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**08-AFC-8**

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REMAINDER OF APPLICANT  
RESPONSES TO

CALIFORNIA ENERGY COMMISSION  
AND ENVIRONMENTAL  
PROTECTION AGENCY COMMENTS  
ON THE

PRELIMINARY DETERMINATION OF  
COMPLIANCE FOR THE HYDROGEN  
ENERGY CALIFORNIA PROJECT  
(08-AFC-8)

*Prepared for:*

**San Joaquin Valley Air Pollution Control  
District**

**Project Number S-1093741**

**Kern County, CA**

*Prepared on behalf of:*

**Hydrogen Energy California LLC**

October 12, 2010

**URS**

## **TABLE OF CONTENTS**

### **REMAINDER OF APPLICANT RESPONSES TO CEC AND EPA COMMENTS ON THE JUNE 21, 2010, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT PRELIMINARY DETERMINATION OF COMPLIANCE**

INTRODUCTION

RESPONSES TO CEC COMMENTS

RESPONSES TO EPA COMMENTS

#### **ATTACHMENTS**

Attachment A	HECA Revision to Authority to Construct/ Permit to Operate Application; Reduction in Turbine Particulate Matter Emissions
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## LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

ATC	Authority to Construct
CEC	California Energy Commission
CO <sub>2</sub>	carbon dioxide
CTG	combustion-turbine generator
EOR	enhanced oil recovery
EPA	Environmental Protection Agency
GE	General Electric
HECA LLC	Hydrogen Energy California LLC
HECA	Hydrogen Energy California
HEI LLC	Hydrogen Energy International LLC
HRSG	heat recovery steam generator
NSR	New Source Review
NO <sub>x</sub>	nitrogen oxides
PDOC	Preliminary Determination of Compliance
PM	particulate matter
PM <sub>10</sub>	particulate matter less than or equal to 10 microns in diameter
PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 microns in diameter
PTO	Permit to Operate
SJVAPCD	San Joaquin Valley Air Pollution Control District

## **INTRODUCTION**

The Hydrogen Energy California (HECA) Project will produce low-carbon baseload electricity by capturing carbon dioxide (CO<sub>2</sub>) and transporting it for enhanced oil recovery (EOR) and sequestration. The Project will gasify petroleum coke (petcoke), or blends of petcoke and coal, as needed, to produce raw syngas and ultimately hydrogen to fuel a combustion turbine operating in combined-cycle mode. The net electrical generation output from the Project will provide California with approximately 250 megawatts of low-carbon baseload power to the grid. The Gasification Block will also capture approximately 90 percent of the carbon from the raw syngas at steady-state operation, which will be transported to the Elk Hills Field for CO<sub>2</sub> EOR and sequestration. The Project will have significantly lower criteria pollutant emissions than a similarly sized petcoke-fired, coal-fired, or integrated gasification combined-cycle power plant. To minimize air emissions, state-of-the art emission control technologies will be implemented for the HECA Project.

On June 26, 2009, Hydrogen Energy International (HEI) LLC (now known as HECA LLC, or the Applicant) submitted an application for an Authority to Construct (ATC) permit to San Joaquin Valley Air Pollution Control District (SJVAPCD). This application was deemed complete by SJVAPCD on August 3, 2009, and was assigned SJVAPCD Project Number S-1093741.

On June 21, 2010, SJVAPCD issued a Preliminary Determination of Compliance (PDOC) for public review and comment. The California Energy Commission (CEC) issued comments on the PDOC on August 3, 2010. Environmental Protection Agency (EPA) Region IX issued comments on the PDOC on August 16, 2010.

On September 14, 2010, HECA submitted responses to most of the comments provided by the CEC and EPA on the PDOC. This document presents the remainder of the Applicant's responses to the CEC's Comment 2 and EPA's Comments 1, 2, and 3 on the PDOC.

**RESPONSES TO CEC COMMENTS**

**CEC Comment**

2. **Combined Cycle Combustion Turbine Generator (S-7616-9) Particulate Emissions:**  
*The particulate matter (PM10/PM2.5) emission levels requested by the applicant for this emission unit are well above similar gas turbine emission rate limits considering fuel firing heat input levels. The applicant has not provided compelling technical rationale to explain why this gas turbine would need a particulate matter (PM) emission rate that is so much higher than other similar gas turbines, and staff believes that the other recently permitted turbine projects have established a reasonable Best Available Control Technology (BACT) emissions level, which based on staff’s review of available source test data generally provides a 50 percent safety factor (i.e., actual emissions are generally no more than half the allowable emissions, which for example would mean that the expected actual PM emissions for the Carlsbad project turbines would be somewhere between 4 to 5 lbs/hour, or about half of the allowable 9.5 lbs/hour). A comparison of the estimated HECA-proposed PM emissions compared to similar, recently approved and on-going projects are as follows:*

<b>Project</b>	<b>Gas Turbine</b>	<b>Lb/hr</b>	<b>Lb/MMBtu</b>	<b>Lb/MW gross</b>
HECA – H <sub>2</sub> Fuel	GE 7FB	18 (19.8)	0.0084 (0.0079)	(0.051) (0.051)
HECA – Natural Gas		18 (19.8)	0.0090 (0.0078)	0.066 (0.060)
<b>Allowable Emissions on Natural Gas:</b>				
Avenal	GE 7FA	8.91 (11.78)	0.0050 (0.0052)	0.034 (0.039)
Inland Empire	GE 107H	10	0.0040	0.026
Carlsbad	Siemens SGT6-PAC5000F	9.5	0.0046	0.034
Value in “( )” is duct firing value for projects with duct burners.				

**Staff believes that the District should consider reducing the Particulate Matter (PM10/PM2.5) emission rate down to no more than 15 lbs/hour without duct firing and 16.8 lbs/hour with duct firing as BACT emission rates. These rates should provide an adequate safety margin compared to expected actual emissions and would also serve to reduce the total permitted annual PM2.5 emission rate to a level where the PM2.5 fraction of the cooling tower emissions are no longer an issue in regards to the potential for the site to exceed 100 tons per year of PM2.5 emissions, which would trigger the need for the project to obtain federal PM2.5 offsets.**

**RESPONSE**

The turbine that will be used at the HECA Project is a General Electric (GE) 7FB combustion-turbine generator (CTG) with a diffusion flame (rather than a lean premix “Dry Low NO<sub>x</sub>”)

combustor with duct firing, which can operate on hydrogen-rich fuel from the gasification plant, natural gas, or a mixture of the two. In the table above, staff compares the particulate matter (PM) emissions from three natural gas turbines to the PM emissions from the CTG/heat recovery steam generator (HRSG) at HECA. The GE 7FB is a different turbine, burning different fuel, from any of the turbines presented in the CEC table. A comparison of two different technologies is not informative, and it is not reasonable to expect the same emissions from these different turbines.

Although the applicant does not agree with staff's comparison of natural gas turbines to the turbine at HECA, HECA has investigated reducing the PM emissions from the turbine. HECA proposes to reduce the maximum PM emissions associated with the CTG and HRSG. HECA requests the PM emissions from the remainder of the project sources remain unchanged. On October 6, 2010, HECA formally requested the ATC/Permit to Operate (PTO) from SJVAPCD be revised to reflect this change. The request is provided in Attachment A, which includes a discussion of the basis for this proposed revision. As outlined in Attachment A, HECA requests the CTG/HRSG permit emission limits for particulate matter less than or equal to 10 and 2.5 microns in diameter (PM<sub>10</sub> and PM<sub>2.5</sub>) be revised to 15 pounds per hour, 360 pounds per day, and 62.4 tons per year. The Applicant requests that CEC staff incorporate this emission reduction into Part 2 of the Preliminary Staff Assessment.

## RESPONSES TO EPA COMMENTS

### EPA COMMENT

1. ***Annual Emissions Estimates:*** *Applicable federal requirements include thresholds for defining a major source of criteria pollutant or of hazardous air pollutant (HAP) emissions. For those sources where emission estimates and/or emission limits are relatively close to the federal thresholds, EPA encourages the following: (a) refinement of emissions and compliance demonstration methods that would ensure the thresholds would not be exceeded, and/or (b) a 5-10% buffer between the permitted emission limits and the federal threshold.*

***We have identified estimated emissions of certain pollutants that are within a margin of less than 5% of the federal annual threshold limits. These limits include the nonattainment of New Source Review (NSR) threshold of 100 tons per year (tpy) for PM<sub>2.5</sub> and the major source of Hazardous Air Pollutant (HAP) thresholds of 10 tpy for a single HAP and 25 tpy for cumulative HAP emissions. If the limits of these pollutants are relaxed, the facility would be subject to the applicable federal requirements; for PM<sub>2.5</sub>, nonattainment New Source Review would be required, and for HAP emissions, evaluation for case-by-case Maximum Available Control Technology (MACT) would be required. Each is further discussed below.***

### RESPONSE

For a discussion of the cooling tower PM emissions and hazardous air pollutant emissions, please see the response to CEC Comment 3, provided in the Applicant's Responses to CEC and EPA Comments on the June 21, 2010, PDOC, dated September 14, 2010.

For a discussion of the turbine PM emissions, see the response to CEC Comment 2 above, and the letter that the Applicant submitted to the SJVAPCD on October 6, 2010, requesting a revision to the ATC/PTO. The letter is included in Attachment A. The reduction in turbine PM emissions would cause the total project annual PM<sub>10</sub> and PM<sub>2.5</sub> emissions to decrease. The revised annual project PM<sub>10</sub> and PM<sub>2.5</sub> emissions would be 91.5 and 79.4 tons per year, respectively. The Applicant requests that EPA staff incorporate this emission reduction into the Prevention of Significant Deterioration permit application.

## EPA COMMENT

2. ***PM2.5 Federal Nonattainment New Source Review (NSR) Applicability:*** *The San Joaquin Valley APCD presents the major source determination for all criteria pollutants on page 62 (Section VII.C.1.) of the engineering evaluation. PM2.5 is estimated at 198,650 pounds per year, or an equivalent of approximately 99.3 tons per year (tpy). As stated by the District in its evaluation, on May 8, 2008 EPA finalized regulations to implement the NSR program for PM2.5. A source that emits or has the potential to emit 100 tpy or more PM2.5 in a non-attainment area is defined as a major stationary source.*

***The equipment primarily contributing to PM2.5 emissions includes the combined cycle combustion turbine generator (CTG) and the cooling towers; other equipment emitting PM2.5 includes the feedstock handling and combustion-related sources. The District has assumed that all PM10 estimated emissions from the CTG are PM2.5 emissions. The District has assumed that 60% of the PM10 estimated emissions from the cooling towers are PM2.5. If it is determined that the estimated emissions are not representative of the potential-to-emit (PTE) and equal or exceed 100 tpy, the following would also be required: the lowest achievable emission rate control technology and offsetting of PM2.5 emissions with creditable emission reductions.***

***Please note that in the event that PM2.5 offsets are required and the project proponent were to consider using SO2 reductions to offset the project's PM2.5 emissions, paragraph IV.G.5 of Part 51, Appendix S currently provides that offset requirements for direct PM2.5 emissions under Appendix S may be satisfied by offsetting reductions of emissions of SO2 only "if such offsets comply with an interprecursor trading hierarchy and ratio approved by the Administrator." Moreover, although the provisions concerning trading ratios for interpollutant trading for PM2.5 emissions and other aspects of EPA's PM2.5 NSR Implementation Rule (73 FR 28321 (May 16, 2008)) are currently subject to reconsideration by the Agency (see 74 FR 26098 (June 1, 2009)), the modeling conducted by EPA in the context of development of those ratios supports a significantly higher PM2.5 to SO2 ratio than the 1:1 ratio used by the District for PM10 to SO2 interpollutant trading.***

## RESPONSE

For a discussion of the cooling tower PM<sub>2.5</sub> emissions, please see the response to CEC Comment 3, provided in the Applicant's Responses to CEC and EPA Comments on the June 21, 2010, PDOC, dated September 14, 2010.

For a discussion of the turbine PM<sub>2.5</sub> emissions, see the response to CEC Comment 2 above, and the letter that the Applicant submitted to SJVAPCD on October 6, 2010, requesting a revision to the ATC/PTO. The letter is included in Attachment A. The reduction in turbine PM<sub>2.5</sub> emissions would cause the total project annual PM<sub>2.5</sub> emissions to decrease. The revised annual project PM<sub>2.5</sub> emissions would be 79.4 tons per year, well below the 100-ton-per-year New Source Review (NSR) threshold.



## EPA COMMENT

3. **Annual Estimates of PM<sub>2.5</sub> Emissions and Compliance Demonstration:** As noted above, PM<sub>2.5</sub> is estimated at 198,650 pounds per year, or an equivalent of approximately 99.3 tons per year (tpy) for the facility operations. (See Page 61, Table titled "Major Source Determination"; see also Appendix F) The equipment primarily contributing to the PM<sub>2.5</sub> emissions estimate include the combined cycle combustion turbine generator (CTG) and the cooling towers. The PDOC indicates that these two sources together contribute an estimated 106.4 tpy of PM<sub>10</sub> emissions and 96.8 tpy of PM<sub>2.5</sub> emissions. The following highlights our comments regarding CTG and cooling tower PM<sub>2.5</sub> emission estimates and the respective compliance demonstration methods.

- **Combustion Turbine Generator (S-7616-9-0)** – It is assumed that the PM<sub>2.5</sub> emissions from the CTG are equal to the PM<sub>10</sub> emissions of 19.8 lbs/hr. EPA supports this assumption. Compliance demonstration for the source testing of PM<sub>10</sub> emissions is proposed in Condition 47.

However, it is unclear why these estimated emissions are approximately twice what EPA has permitted and/or reviewed for similar CTGs. Given what appears to be additional conservatism in the hourly emissions, EPA requests further discussion in the engineering evaluation regarding the rationale supporting the higher value, as well as consideration of a further reduction of PM<sub>10</sub> emission limits based on source test results. For example, has the District considered further reducing the PM<sub>10</sub> emission limits presuming source tests demonstrate lower emissions, similar to the approach for NO<sub>x</sub>, CO and VOC emissions as proposed in Conditions 81-85.

- **Cooling Towers Emissions (S-7616-4-0, S-7616-11-0, S-7616-2-0)** – For all three cooling tower operations, the applicant estimates estimated that the PM<sub>2.5</sub> emissions from the cooling towers are 60% of the PM<sub>10</sub> emissions. (Additionally, the applicant estimates assumed that all PM emissions are PM<sub>10</sub> emissions.) Compliance demonstration for PM<sub>10</sub> emissions from this equipment is based on a calculation methodology. This methodology includes a 0.0005% drift rate (representing BACT) from the cooling tower drift eliminator, a total dissolved solids (TDS) concentration not to exceed 9,000 ppm, annual operations limited to 8,322 hours per year, and cooling water circulation rates specific to each operation. (See pages 43-44 of PDOC engineering evaluation.)

The applicant has assumed that the 60% PM<sub>2.5</sub> size fraction is likely based on the California Air Resources Board (CARB) database information in its California Emission Inventory Development and Reporting System (CEIDARS). This assumption is based on the applicant's use of information from the South Coast Air Quality Management District (SCAQMD). It is our understanding that the SCAQMD has assumed a 60% size fraction, which is based on a CEIDARS value; however, this CEIDARS value is not specific for cooling towers. Therefore, EPA requests further justification of the size fraction of PM<sub>2.5</sub> emissions from the cooling towers and/or additional compliance demonstration requirements. Otherwise, it should be assumed

**that PM<sub>2.5</sub> emissions from the cooling towers are equal to the estimated PM<sub>10</sub> emissions.**

**With respect to the District's proposed compliance demonstration, it appears that the compliance demonstration options that EPA is considering may differ from the District's proposed requirements. We acknowledge that the District is requiring quarterly sampling of the blowdown water to estimate TDS. EPA understands that site-specific data is necessary to determine the correlation between TDS and particulate matter emissions (i.e., PM, PM<sub>10</sub>, PM<sub>2.5</sub>). PM, PM<sub>10</sub>, and PM<sub>2.5</sub> can vary significantly with plant operations and maintenance. Therefore, in order to use a calculation method, as proposed by the District, site-specific data and testing is necessary to demonstrate compliance with the proposed emission limits. EPA is available to discuss this in more detail for the District's consideration.**

## **RESPONSE**

For a discussion of the cooling tower PM<sub>2.5</sub> emissions, please see the response to CEC Comment 3, provided in the Applicant's *Responses to CEC and EPA Comments on the June 21, 2010, PDOC*, dated September 14, 2010.

For a discussion of the turbine PM<sub>2.5</sub> emissions, see the response to CEC Comment 2 above, and the letter that the Applicant submitted to SJVAPCD on October 6, 2010, requesting a revision to the ATC/PTO. The letter is included in Attachment A. The reduction in turbine PM<sub>2.5</sub> emissions would cause the total project annual PM<sub>2.5</sub> emissions to decrease. The revised annual project PM<sub>2.5</sub> emissions would be 79.4 tons per year, well below the 100-ton-per-year NSR threshold. Compliance with the turbine PM emission limit will be shown through annual source testing, as required in SJVAPCD PDOC Conditions 45 and 47.

Compliance with the PM emissions from the cooling tower will be demonstrated as required by PDOC Conditions 14 and 15.

**ATTACHMENT A**  
**HECA REVISION TO AUTHORITY TO CONSTRUCT/ PERMIT TO**  
**OPERATE APPLICATION; REDUCTION IN TURBINE PARTICULATE**  
**MATTER EMISSIONS**

October 6, 2010

Leonard Scandura  
Permit Services Manager  
San Joaquin Valley Air Pollution Control District  
Southern Regional Office  
34946 Flyover Court  
Bakersfield, CA 93308

**Subject: HECA Revision to Authority to Construct/Permit to Operate  
Application Reduction in Turbine Particulate Matter Emissions**

Dear Mr. Scandura:

Hydrogen Energy California LLC (HECA) proposes to revise the Authority to Construct/Permit to Operate Application for the HECA project. The proposed revision is to reduce the maximum particulate matter (PM) emissions associated with the combustion turbine generator (CTG) and heat recovery steam generator (HRSG). HECA requests the PM emissions from the remainder of the project sources remain unchanged. A discussion regarding the basis for this proposed revision is provided below.

The power block at HECA will feature:

- one General Electric (GE) 7FB CTG with a diffusion flame (rather than a lean premix “Dry Low NOx”) combustor that can operate on hydrogen-rich fuel from the gasification plant, natural gas, or a mixture of the two;
- a HRSG with duct firing of hydrogen-rich fuel or natural gas; and
- a condensing steam turbine generator.

The GE 7FB turbine will be designed and tuned to run on both hydrogen-rich fuel and natural gas. Because the turbine will be tuned to operate efficiently with either or both fuels, the emission profile will be different from a turbine tuned to operate only on natural gas. All PM emissions from the turbine are expected to be smaller than 2.5 microns. Therefore, the total PM emission rate from this unit is equal to the emission rates for PM less than both 10 and 2.5 microns in diameter (PM<sub>10</sub> and PM<sub>2.5</sub>).

The maximum PM emission rate proposed in the permit was determined, through the best available control technology analysis, to be 19.8 lb/hr when combusting hydrogen-rich fuel. Concerns have been raised by the U.S. Environmental Protection Agency and the California Energy Commission that the actual maximum PM emissions associated with the turbine may be lower than 19.8 lb/hr. HECA recently engaged the consulting firm ENVIRON International Corporation to conduct a probabilistic analysis of the risk associated with lowering the proposed maximum CTG/HRSG PM emissions. The risk evaluation was based on HECA plant design and engineering estimates and/or judgment.





A Monte Carlo analysis conducted by ENVIRON indicated that the confidence level is at least 95 percent that the steady-state hourly gas turbine PM emission rate will be 15 lb/hr or less when the CTG is burning natural gas and less than this amount when burning hydrogen rich gas (both determined by current stack test methods for PM<sub>10</sub>). Based on this result, HECA has decided to decrease the allowable PM emissions from the CTG/HRSR to 15 lb/hr for combustion of hydrogen-rich fuel, natural gas, or a combination of the two fuels.

It should be noted that the GE 7FB gas turbine that will be used at HECA has a diffusion flame combustor and is a larger turbine with greater air and fuel throughput than the GE 7FA turbines that are commonly compared to the HECA project. The PM emissions associated with the larger 7FB will be higher than those for the smaller 7FA turbine, and it is not reasonable to expect the same emissions from these different turbines.

The revised emission estimates for all operating scenarios are presented below. Table 1 presents the turbine PM emissions during individual startup and shutdown events.

**Table 1**  
**CTG/HRSR Particulate Matter Startup and Shutdown Emissions**

Startup/Shutdown Emissions from Turbine								
Cold Startup			Hot Startup			Shutdown		
180 min. in cold startup	Max 1-hr (lb/hr)	Total (lb/180 min)	60 min. in hot startup	Max 1-hr (lb/hr)	Total (lb/60 min)	30 min. in shutdown	Max 1-hr. (= max 30 min) (lb/hr) <sup>1</sup>	Total (lb/30 min)
PM <sub>10</sub> = PM <sub>2.5</sub>	15.0	45.0	PM <sub>10</sub> = PM <sub>2.5</sub>	15.0	15.0	PM <sub>10</sub> = PM <sub>2.5</sub>	7.5	7.5

Notes:

1. The shutdown hourly emission rate is based on 30 minutes of turbine shutdown and 30 minutes of no turbine operation.



The revised maximum daily PM<sub>10</sub> and PM<sub>2.5</sub> emissions are based on 24 hours of maximum emissions (15 lb/hr × 24 hours = 360 lb/day).

Table 2 presents the revised maximum annual CTG/HRSG PM emissions for full-load operation and for an annual scenario including 10 cold starts, 20 hot starts, and 30 shutdowns.

**Table 2**  
**Revised Annual CTG/HRSG Particulate Matter Emissions**

Annual Post-Project Potential to Emit (PE2)						
	<b>Cold Startup Emissions (lb/yr)</b>	<b>Hot Startup Emissions (lb/yr)</b>	<b>Shutdown Emissions (lb/yr)</b>	<b>Emission Rate @ 100% Load (lb/hr)</b>	<b>Total Emissions based on 100% Load (lb/yr)</b>	<b>Annual PE2 (lb/yr)</b>
Basis	lb/hr × 10 events/yr × 3 hr/event	lb/hr × 20 events/yr × 1 hr/event	lb/hr × 30 events/yr × 0.5 hr/event		Emission rate × 8,257 hr/yr	Cold Startups + Hot Startups + Shutdowns + 100% Load
PM <sub>10</sub>	450	300	225	15.0	123,855	124,830

Revised total project annual emissions of all pollutants are presented in Table 3.

**Table 3**  
**Total Annual Project Emissions Summary**

Pollutant	Total Annual (ton/yr)	CTG/HRSG Maximum <sup>(1)</sup> (ton/yr)	Cooling Towers <sup>(2)</sup> (ton/yr)	Auxiliary Boiler (ton/yr)	Emergency Generators <sup>(3)</sup> (ton/yr)	Fire Water Pump (ton/yr)	Gasification Flare (ton/yr)	SRU Flare (ton/yr)	Rectisol Flare (ton/yr)	Tail Gas Thermal Oxidizer (ton/yr)	CO <sub>2</sub> Vent (ton/yr)	Gasifier Refractory Heaters (ton/yr)	Feedstock <sup>(4)</sup> (ton/yr)	Fugitives (ton/yr)
NO <sub>x</sub>	196.1	168.0	–	0.9	0.2	0.1	7.2	0.2	1.2	10.5	–	7.8	–	–
CO	407.6	155.7	–	5.8	0.9	0.2	111.2	0.2	0.8	8.8	106.9	11.3	–	6.0
VOC	59.2	33.8	–	0.6	0.10	0.01	0.003	0.003	0.013	0.3	2.4	2.3	–	19.7
SO <sub>2</sub>	38.0	28.3	–	0.3	0.001	0.0003	0.118	0.372	0.303	8.5	–	0.07	–	–
PM <sub>10</sub>	91.5	62.4	24.1	0.8	0.02	0.001	0.007	0.006	0.030	0.4	–	0.3	3.6	–
PM <sub>2.5</sub> <sup>(5)</sup>	79.4	62.4	14.5	0.8	0.02	0.001	0.007	0.006	0.030	0.4	–	0.3	1.0	–

Notes:

(1) Total annual CTG/HRSG emissions represent the maximum emissions rate from firing either hydrogen-rich fuel, natural gas or co-firing.

(2) Includes contributions from all three cooling towers.

(3) Includes contributions from both emergency generators.

(4) Feedstock emissions are shown as the contribution of all dust collection points.

(5) Where PM<sub>10</sub> = PM<sub>2.5</sub>, it is assumed that PM<sub>10</sub> is 100% PM<sub>2.5</sub>. For the cooling tower it is assumed that all of the PM is PM<sub>10</sub> and 60% of the PM<sub>10</sub> is PM<sub>2.5</sub>.

CO = carbon monoxide

CO<sub>2</sub> = carbon dioxide

CTG = combustion turbine generator

HRSG = heat recovery steam generator

NO<sub>x</sub> = nitrogen oxides

PM<sub>10</sub> = particulate matter less than 10 microns in diameter

PM<sub>2.5</sub> = particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub> is assumed to equal PM<sub>10</sub>)

SO<sub>2</sub> = sulfur dioxide

SRU = Sulfur Recovery Unit

VOC = volatile organic compounds

The PM emissions during commissioning of the CTG/HRSG are not expected to change from the emissions described in the applicant's comments on the Preliminary Determination of Compliance (i.e., a maximum of 19.8 lb/hr when commissioning on hydrogen-rich fuel and 18.0 lb/hr when commissioning on natural gas).

The air quality modeling conducted previously for the HECA project showed that impacts from project emissions of PM<sub>10</sub> and PM<sub>2.5</sub> will not significantly contribute to the existing violations of the federal and state PM<sub>10</sub> and PM<sub>2.5</sub> standards. The revised CTG/HRSG particulate emissions are lower than those used in the modeling for all averaging times, and the stack parameters of the CTG/HRSG are unchanged. Therefore, the impacts associated with the PM emissions would necessarily be decreased, and the air quality modeling does not need to be revised.

HECA requests the Authority to Construct/Permit to Operate be revised to reflect the lower turbine PM emissions. HECA would accept a permit condition to limit the PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the CTG/HRSG to 15 lb/hr, 360 lb/day, and 62.4 ton/year.

Please do not hesitate to contact me regarding the proposed revisions to the maximum CTG/HRSG emissions of PM.

Sincerely,



Gregory D. Skannal  
HSSE Manager  
Hydrogen Energy California LLC

cc: Homero Rodriguez, SJVAPCD  
Julie Mitchell, URS  
Shaheerah Kelly, EPA Region IX  
William Walters, CEC  
Dale Shileikis, URS  
Mike Carroll, Latham & Watkins





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

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

Docket No. 08-AFC-8

PROOF OF SERVICE LIST  
Rev. 10/21/10

**APPLICANT**

Gregory D. Skannal  
Tiffany Rau  
Rick Harrison

\*Hydrogen Energy California, LLC  
One World Trade Center, Suite 1600  
Long Beach, CA 90831  
[gregory.skannal@hydrogenenergy.com](mailto:gregory.skannal@hydrogenenergy.com)  
[tiffany.rau@hydrogenenergy.com](mailto:tiffany.rau@hydrogenenergy.com)  
[rick.harrison@hydrogenenergy.com](mailto:rick.harrison@hydrogenenergy.com)

Asteghik Khajetoorians,  
Senior BP Legal Attorney  
BP America, Inc.  
6 Centerpointe Drive, LPR 6-550  
La Palma, CA 90623  
[Asteghik.Khajetoorians@bp.com](mailto:Asteghik.Khajetoorians@bp.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](mailto:dale_shileikis@urscorp.com)

**COUNSEL FOR APPLICANT**

Michael J. Carroll  
Latham & Watkins, LLP  
650 Town Center Drive, 20<sup>th</sup> Fl.  
Costa Mesa, CA 92626-1925  
[michael.carroll@lw.com](mailto:michael.carroll@lw.com)

**INTERESTED AGENCIES**

California ISO  
[e-recipient@caiso.com](mailto: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](mailto: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](mailto:tenslow@adamsbroadwell.com)

Tom Frantz  
Association of Irrigated Residents  
30100 Orange Street  
Shafter, CA 93263  
[tfrantz@bak.rr.com](mailto:tfrantz@bak.rr.com)

Kern-Kaweah Chapter  
of the Sierra Club  
Babak Naficy  
Law Offices of Babak Naficy  
1504 Marsh Street  
San Luis Obispo, California 93401  
[babaknaficy@sbcglobal.net](mailto:babaknaficy@sbcglobal.net)

Environmental Defense Fund (EDF)  
Timothy O'Connor, Esq.  
1107 Ninth St., Suite 540  
Sacramento, CA 95814  
[toconnor@edf.org](mailto:toconnor@edf.org)

Natural Resources Defense Council  
George Peridas  
111 Sutter Street, 20<sup>th</sup> Fl.  
San Francisco, CA 94104  
[gperidas@nrdc.org](mailto:gperidas@nrdc.org)

**ENERGY COMMISSION**

JAMES D. BOYD  
Vice Chair and Presiding Member  
[jboyd@energy.state.ca.us](mailto:jboyd@energy.state.ca.us)

JEFFREY D. BYRON  
Commissioner and Associate  
Member  
[jbyron@energy.state.ca.us](mailto:jbyron@energy.state.ca.us)

Raoul Renaud  
Hearing Officer  
[rrenaud@energy.state.ca.us](mailto:rrenaud@energy.state.ca.us)

Kristy Chew  
Adviser to Commissioner Boyd  
*e-mail service preferred*  
[kchew@energy.state.ca.us](mailto:kchew@energy.state.ca.us)

Rod Jones  
Project Manager  
[rjones@energy.state.ca.us](mailto:rjones@energy.state.ca.us)

Lisa De Carlo  
Staff Counsel  
[ldecarlo@energy.state.ca.us](mailto:ldecarlo@energy.state.ca.us)

Jennifer Jennings  
Public Adviser's Office  
*e-mail service preferred*  
[publicadviser@energy.state.ca.us](mailto:publicadviser@energy.state.ca.us)

**DECLARATION OF SERVICE**

I, Dale Shileikis, declare that on October 21, 2010, I served and filed copies of the attached Remainder of Applicant Responses to California Energy Commission and Environmental Protection Agency Comments on the Preliminary Determination of Compliance, dated October 12, 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:**

- X   sent electronically to all email addresses on the Proof of Service list;  
       by personal delivery;
- X   By 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:**

- X   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](mailto: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.

  
\_\_\_\_\_