

California Energy Commission DOCKETED 08-AFC-8A
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OEHI Response to CEC Follow-Up Questions Regarding Workshop Request A41 (CEC Data Request A38)

Amended Application for Certification
for
HYDROGEN ENERGY CALIFORNIA
(08-AFC-8A)
Kern County, California

February 2013

Occidental of Elk Hills, Inc.

California Energy Commission (CEC)

Data Request A38

February 2013

Mike Kelly
Vector Environmental, Inc.

CEC Data Request A38

William Walters email 1-29-12. In reviewing the workshop data response submittal received today we are seeing a problem with Tables 1.D and 2.D. The well maintenance rows on both tables are showing a total CO₂e value that isn't the sum of the values for CO₂, N₂O, CH₄ and the those three values are different than they were presented before for the 552 MMSCFD case. Unless you identify why the older values changed and that the summed value is incorrect, we plan on using the older values and use the multiplier to determine the correct 685 MMSCFD case values.

Response: (Greenhouse Gas Emission Calculations)

Per Workshop Request A39-A42, the greenhouse gas (GHG) emissions summarized in Tables 1C and 1D (552 MMSCFD design case) and Tables 1C and 1D (685 MMSCFD design case) were reviewed. The value reported in the Table 1C and 1D for carbon dioxide emission (CO₂) from well maintenance was input to the table incorrectly. Tables 2C and 2D were propagated from Tables 1C and 1D therefore they contain a similar error.

The incorrect CO₂ value listed for well maintenance in Table 1D (386 Tonne/year) was not used in the emission calculations. The erroneous data in the table has been corrected. Corrected tables are attached. The changes result in:

- an increase in CO₂e emission of 0.59 tonne/day for the 552 MMScf/day case (Table 1C);
- an increase in CO₂e emission of 0.73 tonne/day for the 685 MMScf/day case (Table 2C);
- no change in the CO₂e emissions reported in Table 1D or Table 2D.

One additional question. While the 685 MMSCFD case provides the maximum recycle case, what would be a reasonable multiplier for project average recycle rate to determine the long-term project average emissions (for direct GHG emissions analysis purposes only).

Response

OEHI recommends using the 685 MMSCFD case to determine the long-term emissions.

Attachment-I

Design Case of 522 MMScfd

Greenhouse Gas Emissions

Table-1.C
Maximum Daily Emissions of Greenhouse Gases

Design Basis 552 MMScfd				
Equipment Description and Process Information	Carbon Dioxide CO2e Tonne/Day	Methane CH4 as CO2e Tonne/Day	Nitrous Oxide N2O as CO2e Tonne/Day	Total CO2e Tonne/Day
Stationary Source	27,652.36	3.02	4.31	27,659.69
Indirect (Electric Power)	-----	-----	-----	493.63
Well Maintenance	1.06	0.00	0.00	1.06
Mobile Source	0.45	0.00	0.00	0.46
Total GHG Emissions	27,653.87	3.02	4.31	28,154.84
Note:				
<ol style="list-style-type: none"> 1. Maximum daily emissions from stationary source equipment were calculated using the maximum rated capacity of the equipment assuming a 24 hour per day operating schedule at 100% load. 2. The maximum daily emissions from well maintenance activities were calculated by dividing the emission for year 2034 by the number of days of well maintenance conducted during the year (150 days per year). 3. Per the San Joaquin Valley Air Pollution Control District calculation procedures, maximum daily emissions from emergency use only stationary source equipment include the potential emissions that could result from a 24 hour emergency event. 4. The maximum daily emissions from mobile source activity were estimated by dividing the annual emission by 365. 				

Table-1.D
Annual Emissions of Greenhouse Gases

Design Basis 552 MMScfd				
Equipment Description and Process Information	Carbon Dioxide CO2e Tonne/Year	Methane CH4 as CO2e Tonne/Year	Nitrous Oxide N2O as CO2e Tonne/Year	Total CO2e Tonne/Year
Stationary Source	46,132.35	156.53	23.29	46,312.17
Indirect (Electric Power)	-----	-----	-----	180,176.63
Well Maintenance	172.86	0.14	0.44	173.44
Mobile Source	165.07	0.17	1.53	166.77
Total GHG Emissions	46,470.28	156.38	25.26	226,829.01
Annual average emissions over the life of the project.				

Attachment-II

Design Case of 685 MMScfd

Greenhouse Gas Emissions

Criteria Pollutant Emissions (685 MMScfd Design Basis)

Table-2.C
Maximum Daily Emissions of Greenhouse Gases

Design Basis 685 MMScfd				
Equipment Description and Process Information	Carbon Dioxide CO2e Tonne/Day	Methane CH4 as CO2e Tonne/Day	Nitrous Oxide N2O as CO2e Tonne/Day	Total CO2e Tonne/Day
Stationary Source	34,314.97	3.74	5.34	34,324.06
Indirect (Electric Power)	-----	-----	-----	612.57
Well Maintenance	1.32	0.00	0.00	1.32
Mobile Source	0.56	0.00	0.01	0.57
Total GHG Emissions	34,316.85	3.74	5.36	34,938.52
<p>Note:</p> <p>1. Greenhouse gas emissions from equipment and indirect GHG emissions from electric power consumption were calculated for the 685 MMScfd design case using a proration factor of 1.2409 (= 685/552). For additional information on the calculation procedures refer to the notes included in Table-2.A found in Attachment-I.</p>				

Table-2.D
Annual Emissions of Greenhouse Gas Emissions

Design Basis 685 MMScfd				
Equipment Description and Process Information	Carbon Dioxide CO2e Tonne/Year	Methane CH4 as CO2e Tonne/Year	Nitrous Oxide N2O as CO2e Tonne/Year	Total CO2e Tonne/Year
Stationary Source	57,247.57	194.25	28.90	57,470.72
Indirect (Electric Power)	-----	-----	-----	223,588.76
Well Maintenance	214.51	0.17	0.55	215.23
Mobile Source	204.84	0.22	1.90	206.96
Total GHG Emissions	57,666.92	194.64	31.35	281,481.67
<p>Note:</p> <p>1. Greenhouse gas emissions from equipment and indirect GHG emissions from electric power consumption were calculated for the 685 MMScfd design case using a proration factor of 1.2409 (= 685/552). For additional information on the calculation procedures refer to the notes included in Table-2.B found in Attachment-I. Annual average emissions over the life of the project.</p>				



**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
PROOF OF SERVICE
(Revised 2/11/13)**

SERVICE LIST:

APPLICANT

SCS Energy, LLC
Marisa Mascaro
30 Monument Square, Suite 235
Concord, MA 01742
mmascaro@scsenergyllc.com

Tiffany Rau
2629 Manhattan Avenue, PMB# 187
Hermosa Beach, CA 90254
trau@heca.com

Hydrogen Energy California, LLC
George Landman
Director of Finance and
Regulatory Affairs
500 Sansome Street, Suite 750
San Francisco, CA 94111
glandman@heca.com

CONSULTANT FOR APPLICANT

URS Corporation
Dale Shileikis, Vice President
Energy Services Manager
Major Environmental Programs
One Montgomery Street, Suite 900
San Francisco, CA 94104-4538
dale_shileikis@urscorp.com

COUNSEL FOR APPLICANT

Michael J. Carroll
Marc T. Campopiano
Latham & Watkins, LLP
650 Town Center Drive, 20th Fl.
Costa Mesa, CA 92626-1925
michael.carroll@lw.com
marc.campopiano@lw.com

INTERESTED AGENCIES

California ISO
e-recipient@caiso.com

Department of Conservation
Office of Governmental and
Environmental Relations
(Department of Oil, Gas &
Geothermal Resources)
Marni Weber
801 K Street, MS 2402
Sacramento, CA 95814-3530
marni.weber@conservation.ca.gov

INTERVENORS

California Unions for Reliable Energy
Thomas A. Enslow
Marc D. Joseph
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814
tenslow@adamsbroadwell.com

Association of Irrigated Residents
Tom Frantz
30100 Orange Street
Shafter, CA 93263
tfrantz@bak.rr.com

Kern-Kaweah Chapter
of the Sierra Club
Andrea Issod
Matthew Vespa
85 Second Street, 2nd Floor
San Francisco, CA 94105
andrea.issod@sierraclub.org
matt.vespa@sierraclub.org

INTERVENORS (Cont'd)

Environmental Defense Fund (EDF)
Timothy O'Connor, Esq.
123 Mission Street, 28th Floor
San Francisco, CA 94105
toconnor@edf.org

Natural Resources Defense Council
George Peridas
111 Sutter Street, 20th Fl.
San Francisco, CA 94104
gperidas@nrdc.org

Kern County Farm Bureau, Inc.
Benjamin McFarland
801 South Mt. Vernon Avenue
Bakersfield, CA 93307
bmcfarland@kerncfb.com

HECA Neighbors
c/o Chris Romanini
P.O. Box 786
Buttonwillow, CA 93206
roman93311@aol.com

ENERGY COMMISSION STAFF

*Robert Worl
Project Manager
robert.worl.energy.ca.gov

*John Heiser
Associate Project Manager
john.heiser@energy.ca.gov

*Lisa DeCarlo
Staff Counsel
lisa.decarlo@energy.ca.gov

*Indicates Change

**ENERGY COMMISSION –
PUBLIC ADVISER**

Blake Roberts
Assistant Public Adviser
publicadviser@energy.ca.gov

COMMISSION DOCKET UNIT

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

**OTHER ENERGY COMMISSION
PARTICIPANTS (LISTED FOR
CONVENIENCE ONLY):**

*After docketing, the Docket Unit
will provide a copy to the persons
listed below. Do not send copies of
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so.*

KAREN DOUGLAS
Commissioner and Presiding Member

ANDREW McALLISTER
Commissioner and Associate Member

Raoul Renaud
Hearing Adviser

Galen Lemei
Adviser to Presiding Member

Jennifer Nelson
Adviser to Presiding Member

David Hungerford
Adviser to Associate Member

Patrick Saxton
Adviser to Associate Member

Eileen Allen
Commissioners' Technical
Adviser for Facility Siting

DECLARATION OF SERVICE

I, Dale Shileikis, declare that on February 11, 2013, I served and filed copies of the attached OEHI Response to CEC Follow-Up Questions Regarding Workshop Request A41 (CEC Data Request A38), dated February, 2013. This document is accompanied by the most recent Proof of Service, which I copied from the web page for this project at: http://www.energy.ca.gov/sitingcases/hydrogen_energy/.

The document has been sent to the other persons on the Service List above in the following manner:

(Check one)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

 X I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those persons noted above as "hard copy required";
OR

 Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: 2/11/13


