Responses to AIR Data Requests: Nos. 1 through 11

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

Prepared for:
Hydrogen Energy California LLC

hydrogen energy california

Submitted to:

California Energy Commission

U.S Department of Energy

Prepared by:

URS

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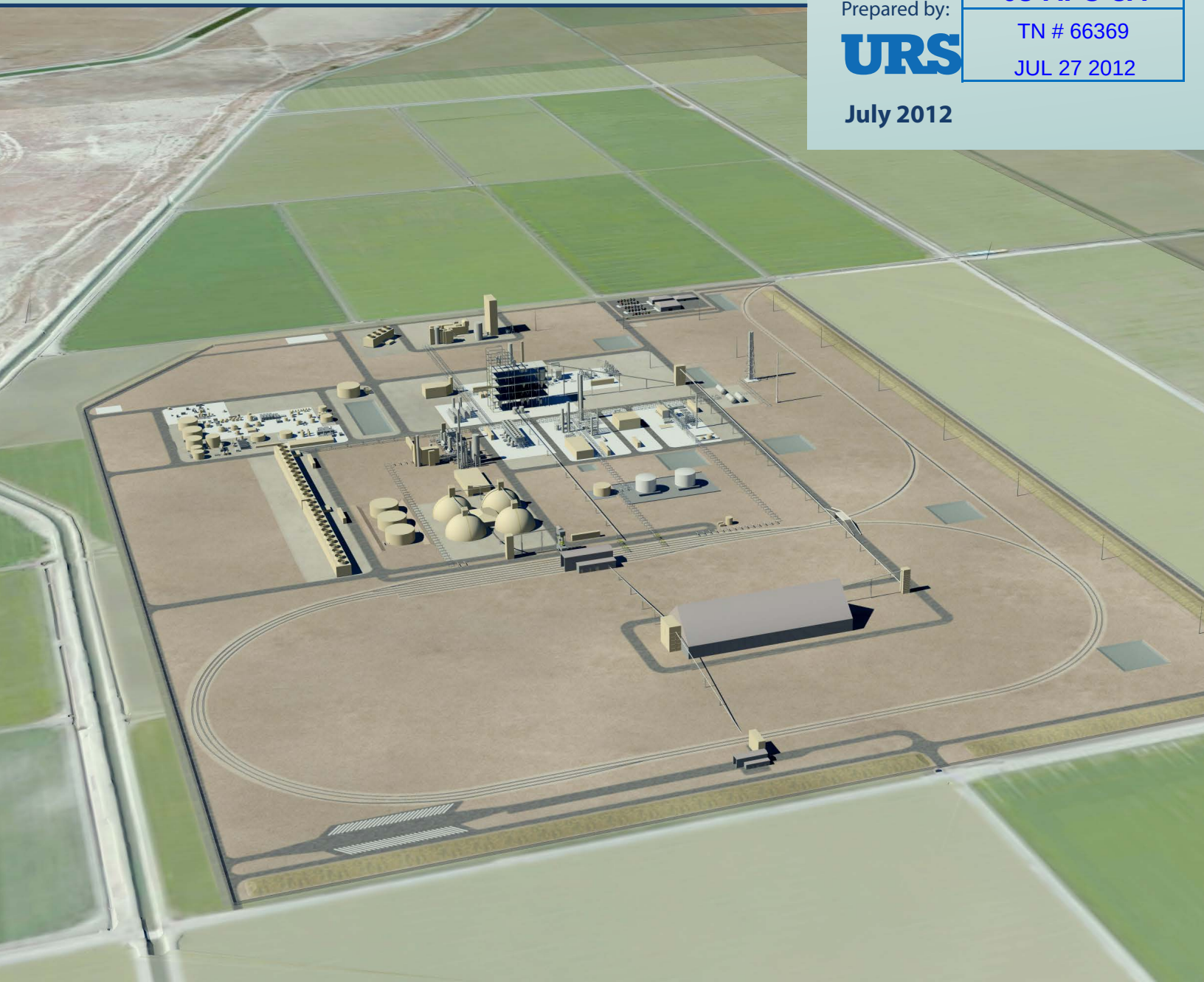

RESPONSES TO DATA REQUESTS 1 THROUGH 11
FROM THE ASSOCIATION OF IRRITATED RESIDENTS (AIR)

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LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

BVWSD	Buena Vista Water Storage District
CAAQS	California Ambient Air Quality Standards
CCPI-3	Clean Coal Power Initiative Round 3
CCR	California Code of Regulations
CCS	carbon capture and sequestration
CEC	California Energy Commission
CEQA	California Environmental Quality Act of 1970
CFR	Code of Federal Regulations
CH_4	methane
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalents
CTG	combustion turbine generator
DOE	Department of Energy
EHOF	Elk Hills Oil Field
EIR	Environmental Impact Report
EOR	Enhanced Oil Recovery
EPA	Environmental Protection Agency (see USEPA)
EPS	Emission Performance Standards
GHG	greenhouse gas
HECA	Hydrogen Energy California
HRSG	heat recovery steam generator
IGCC	Integrated Gasification Combined-Cycle
lb	pound
lb/hr	pounds per hour
mm/yr	millimeters per year
MMBtu	million British thermal units
MW	megawatt
MW-hr	megawatt per hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
O_3	ozone
OEHI	Occidental of Elk Hills, Inc.
PM	particulate matter
PM_{10}	particulate matter 10 microns in diameter or less
$PM_{2.5}$	particulate matter 2.5 microns in diameter or less
ppm	parts per million
PSA	Pressure Swing Adsorption
psi	pounds per square inch
SEI	Supplemental Environmental Information
SF_6	sulfur hexafluoride
tpy	tons per year
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

DATA REQUEST

1. This first question or data request is about "eminent domain" and is addressed to both HECA and the CEC. Assuming HECA decides they need to build a railroad spur through surrounding farmland and assuming local farmers may not wish to have this railroad spur disrupt their farming operations, then which government entity, if any, will exercise the option of eminent domain and condemn the farmland so that it can be sold to HECA? If there are multiple options, please indicate. We also request an answer to this question before the local Tupman meeting on July 12 since local residents will be present who need to have this information.

RESPONSE

The Applicant's response to Data Request 1 was docketed on July 9, 2012. The response is repeated below for convenient reference.

> As a private entity, Hydrogen Energy California (HECA) does not have the power of eminent domain. Thus, there are no plans to acquire any property or rights-of-way needed for the Project by eminent domain.

DATA REQUEST

2. If eminent domain procedures are initiated for the railroad spur, do these procedures have to be completed before the CEC gives final approval for HECA?

RESPONSE

The Applicant's response to Data Request 2 was docketed on July 9, 2012. The response is the same as the response to Data Request 1 and is presented below for convenient reference.

> As a private entity, HECA does not have the power of eminent domain. Thus, there are no plans to acquire any property or rights-of-way needed for the Project by eminent domain.

DATA REQUEST

3. During the workshop on June 20, a question was raised about whether HECA would receive approval with an option to use either a railroad spur for local railroad delivery of coal or use trucking of coal from the depot in the town of Wasco. Isn't it true that this option must be decided before any final CEC approval of the project? The two options are vastly different in their effects on local residents. If this is left as an open question indefinitely, please explain how that would be legal under CEQA regulations. Please clarify when these transportation options must be finalized.

RESPONSE

The Applicant's response to Data Request 3 was docketed on July 9, 2012. The response is repeated below for convenient reference.

> As indicated at the workshop on June 20, 2012, HECA has requested that the California Energy Commission (CEC) staff review both transportation options. The reason for this request is that it is not yet clear which of the two options will be preferred from practical and commercial perspectives. If at some point during the certification proceedings, it becomes clear which of the two options will be pursued, Applicant will notify the CEC staff that continued review of the other option is no longer necessary. It may be, however, that Applicant requests that a final certification be issued which includes both options. As long as both options, including their potential environmental impacts, are fully analyzed, California Environmental Quality Act (CEQA) requirements would be satisfied. There is existing CEC precedent for such an approach. For example, the Palmdale Hybrid Power Project was recently certified with two alternative transmission line routes.

DATA REQUEST

4. It was stated at the June 20 meeting by a spokesperson for HECA (Schrag) that carbon capture and sequestration was the third option out of three in solving the problem of excessive green house gas emissions from energy production. Alternative one was efficiency and conservation. Alternative two was renewable energy and nuclear energy. Does HECA mean to imply from this presentation that CCS is equivalent to or just as important to reducing GHG emissions as the first two alternatives? We request to see some actual numbers showing potential quantities of reductions and costs related to all three options so that the relative value of each of the three may be appropriately considered. It may be that CCS, through projects such as HECA are so expensive, unreliable, and irrelevant to solving the earth's GHG problem that the CEC and the public may want to logically spend their time and money on other paths.

RESPONSE

This question misstates the comment by Professor Schrag. Dr. Schrag stated that there are three possible ways to reduce carbon emissions: 1) using less energy—either through efficiency or conservation; 2) non-fossil energy (renewables or nuclear); and 3) carbon capture and storage. Dr. Schrag made it clear that all three are essential to achieving a low-carbon society. These three means of reducing greenhouse gas (GHG) levels are not alternatives; each will play an important role in a sustainable future. For example, it is almost impossible to envision how renewable technologies can replace industrial energy needs, such as those required by a fertilizer plant. Carbon capture and storage can reduce the emissions from a fertilizer plant by more than 75 percent. Moreover, a power plant that uses carbon capture and storage in the production of electricity will serve as a backup for wind and solar power, when the wind is not blowing and the sun is not shining. This will be done by HECA, facilitating the deployment of a higher fraction of renewables on the grid, and saving enormous amounts of carbon dioxide (CO_2) emissions relative to a natural-gas peaking plant, which would normally serve this role.

Support for carbon capture and storage is a view held not only by Professor Schrag. Numerous experts in environmental science, industry, and government have all acknowledged that carbon capture and storage is a critical technology for achieving a low-carbon future. Carbon capture and storage plays a central role in the famous paper by Pacala and Socolow ("Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies"—*Science*, 2004 [http://www.sciencemag.org/content/305/5686/968.abstract]).

Carbon capture and storage has also been cited as a critical technology by Secretary of Energy and Nobel Laureate Steven Chu (e.g., http://www.businessgreen.com/bg/news/1801691/us-energy-secretary-envisages-rapid-ccs-rollout). Finally, President Obama has recognized the importance of carbon capture and storage in his Presidential Memorandum establishing an interagency task force to speed the development and deployment of carbon capture and storage efforts (http://www.whitehouse.gov/the-press-office/presidential-memorandum-a-comprehensive-federal-strategy-carbon-capture-and-storage).

DATA REQUEST

5. In an earlier data request, AIR questioned why Shafter was the appropriate site for baseline ozone and nitrogen oxide emissions. AIR disagrees with the answer it was given which basically said Shafter was closer to the project than any other monitor. Under CEQA, the most precautionary assumptions need to be made. It is therefore appropriate to use the monitor in Kern County showing the highest emission levels of these pollutants and not the monitor showing the lowest levels. Arvin Bear Mtn is the monitor which should be used. We need a further explanation why this is not true. CEQA requires conservative and precautionary assumptions, not best case scenarios. It would help if officials from Region 9 of the EPA would be brought in to explain objectively why Shafter and not Arvin is the appropriate monitor to use.

RESPONSE

The CEQA requires establishment of a baseline that is representative of existing conditions in the vicinity of the proposed project. This issue was addressed by the California Supreme Court's recent decision in Communities for a Better Environment. In discussing the baseline that is appropriately used in a CEQA analysis to measure a project's environmental impacts, the court referred to the CEQA Guidelines. Section 15125, subdivision (a) of the CEQA Guidelines provides: "An Environmental Impact Report (EIR) must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." [Citation.] (Communities for a Better Environment, supra, 48 Cal. 4th at p. 320, fn. omitted.) (emphasis added.)

The representativeness of the Shafter monitor for nitrogen dioxide (NO_2) and ozone (O_3) background data was discussed in detail in Section 3.1 of Appendix E-7 of the HECA AFC Amendment. USEPA staff and San Joaquin Valley Air Pollution Control District (SJVAPCD) staff were consulted regarding the appropriate monitoring station to use for NO_2 and O_3 background data in the modeling analysis. Through the course of several conference calls with agency staff, it was determined that the Shafter station was the most representative station for NO_2 and O_3 data for modeling. It is reasonable to consider the proximity of a monitoring station when selecting the most appropriate station to represent ambient baseline concentrations at a Project Site. This has long been common practice, and the approach recommended by the U.S. Environmental Protection Agency (USEPA) in 40 Code of Federal Regulations [CFR] Part 51. As detailed in Appendix W of 40 CFR Part 51, preference is given to "air quality data collected in the vicinity of the source to determine background concentrations."

In the last 3 years of available monitoring data, 2008-2010,[1] the Arvin Bear Mountain Boulevard monitoring station measured a maximum 1-hour NO_2 concentration of 0.051 part per million (ppm). From 2009 through 2011, the Shafter monitoring station measured a maximum 1-hour NO_2 concentration of 0.074 ppm in 2010, which was used for background for the NO_2 1-hour California Ambient Air Quality Standards (CAAQS). The Shafter station also measured higher annual NO_2 concentrations than annual NO_2 concentrations at the Arvin station for the same years. Thus, for representing background NO_2 concentration in the modeling analysis, the Shafter monitoring station provides more conservative data than the Arvin station.

[1] The Arvin Bear Mountain Boulevard station is no longer active, and stopped monitoring air quality after 2010.

In the NO_2 modeling, hourly ozone must be paired with hourly NO_2 data from the same station to account for the balance between NO_2 and O_3 ambient chemistry. While it is true that the Arvin monitoring station measured higher O_3 concentrations compared to the Shafter monitoring station; for modeling purposes, the monitored ozone concentrations are not simply summed with modeled concentrations like other pollutants to determine a total concentration. The 1-hour ozone data are used for modeling 1-hour and annual NO_2 concentrations from Project emissions with the ozone-limiting method, which incorporates the chemical reaction of ozone in the conversion of oxides of nitrogen (NO_X) to NO_2. All NO_2 and O_3 hourly monitoring data from the Shafter station were provided by SJVAPCD, and deemed representative for the NO_2 modeling analysis.

The Shafter monitoring station data for the last several years accurately illustrates the County's non-attainment status for ozone, and attainment status for NO_2. Because the Shafter monitoring station is near mobile sources but is not near large industrial sources, and is not downwind from an urban area, the data appropriately represent ambient NO_2 and O_3 concentrations expected to be found throughout the rural San Joaquin Valley. The Arvin station was almost twice the distance from the proposed Project Site than the Shafter station, and was on the opposite, downwind end of Bakersfield, compared to the Shafter station and the HECA site. Therefore, the Arvin monitoring station would not be the most appropriate monitor to use for basin background concentrations representing ambient conditions at the Project Site.

DATA REQUEST

6. The public needs to hear what the mitigation for the loss of prime farmland is going to be for HECA so it can comment on that proposed mitigation.

RESPONSE

As with all other aspects of the HECA Project, the Applicant will comply with all laws, ordinances, regulations, and standards. Of the approximately 1,100 acres of land used for the HECA Project, approximately 60 percent will remain in active agriculture. The 453 acres that will be removed from active agriculture represent approximately 0.07 percent of the Prime Farmland in the County. Loss of such a small percentage of prime farmland does not result in a significant impact, so the Applicant does not contemplate any further mitigation at this time.

DATA REQUEST

7. HECA needs to quantify all potential CO2 emissions related to this project. Maximum possible leakage of the CO2 which comes back to the surface with the enhanced oil recovery operations has not been quantified to our knowledge. That CO2 must be added to the total for the power plant to see if California's emission performance standard is being met. The CO2 or equivalent emissions from the massive fuel transportation, water pumping, waste removal, CO2 injection operations, recapture of CO2 operations, and product transportation related to this project must be quantified and totaled. Since N20 is 310 times the value of CO2 in terms of GHG emissions, what are the N2O emissions associated with the manufacture of the fertilizer products and with the packaging and transportation of the fertilizer products? This too must be quantified. It would also help the public to understand this project if the N20 from agricultural use of the fertilizer products were quantified and the CO2 from burning the oil recovered by this CO2 injection were quantified. Since it has been stated that the oil is not recoverable by any other means then it is important to know how much oil will most likely be recovered because of this project. If oil is recovered which would not otherwise be recovered because of HECA (and similar projects if HECA is successful), how will this affect the relative price of oil vs renewable energy? Will the effect be negative or positive on the effect of pricing for renewable energy?

RESPONSE

Potential GHG emissions associated with all aspects of the HECA Project have been calculated, and were presented in the Application for Certification (AFC) Amendment (URS, 2012). Emissions related to construction (AFC Amendment Table 5.1-10), operation (AFC Amendment Table 5.1-22), and transportation (AFC Amendment Table 5.1-24) were presented in the AFC Amendment, and are included herein as Table 7-1, Table 7-2, and Table 7-3, respectively. Methane (CH_4), nitrous oxide (N_2O), and sulfur hexafluoride (SF_6) are included in the total carbon dioxide equivalent (CO_2e) emissions, and have been multiplied by their respective global warming potentials.

GHG emissions from the Enhanced Oil Recovery (EOR) activities of the OEHI Project in the Elk Hills Oil Field (EHOF) have been calculated and presented by OEHI in the 2012 Supplemental Environmental Information (SEI) document, which was included in Appendix A of the HECA AFC Amendment (URS, 2012). These emissions are part of the OEHI Project, which is separate and distinct from the power generation associated with the HECA Project, and thus not included for purposes of determining compliance with the Emission Performance Standard (EPS) with which HECA must comply. A summary of these emissions is presented in Table 7-4.

The requests for emissions data associated with the use of fertilizer manufactured in the HECA Integrated Manufacturing Complex, and the use of petroleum produced by the OEHI EOR Project, along with the potential economic impacts associated with the EOR Project, call for information that is highly speculative and outside the scope of the environmental review of the Project. CEQA does not require an analysis of speculative impacts or impacts outside the scope of a project. See 14 California Code of Regulations § 15144-14145; Anderson First Coalition v. City of Anderson, 130 Cal. App. 4th 1173, 1182 (2005); Towards Responsibility in Planning v. City Council, 200 Cal. App. 3d 671, 681 (1988).

Table 7-1
(AFC Amendment Table 5.1-10)
Estimated Emissions of GHG Pollutants, Entire Construction Period
(metric tonnes)

Activity	CO_2	CH_4	N_2O	CO_2e
Project Construction Emissions				
On-Site Combustion Emissions				
Construction Equipment – On-road	5,215.7	0.1	0.1	5,244.7
Construction Equipment – Off-road	8,294.8	1.4	0.2	8,385.2
Worker Vehicles	246.6	0.0	0.0	249.9
Delivery Trucks	352.2	0.0	0.0	353.8
Linear Combustion Emissions	2,433.5	0.3	0.0	2,450.9
Subtotal of Project Emissions	**16,542.8**	**1.8**	**0.3**	**16,684.5**
Off-Site On-Road Emissions				
Off-Site Combustion Emissions				
Worker Vehicles	13,953.4	3.3	1.7	14,536.2
Delivery Trucks	5,299.6	0.2	0.2	5,355.8
Subtotal of Off-Site Emissions	**19,253.0**	**3.5**	**1.8**	**19,892.1**
Total Maximum Construction Emissions (tonnes)	**35,795.8**	**5.3**	**2.2**	**36,576.6**

Notes:

AFC = Application for Certification
CH_4 = Methane
CO_2 = Carbon Dioxide
CO_2e = Carbon Dioxide equivalent
GHG = Greenhouse Gas
N_2O = Nitrous Oxide

Table 7-2
(AFC Amendment Table 5.1-22)
HECA Maximum Annual CO_2e Emissions

Source	Maximum Permitted CO_2e Emissions (tonne/year)
CTG/HRSG Hydrogen-Rich Fuel and PSA Off-gas	269,153
CTG/HRSG Natural Gas	44,772
CO_2 Vent	174,113
SF_6 Circuit breakers	86
Flares	8,257
Thermal Oxidizer	5,946
Emergency generators and fire pump	181
Auxiliary boiler	24,782
Ammonia Synthesis Plant Startup Heater	409
Urea Absorber Vents	116
Nitric Acid Unit	7,426
Fugitives	35
Total CO_2e Annual Emissions	**535,278**

Notes: Maximum permitted emissions include periods of startup and shutdown.

CO_2 = Carbon Dioxide
CO_2 = Carbon Dioxide
CTG = combustion turbine generator
HRSG = heat recovery steam generator
PSA = Pressure Swing Adsorption
SF_6 = sulfur hexafluoride

Table 7-3
(AFC Amendment Table 5.1-24)
Greenhouse Gas Emissions Associated with the Mobile Sources During Project Operations

Source	Annual CO_2e Emissions (tonne/year)
Onsite Trucks	413
Onsite Trains	291
Offsite Workers Commuting	824
Offsite Trucks	10,866
Offsite Trains	45,226
Total CO_2e Annual Emissions	**57,619**

Notes: Onsite worker travel and associated emissions are negligible.

AFC = Application for Certification
CO_2e = Carbon Dioxide equivalent

Table 7-4
Estimated OEHI Project CO_2e Emissions

Activity	CO_2e (tonnes)	
	Annual Breakdown	**Project Total (2014-2033)**
Construction	–	38,112
Operation	–	4,082,364
Natural Gas Fueled Combustion Equipment	46,081	–
Plant Maintenance, Injection and Production Operations	108	–
Fugitives	93	
Indirect GHG Emissions from Purchased Power Consumption	180,177	–
Mobile Source Activity	167	–
Well Maintenance Activities (Vehicles)	173	–
Total	**–**	**4,120,476**

Notes: Data from the Supplemental Environmental Information, prepared by Stantec Consulting Corporation for OEHI, April 2012.

CO_2e = Carbon Dioxide equivalent
GHG = Greenhouse Gas
OEHI = Occidental of Elk Hills, Inc.

References

URS, 2012. Amended Application for Certification for Hydrogen Energy California (08-AFC-8A). May 2012.

DATA REQUEST

8. AIR wishes to see a comparison of burning hydrogen as a fuel in this project with burning natural gas in terms of the amount of NOx emitted by the power plant. A comparison should be made with a modern natural gas plant such as the Avenal power plant recently approved by the CEC and also in the San Joaquin Valley. What are the respective rates of NOx emissions per unit of electricity produced for the two projects?

RESPONSE

A comparison of emissions per unit of electricity produced from the natural-gas–fired Avenal power plant to the HECA Project is provided below in Table 8-1. NO_X emissions, as well as emissions of volatile organic compounds (VOC) and particulate matter (PM), are lower on a per-megawatt-hour basis from the HECA Project turbine than from the natural-gas–fired Avenal power plant turbines.

The turbines were analyzed because this is the only way to compare, on equal footing, emissions related to electricity production from the two inherently different projects. Facility-wide emissions are not comparable, because the HECA Project includes a manufacturing complex, to create a saleable product in addition to electricity.

Table 8-1
Turbine Emission Comparison
Annual Basis

	Avenal[1,2]	**HECA[3]**
Gross Megawatt-hours (MW-hr)	3,393,600	3,382,776
NO_X emissions (tpy)	144.0	127.2
NO_X emissions per MW-hr (lb/MW-hr)	0.085	0.075
VOC emissions (tpy)	34.5	17.7
VOC emissions per MW-hr (lb/MW-hr)	0.020	0.010
$PM_{10}/PM_{2.5}$ emissions (tpy)	80.7	60.2
$PM_{10}/PM_{2.5}$ emissions per MW-hr (lb/MW-hr)	0.048	0.036

Notes:

1. Avenal annual turbine emissions are from the CEC Final Staff Assessment (June 2009) and include startup and shutdown emissions.
2. Avenal gross megawatt-hours are calculated from the power production (MW) with and without duct firing and hours based on the maximum operation scenario #3 from the SJVAPCD Final Determination of Compliance (November 2008).
3. HECA annual emissions include turbine and coal dryer emissions with hydrogen-rich fuel and natural gas including startup and shutdown emissions.

NO_X = oxides of nitrogen
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less
tpy = tons per year
VOCs = volatile organic compounds

DATA REQUEST

9. Why is natural gas not considered an alternative fuel to coal for this project? Please compare the relative price and availability of coal to natural gas in the southern San Joaquin Valley. Also, please explain the need for HECA, a $3 billion project with taxpayer subsidies, to bring this large amount of coal into California as a fuel for the next 30 years.

RESPONSE

The Hydrogen Energy California Project is an Integrated Gasification Combined Cycle (IGCC) facility that generates electricity and fertilizers while capturing and sequestering more than 90 percent of CO_2 emissions by converting a blend of coal and petroleum coke into clean-burning hydrogen gas. Since inception, HECA has contemplated the use of solid feedstocks for the production of hydrogen gas and capture of CO_2. As evidenced by receipt of the U.S. Department of Energy (DOE) Clean Coal Power Initiative (CCPI-3) award, HECA is recognized as an advanced coal-based project capable of demonstrating next-generation technologies to produce electricity, while capturing and sequestering a significant portion of CO_2 emissions. In fact, it is specifically through its use of coal that HECA is able to offer California, the nation, and the world progress toward controlling global climate change, while demonstrating the commercial viability of an advanced coal-based power facility.

Coal is preferred over natural gas as a feedstock for conversion to hydrogen gas due to its low and stable price. Based on current U.S. Energy Information Administration data, western sub-bituminous coal is approximately $1.44 per million British thermal units (MMBtu), while California natural gas prices for electrical power facilities are approximately $5.16 per MMBtu, or roughly 3.5 times more expensive than coal. Coal prices are also more stable historically than natural gas prices, and therefore more predictable for investors and lenders. Regarding availability, both coal and natural gas are domestically plentiful fossil fuels, but are rare in California, and would need to be imported. California currently imports approximately 90 percent of its natural gas needs each year.

Construction and operation of the HECA Project will generate significant returns for Kern County and the State of California. DOE funding through the CCPI-3 agreement constitutes approximately 10 percent of the overall project cost, or $408 million. This investment will be quickly recouped, because HECA is projected to deliver $3.4 billion in economic stimulus to Kern County during construction. Moreover, HECA will return an estimated $291 million of annual economic stimulus in Kern County over the Project's life. In addition, construction and operation of HECA will provide thousands of high-quality union jobs—with more than 2,400 jobs at peak construction, and 200 permanent jobs during operations. Given these returns, the value proposition of HECA is magnitudes greater than would be realized for a natural gas facility of equal size.

DATA REQUEST

10. Since the Avenal project agrees to use turbine air cooling instead of massive amounts of water, why is that not the best alternative for HECA given that water is always short in the valley and the water proposed for HECA is only relatively contaminated on the brackish side compared to other groundwater in the region and compared to the billions of gallons of produced water available in the nearby oil fields?

RESPONSE

The Applicant evaluated the suitability of air cooling for heat rejection. The project uses heat integration and/or air cooling to reduce process stream temperatures down to 140 degrees Fahrenheit where it is effective to do so. Extensive process heat integration has been incorporated into the plant design to conserve water. Air cooling was not selected for the steam turbine surface condenser because it results in a substantial increase in parasitic electrical demand and a dramatic decrease in power output. These effects result in a markedly negative impact on the cost and availability of electricity.

Furthermore, Buena Vista Water Storage District (BVWSD) considers the use of its brackish water as a beneficial part of BVWSD's Brackish Groundwater Remediation Project. As such, BVWSD has encouraged the Project to use the brackish water.

Although produced water is available from the oilfields within 10 miles of the Project Site, and the producers of these waters indicated they were willing to provide this water to the Project, they are reluctant to guarantee specific quantities of future water supply. The business purpose of these organizations is oil production, and not water production, and they are unwilling to complicate the former for the sake of the latter. Commercial discussions determined that a reliable supply of produced water with respect to quantity and quality is not readily available.

DATA REQUEST

11. With the large amount of NOx emitted from burning hydrogen as a fuel and because of the air quality problem in this part of the San Joaquin Valley, explain why there is no option considered to use oxygen only as the combustion air when the hydrogen fuel is burned. In other words, why is it so necessary for HECA to further pollute the air the public breathes in order to save the earth from more GHG emissions?

RESPONSE

With the currently available technology used in commercial-scale power plants, combustion of oxygen with the hydrogen-rich fuel would burn far too hot for safe operating conditions. Combustion of hydrogen with oxygen for power generation is a technology that is still in the research phase; thus, the technology is not advanced enough to be commercially available.

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AMENDED APPLICATION FOR CERTIFICATION
FOR THE HYDROGEN ENERGY CALIFORNIA PROJECT

Docket No. 08-AFC-08A
(Revised 7/27/12)

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DECLARATION OF SERVICE

I Dale Shileikis, declare that on July 27, 2012, I served and filed a copy of the attached Responses to AIR Data Requests: No. 1 through 11 dated July, 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.