URS

Memorandum

California Energy Commission
DOCKETED
08-AFC-8A
TN # 68392
NOV. 06 2012

Date: October 30, 2012

To: U.S. EPA:
Cleveland Holladay
Shaheerah Kelly

San Joaquin Valley Air Pollution Control District:
Leland Villalvazo
Homero Ramirez

California Energy Commission:
Will Walters

Hydrogen Energy California:
Marisa Mascaro

From: Julie Mitchell, URS

Subject: **Hydrogen Energy California Class II Visibility Analysis**

As noted in the Prevention of Significant Deterioration (PSD) application (May 2012), the nearest Class II areas that meet the National Park Service PSD guidance definition are Sequoia National Forest, 54 kilometers away, and Los Padres National Forest, 49 kilometers away from the Hydrogen Energy California (HECA) Project. Since both of these parks are approximately 50 kilometers or farther from HECA, with an emissions to distance factor (Q/d) of less than 6, the U.S. Forest Service agreed that impacts would be less than significant. Therefore, no Class II area visibility analysis was conducted in the PSD application.

U.S. EPA has since requested that a Class II area visibility analysis be conducted, even though there is no officially defined Class II area near the Project. Therefore, this Class II visibility analysis was performed for the Elk Hills area that lies south of the facility.

This visibility analysis was conducted in accordance with U.S. Environmental Protection Agency (U.S. EPA) guidance in *Workbook for Plume Visual Impact Screening and Analysis* (Revised), 1992, hereafter referred to as "1992 U.S. EPA Guidance." U.S. EPA's VISCREEN model (Version 1.01) was used to evaluate visibility impacts. The model is expected to provide a conservative estimate of the Project's impact on visibility in the Elk Hills area.

The VISCREEN model is designed to determine whether the plume from a facility has the potential to be perceptible to an untrained observer under "reasonable worst case" conditions. The model measures the change in perceptibility of a plume due to an increase in emissions as a

function of contrast and color changes at different values of the scattering angle (angle between direct solar radiation and the line of sight). The green contrast value (Cp) was developed as a measure of the perceived reduction in contrast. The color difference parameter (ΔE) was developed to specify the perceived magnitude of brightness and color changes due to a plume.

The VISCREEN model performs four tests that are based upon the Level 1 screening criteria for ΔE and Cp (2.0 and 0.05, respectively). The first two tests refer to visual impacts caused by plume parcels located inside the boundaries of a given area. The last two tests refer to visual impacts caused by plume parcels located outside the boundaries of a given area. For internal and external visibility assessments, the two tests assess the perceptibility of the plume in relation to two plume-viewing backgrounds (i.e., the horizon sky and a black terrain object).

The area around the HECA Project Site is at an elevation of 90 meters, and is generally very flat with no nearby terrain features for a visibility assessment. An exception to this are the Elk Hills (300 to 470 meters elevation), which are in an area to the south and southwest of the Project Site. In this area, the terrain provides a contrast that makes changes in visibility perceptible. Although the Tule Elk Reserve State Park is closer, there are no terrain features within the park for a visibility assessment. Thus, the area that is examined in this visibility analysis is the Elk Hills. The analysis examines the potential visual impacts inside the Elk Hills area; impacts outside the area are not considered.

Onsite emissions from all HECA stationary sources were included at normal daily operating rates for oxides of nitrogen (NO_X) and particulate matter, as well as primary nitrogen dioxide (NO_2) emissions from the nitric acid unit. The nitric acid unit emissions leaving the stack are composed of about 50 percent NO_X and 50 percent NO_2. Because the VISCREEN model assumes that 10 percent of NO_X emissions are initially converted to NO_2, the nitric acid unit emissions included in the visibility modeling analysis were 55.6 percent directly emitted primary NO_X emissions, and 44.4 percent NO_2 emissions. Table 1 includes emission rates used in the modeling.

Table 1
Total HECA Facility Emission Rates (g/s)

PM 24 hour	2.69
NO_X 24 hour	4.46
Primary NO_2 24 hour	0.23

Notes:

PM = particular matter
NO_X = oxides of nitrogen
NO_2 = nitrogen dioxide

Other input parameters, such as observer and Class II distances from the Project, background visible ranges, the background ozone concentration, and meteorological conditions for a Level I analysis are included in Tables 2 and 3, respectively. The parameters outlined in Table 3 are all defaults provided from the 1992 U.S. EPA Guidance for a Level 1 analysis. The visibility analysis was completed in the Elk Hills, where hill peaks are between 11 and 15 kilometers south of the Project area. The Level 1 screening approach uses worst-case meteorological conditions, which include extremely stable atmospheric conditions (stability category F), low wind speed (1 meter per second) persisting for 12 hours, and a wind direction that would transport the plume directly adjacent to the observer.

Table 2
Visibility Analysis Distances (kilometers)

Distance between HECA sources and observer in Class II Area/Elk Hills (d)	11
Distance between HECA sources and closest Class II area boundary/Elk Hills (x_{min})	11
Distance between HECA sources and farthest Class II area boundary/Elk Hills (x_{max})	15

Table 3
Level 1 Modeling Parameters used in VISCREEN

Model Input	
Background Visible Range (R_{vo})	25 kilometers
Background Ozone concentration	0.04 parts per million
Meteorological parameters, Level 1	1 meter per second, stability category F
Significance Thresholds	
Color Difference Critical Value (ΔE)	2
Contrast Critical Value (C)	0.05

Table 4 presents the results of the Level 1 screening analysis for the proposed project in the Elk Hills. The Delta E and Contrast values were below the default screening threshold values inside the Elk Hills range. Therefore, visibility impacts caused by emissions from the HECA Project will not be perceptible to most individuals in the Elk Hills south of the Project.

Table 4
Elk Hills Level 1 VISCREEN Results

Maximum Visual Impacts INSIDE Area Screening Criteria ARE NOT Exceeded								
					Delta E		Contrast	
Background	Theta	Azimuth	Distance	Alpha	Criteria	Plume	Criteria	Plume
SKY	10	142	15	27	2	1.765	0.05	0.013
SKY	140	142	15	27	2	0.532	0.05	-0.012
TERRAIN	10	84	11	84	2	1.932	0.05	0.019
TERRAIN	140	84	11	84	2	0.291	0.05	0.01

References:

U.S. EPA (U.S. Environmental Protection Agency), 1992. "Workbook for Plume Visual Impact Screening and Analysis." EPA-450/R-92-023. October.

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
(Revised 10/9/12)

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

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

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

COUNSEL FOR APPLICANT
Michael J. Carroll
Latham & Watkins, LLP
650 Town Center Drive, 20th Fl.
Costa Mesa, CA 92626-1925
michael.carroll@lw.com

INTERESTED AGENCIES
California ISO
e-recipient@caiso.com

Marni Weber
Department of Conservation
Office of Governmental and
Environmental Relations
(Department of Oil, Gas &
Geothermal Resources)
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

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

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

INTERVENORS (con't.)
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

*indicates change

ENERGY COMMISSION – DECISIONMAKERS

KAREN DOUGLAS
Commissioner and Presiding Member
karen.douglas@energy.ca.gov

ANDREW McALLISTER
Commissioner and Associate Member
andrew.mcallister@energy.ca.gov

Raoul Renaud
Hearing Adviser
raoul.renaud@energy.ca.gov

Eileen Allen
Commissioners' Technical
Advisor for Facility Siting
eileen.allen@energy.ca.gov

Galen Lemei
Advisor to Presiding Member
galen.lemei@energy.ca.gov

Jennifer Nelson
Advisor to Presiding Member
jennifer.nelson@energy.ca.gov

David Hungerford
Advisor to Associate Member
david.hungerford@energy.ca.gov

*Pat Saxton
Advisor to Associate Member
patrick.saxton@energy.ca.gov

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

ENERGY COMMISSION – PUBLIC ADVISER

Jennifer Jennings
Public Adviser's Office
publicadviser@energy.ca.gov

DECLARATION OF SERVICE

I, Dale Shileikis, declare that on November 6, 2012, I served and filed a copy of the attached Hydrogen Energy California Class II Visibility Analysis, dated October 30, 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;

____ 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:

__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.