

<b>DOCKET</b> 08-AFC-8
<b>DATE</b> 3-20-2012
<b>RECD.</b> 3-20-2012

**RESPONSES TO CEC COMMENTS ON THE  
MODELING PROTOCOL SUPPLEMENT FOR  
THE HYDROGEN ENERGY CALIFORNIA  
(HECA) PROJECT**

**Revised Application for Certification (08-AFC-8)**

*Submitted to:*

**California Energy Commission**

*Prepared on behalf of:*

**Hydrogen Energy California LLC**

March 20, 2012

**URS**

DOCKET

Hydrogen Energy California (08-AFC-8)

Response to Specific Comment 1

Responses to CEC Comments on February 21, 2012 Modeling Protocol Supplement

Technical Area: Air Quality

Technical Lead: William Walters

#### SPECIFIC COMMENT

1. **Page 3 – Second bullet. Should the last sentence be written as “...natural gas burner/nozzle under a much shorter time duration.”?**

#### RESPONSE

The sentence should read “...natural gas burner/nozzle under a much shorter time duration.”

## **SPECIFIC COMMENT**

- 2.     *Page 4 – Urea Unit discussion. It would be useful if the terminology “essentially inerts” for the treated vapors was clarified...such as “(i.e. primarily nitrogen)” as appropriate to properly define the inerts.***

## **RESPONSE**

In their upcoming filing with the California Energy Commission (CEC), Hydrogen Energy California (HECA) will provide the composition of the vented gas stream.

### **SPECIFIC COMMENT**

- 3. *Page 8 – Second to last paragraph. The use of EMFAC2007 to determine on-road emissions may be problematic for the CEQA modeling analysis given that it isn't the State approved model. The modeling of mobile source emissions is strictly being performed to meet CEQA analysis purposes so some additional discussion of why the out-of-date EMFAC2007 is appropriate or conservative should be provided. A discussion of the comparison of emissions factors, particular if EMFAC2007 would provide conservative emissions factors for the incoming/outgoing delivery trucks, both for criteria pollutants and DPM if true, would alleviate this concern.***

### **RESPONSE**

The California Emission FACTor 2007 (EMFAC2007) model is being used by the HECA Project because it has been approved by both California and U.S. Environmental Protection Agency (U.S. EPA). The EMFAC2011 model is not currently a federally approved model. The HECA Project is subject to both California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) compliance. HECA will file a combined document with the CEC and the U.S. Department of Energy (DOE) that will provide information for CEC and DOE preparation of the combined CEQA and NEPA decision document.

HECA will also file a federal conformity analysis with U.S. EPA Region IX to demonstrate that the HECA Project will not interfere with state and local implementation plans that are designed to bring the San Joaquin Valley Air Pollution Control District (SJVAPCD) into attainment status with the National Ambient Air Quality Standards (NAAQS). The conformity analysis will use the federally approved EMFAC2007 model to obtain on-road vehicle emission factors. Subsequent to EPA approval of the conformity analysis, it will be submitted to SJVAPCD. To ensure consistency between the CEQA and NEPA analyses and the federal conformity analysis, EMFAC2007 will be used to obtain vehicle emission factors for the emissions calculations and modeling.

## SPECIFIC COMMENT

4. ***Page 9 – Meteorological data selection. It is understood given SJVAPCD modeling guidance why the Bakersfield meteorological data was selected for the criteria pollutant modeling analysis, but there is MM5 derived meteorological data from the west side of air basin that could be used for the HRA modeling. Please discuss why this data isn't being used and identify if SJVAPCD was consulted about the use of this data for the HRA and the results of that consultation.***

## RESPONSE

SJVAPCD was consulted, and they provided meteorological data to be used for all dispersion modeling analyses using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), including both Ambient Air Quality Standards and Health Risk Assessment (HRA) modeling. SJVAPCD processed and provided to HECA the data from the most representative meteorological station, the Bakersfield airport, for the five most recent available meteorological years. HRA modeling will use AERMOD and Hotspots Analysis and Reporting Program (HARP) On-Ramp with the same meteorological data set used for the criteria pollutant modeling analyses for consistency with the analyses that will be conducted by SJVAPCD in review of the air permit. SJVAPCD has provided hourly meteorological data that pair in time with the hourly background ozone and nitrogen dioxide data for 2006–2010. This is the most recent 5-year data set available for all parameters needed. HECA will be using these years of data for all modeling analyses.

To determine the most representative meteorological station, SJVAPCD and HECA considered many factors. The HECA Project is situated in a valley at a base elevation of 87 meters. The Bakersfield airport station is 20 miles away and is also situated in the valley, with an elevation of 149 meters. However, sites on the west side of the air basin that use the MM5 data for the basis of the data set are at Missouri Triangle and Fellows, both upslope in the hills west of the HECA Project Site, at base elevations of 268 meters and 472 meters, respectively. Temperatures would generally be cooler in the hills, and wind patterns are not as representative at these stations as at the Bakersfield airport station, which is situated in the valley, as is the HECA Project Site.

Attachment 4-1 presents wind roses for a comparison of wind speed and direction at Bakersfield Meadows Field Airport, Fellows, and Missouri Triangle stations for the most recent 5-year periods at each site. The wind directional patterns differ more in the valley than in the hills; therefore, the most representative meteorological data from the Bakersfield station will be used for the criteria pollutant and HRA modeling.

**ATTACHMENT 4-1**

**Wind Roses for Bakersfield Meadows Field Airport (2006–2010),**

**Fellows, California (2004–2008), and**

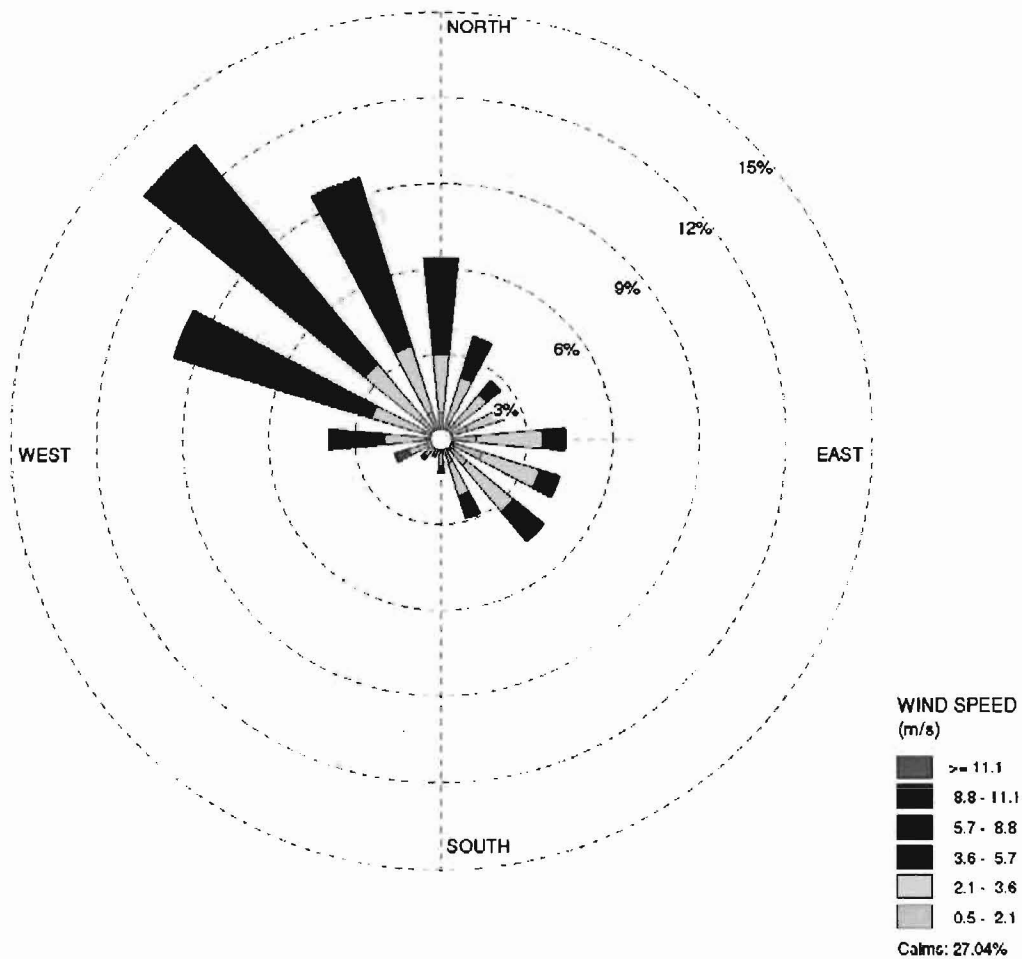
**Missouri Triangle (2004–2008)**

## WIND ROSE PLOT:

**Bakersfield Meadows Field Airport 2006-2010**  
SJVAPCD Processed, March 2012

## DISPLAY:

**Wind Speed**  
**Direction (blowing from)**



## COMMENTS:

## DATA PERIOD:

**Start Date: 1/1/2006 - 00:00**  
**End Date: 12/31/2010 - 23:00**

## COMPANY NAME:

**URS**

## MODELER:

**LMB**

## CALM WINDS:

**27.04%**

## TOTAL COUNT:

**43746 hrs.**

## AVG. WIND SPEED:

**2.91 m/s**

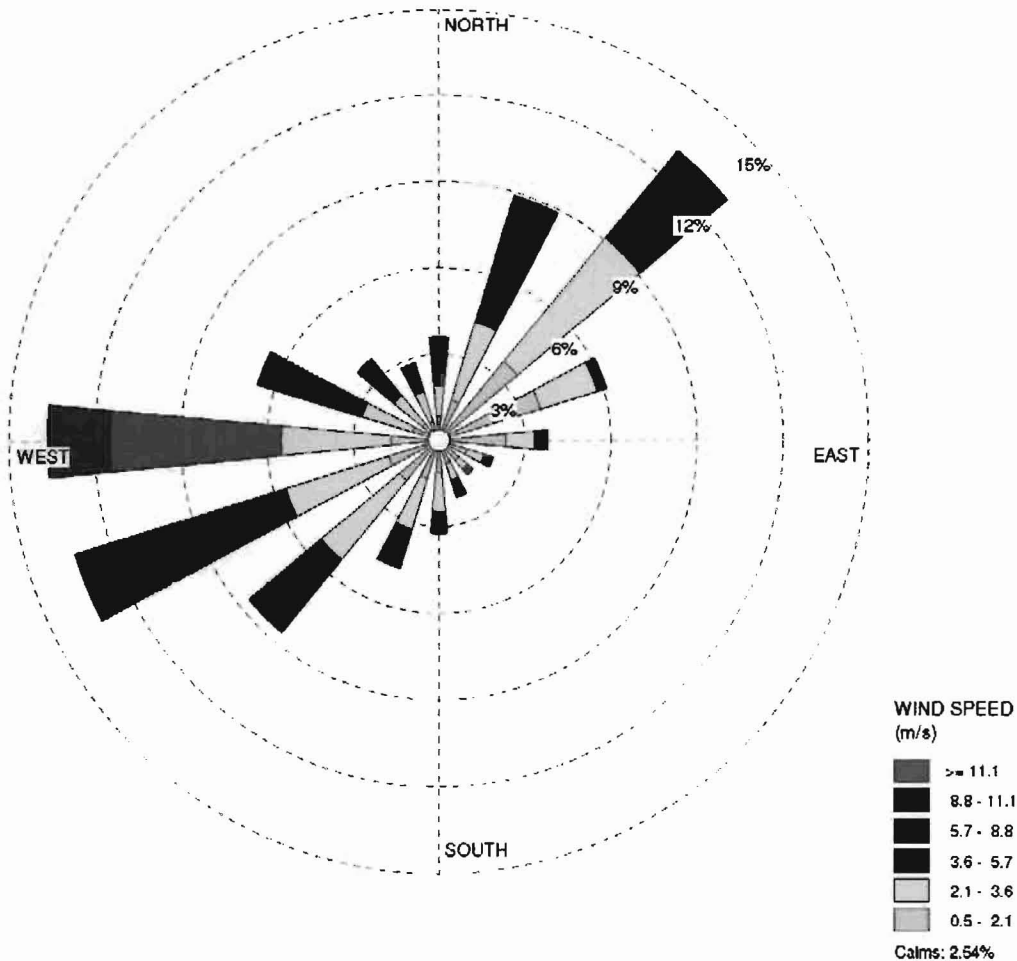
## DATE:

**3/8/2012**

## PROJECT NO.:

WIND ROSE PLOT:  
FELLOWS, CALIFORNIA SJVAPCD MM5 DATA

DISPLAY:  
Wind Speed  
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/2004 - 00:00  
End Date: 12/31/2008 - 23:00

COMPANY NAME:

URS

MODELER:

LMB

CALM WINDS:

2.54%

TOTAL COUNT:

43848 hrs.

AVG. WIND SPEED:

3.00 m/s

DATE:

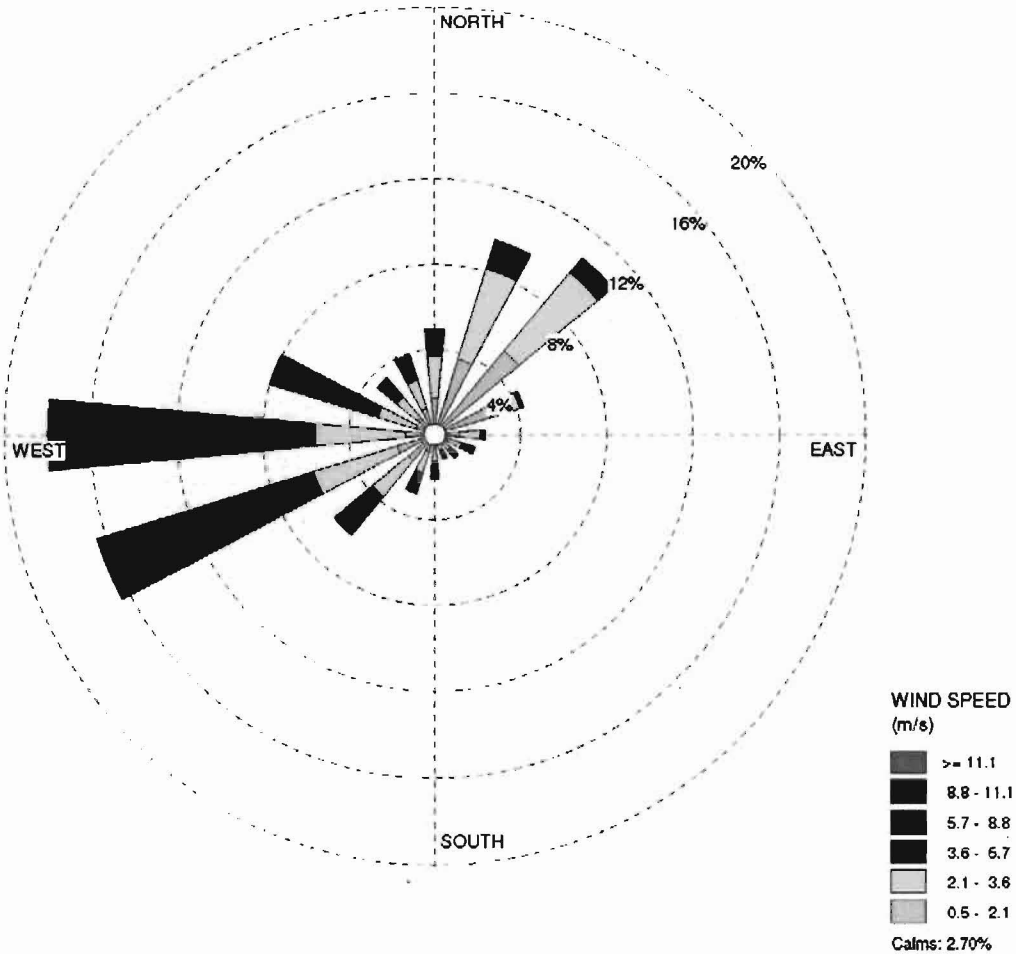
3/8/2012

PROJECT NO.:



WIND ROSE PLOT:  
MISSOURI TRIANGLE, CALIFORNIA SJVAPCD MM5 DATA

DISPLAY:  
Wind Speed  
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date: 1/1/2004 - 00:00  
End Date: 12/31/2008 - 23:00

COMPANY NAME:

URS

MODELER:

LMB

CALM WINDS:

2.70%

TOTAL COUNT:

43848 hrs.

AVG. WIND SPEED:

3.11 m/s

DATE:

3/8/2012

PROJECT NO.:

## GENERAL COMMENT

- 1. Without a complete PFD and material and energy balance, it is difficult to determine if all of the potential new emissions sources have been identified in this protocol supplement. For example, is there no potential for ammonia emissions from the ammonia synthesis unit described on Page 4; or ammonia and/or nitric acid vapor off-gassing from the Ammonium Nitrate Unit, or nitric acid vapor from the UAN solution units that are both described on Page 5? Please be aware that the Energy Commission will require a complete PFD with a material and energy balance to confirm the emissions/modeling inputs, as well as for other analysis purposes.***

## RESPONSE

HECA's upcoming CEC filing will include process flow diagrams (PFDs). The Air Quality and Public Health sections of the filing will include a description of all emission sources of criteria pollutants and toxic air contaminants and greenhouse gases (including stationary, mobile, vented, and fugitive emission sources).

**GENERAL COMMENT**

- 2. *It is unclear if any air dispersion modeling of ammonia will be performed for nuisance odor, although we assume it will be included in the HRA modeling. Please specify if the new ammonia sources will be included in modeling that can assess odor impacts, including peak emission events. If not it should be clear in the emissions documentation that the ammonia emissions would not have the potential to exceed odor thresholds.***

**RESPONSE**

Ammonia emissions from stationary and fugitive sources will be included in the HRA modeling for the HECA Project. The Office of Environmental Health Hazard Assessment (OEHHA) acute threshold for ammonia is lower than the odor threshold for ammonia; thus, if the acute health index is less than significant, the ammonia concentration would be below the odor detection level. A discussion regarding the odor impacts from ammonia will be included in the Air Quality section of HECA's upcoming filing.

## GENERAL COMMENT

3. ***Fugitive emissions from new piping component systems do not appear to be addressed. There is no description of the new fugitive emissions sources associated with the new fertilizer production process. These are expected to include at the very least the ammonia and nitric acid piping component fugitive emissions. The description of these emissions sources, whether they are negligible emission sources, and if found not to be negligible whether they would be included in the modeling analysis should be included in the discussion.***

## RESPONSE

The fugitive emissions from the fertilizer plant will consist of ammonia, nitric acid, and a small amount of carbon dioxide (CO<sub>2</sub>). The fugitive ammonia and nitric acid emissions from the fertilizer plant will be included in the HRA modeling. All emissions will be presented in HECA's upcoming filing.

## GENERAL COMMENT

- 4. *While not specifically mentioned we assume that near-field CO<sub>2</sub> modeling and H<sub>2</sub>S odor modeling will be completed as was previously the case.***

## RESPONSE

HECA's upcoming filing will include an assessment of the hydrogen sulfide (H<sub>2</sub>S) emissions from HECA, compared against the 1-hour California Ambient Air Quality Standards (CAAQS). The CAAQS for H<sub>2</sub>S is equivalent to its odor threshold; therefore, if the predicted impacts of 1-hour H<sub>2</sub>S are less than the CAAQS, the H<sub>2</sub>S should not be detectable offsite. Near-field modeling of the CO<sub>2</sub> from the CO<sub>2</sub> vent will also be conducted.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
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1516 NINTH STREET, SACRAMENTO, CA 95814  
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**APPLICATION FOR CERTIFICATION  
FOR THE *HYDROGEN ENERGY*  
*CALIFORNIA, LLC PROJECT***

**Docket No. 08-AFC-8**

**PROOF OF SERVICE  
(Revised 2/21/12)**

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**DECLARATION OF SERVICE**

I, Dale Shileikis declare that on, March 20, 2012, I served and filed copies of the attached Responses to CEC Comments on the Modeling Protocol Supplement for the Hydrogen Energy California (HECA) Project. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at: [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 email addresses on the Proof of Service list;
- x   Served by delivering on this date, either personally, 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 "email preferred."

**AND**

**For filing with the Docket Unit at the Energy Commission:**

- x   by sending an original paper copy and one electronic copy, mailed with the U.S. Postal Service with first class postage thereon fully prepaid and e-mailed respectively, to the 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-8  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512  
docket@energy.state.ca.us

***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  
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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.

