I understand will be submitted to the Energy Commission's Siting Transmission and Environmental Protection Division (STEP) in mid-March:

- o Oxy's CO₂ EOR Project Description
- o Technical Studies analyzing the potential for CO₂ EOR to act as sequestration
- o Sample Class II Underground Injection (UIC) Control Permit Application to DOGGR (non confidential), and
- o Proposed measuring, monitoring, verification, and well abandonment standards

In addition to receiving the aforementioned information from Oxy, and to better understand the CO₂ EOR and sequestration process for purposes of our California Environmental Quality Act (CEQA) review, the Energy Commission will also need written responses to the questions below. Our preference would be to see Oxy's responses included with the information that is currently being prepared for STEP, if feasible.

CO₂ /EOR Process

1. What is the nexus between enhanced oil recovery and sequestration as it pertains to Oxy's proposal?
2. What percentage of the injected carbon dioxide remains trapped in the oil wells/rock formation during the CO₂ EOR process, and is it considered sequestration?
3. What percentage of CO₂ that is initially injected is expected to be captured and re-injected into the wells?
4. Will the CO₂ EOR be operating 24 hours/ day?

PROOF OF SERVICE (REVISED 02/08/10) FILED WITH
ORIGINAL MAILED FROM SACRAMENTO ON 03/04/10

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5. What percentage of time over a year is the process expected to operate without interruption?
6. How frequently will maintenance and overhaul activities be scheduled which could affect the CO₂ EOR process? Will Oxy still be able to take CO₂ when wells are closed for maintenance or an unexpected malfunction occurs?

Site Assessment

1. What site characterization process (e.g., site assessment, subsurface characterization, etc.) will be used by Oxy to determine which wells will be used for the CO₂ EOR Project?
2. How many oil wells are expected to be used annually by Oxy for CO₂ EOR?
3. What would be the anticipated life-cycle of the wells used during CO₂ EOR?
4. What is the capacity of the wells to be injected with CO₂?

CO₂ Transfer and Storage

1. How many tons of CO₂ per year is projected to be transported through the CO₂ pipeline to the custody transfer point in the Elk Hills Field?
2. What happens to any excess received from the HECA CO₂ pipeline and how would it be stored and used by Oxy?

Monitoring, Mitigation, and Verification (MMV)

1. What type of subsurface monitoring techniques (e.g., sensors) will be used by Oxy to manage the performance risks (e.g., containment, leakage, fracturing of cap rock, etc.), associated with CO₂ in the wells?
2. What would be the average rate of damage caused to the wellhead and casing from high pressure injection of CO₂ into the wells?
3. What practices and safety measures would be used to prevent or minimize injection of CO₂ to the non-target areas of the reservoir and surrounding geologic features at the Elk Hills Field?

Stewardship

1. Who will have ownership of the pore space, mineral rights, etc. associated with the CO₂ EOR process?
2. At the end of the active operation when the CO₂ supply is finished, how will Oxy decommission the wells?

3. What technologies and procedures will Oxy use to ensure long-term isolation, as well as monitor and insure the CO₂ storage integrity?
4. How will long-term liability issues associated with CO₂ storage be addressed?
5. What measure will Oxy use to monitor the storage site and how long after site closure does Oxy expect to continue monitoring?

After receiving and reviewing Oxy's information, the Energy Commission technical staff may have data requests, and will forward them to the HECA project representative Gregory Skannal. To move the Energy Commission's siting review of the HECA project forward as expeditiously as feasible, I have directed STEP staff to request a Status Conference with the HECA Project Committee as soon as possible to discuss issues regarding review and regulatory oversight of the carbon sequestration proposal. In addition, once we have received Oxy's information, staff will schedule a data response workshop with the HECA applicant and Oxy to discuss the previously submitted HECA responses to Energy Commission Data Requests Set One and Set Two, and Oxy's information.

Your efforts in addressing this matter are appreciated as is your continued coordination with the HECA project. We look forward to working with HECA/Oxy/DOGGR and interested agencies regarding this matter. If you have any questions regarding the submittal of your information, please contact Rod Jones, Project Manager for the HECA project at (916) 654-5191.

Sincerely,

Original signed by:
TERRENCE O' BRIEN
Deputy Director
Siting, Transmission and
Environmental Protection Division

Enclosure

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

**APPLICATION FOR CERTIFICATION
FOR THE *HYDROGEN ENERGY*
*CALIFORNIA PROJECT***

Docket No. 08-AFC-8

**PROOF OF SERVICE LIST
(Rev. 2/8/10)**

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DECLARATION OF SERVICE

I, April Albright, declare that on March 4, 2010, I served and filed copies of Energy Commission Staff's Status Report 3; and Response Letter to Occidental Regarding CO₂ Enhanced Oil Recovery Project, both dated March 4, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [\[www.energy.ca.gov/sitingcases/hydrogen_energy\]](http://www.energy.ca.gov/sitingcases/hydrogen_energy).

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

- sent electronically to all email addresses on the Proof of Service list;
- by personal delivery;
- delivering on this date, for mailing with the United States 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 "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

- sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

OR

- depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-8
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury 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.

Original signed by: _____
April Albright