

**CALIFORNIA ENERGY COMMISSION**

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<b>DOCKET</b>	
<b>08-AFC-8</b>	
DATE	JUN 17 2009
RECD.	JUN 19 2009

June 17, 2009

**TO: AGENCY DISTRIBUTION LIST (STATE AND FEDERAL)**

**REQUEST FOR AGENCY PARTICIPATION IN THE REVIEW OF THE HYDROGEN ENERGY CALIFORNIA PROJECT, REVISED APPLICATION FOR CERTIFICATION (08-AFC-8)**

On May 28, 2009, Hydrogen Energy International (HEI) submitted a revised Application for Certification (AFC) to the California Energy Commission to construct and operate an Integrated Gasification Combined Cycle (IGCC) power generating facility called Hydrogen Energy California (HECA). HEI is jointly owned by BP Alternative Energy North America Incorporated and RIO Tinto Hydrogen Energy, LLC. Previously HEI submitted an AFC to the Energy Commission, which proposed the project on a different site. HEI subsequently decided to move the project when it discovered the existence of previously undisclosed sensitive biological resources at the prior site. This revised AFC for the new project site supersedes and replaces the July 31, 2008 AFC in its entirety.

The proposed HECA project would gasify petroleum coke (or blends of petroleum coke and coal, as needed) to produce hydrogen to fuel a combustion turbine operating in combined cycle mode. The gasification block would provide fuel to a 390 megawatt (MW) gross/250 MW net combined cycle power plant providing California with baseload power to the grid. The gasification block would also capture approximately 90 percent of the carbon from the raw syngas (the direct end of the gasification process) at steady-state operation, which will be transported to the custody transfer point at Elk Hills Oil Field for CO<sub>2</sub> (carbon dioxide) enhanced oil recovery (EOR) and sequestration. Due to the complex gasification and sequestration (storage) process, there is a larger than usual parasitic load.

In addition, the project would include a 100 MW net peaking natural gas-fired combustion generator that would provide power for plant startup, powering the gasifier when the plant does not generate and provide peaking power to the grid. Essentially 350 MW (250 MW net baseload capacity plus 100 MW peaking performance) of power output would be available to the grid during high demand periods (e.g., summer months, etc.).

**Project Location**

The proposed project would be located on a 473-acre site (currently used for agricultural production of alfalfa, cotton, and onions), and is comprised of two parcels (Part of Assessor's Parcel # 159-040-16 and 159-040-18, respectively). The project site would be located in western unincorporated Kern County, Section 10 of Township 30 South, Range 24 East, approximately 7 miles west of the outermost edge of the city of Bakersfield. It is 1.5 miles northwest of the unincorporated community of Tupman, and approximately 4 miles southeast of the unincorporated community of Buttonwillow, is bounded by Adohr Road on the north, Tupman Road to the east, an irrigation canal (California State Water Project, aqueduct) to the south, and Dairy Road to the west. Elk Hills Oil Field located approximately 1 mile south of the project site.

The project site is currently subject to a Williamson Act agricultural land preservation contract. HEI is currently pursuing a contract cancellation process with Kern County. The project site represents approximately 0.03 percent of the 1,649,780 acres of Williamson Act contracted lands in Kern County (Kern County, 2007b). The western border of the Tule Elk State Natural Reserve (California state park) is located approximately 1,700 feet to the east of the project site.

The nearest single-family dwellings are located approximately 370 feet to the northwest, 1,400 feet to the east, 3,300 feet to the southeast of the proposed project site, and 4,000 feet to the north.

### **Project Description**

Highlights of the project are as follows:

- The proposed HECA project would be designed to operate with 100 percent petroleum coke from California refineries, and would have the flexibility to operate with up to 75 percent thermal input from western bituminous coal. Transportation of petcoke and coal to the project would be by truck during business operations.
- The feedstock would be gasified to produce a synthesis gas (syngas) that would be processed and purified to produce a hydrogen-rich gas, which would be used to fuel the combustion turbine for electric power generation. A portion of the product (hydrogen-rich gas) would also be used to supplementally fire the heat recovery steam generator (HRSG) that produces steam from the combustion turbine exhaust heat.
- At least 90 percent of the carbon in the raw syngas will be captured in a high-purity carbon dioxide stream during steady-state operation, which would be compressed and transported by pipeline off-site for injection into deep underground oil reservoirs for enhanced oil recovery and sequestration.
- Project greenhouse gas emissions (e.g., carbon dioxide) and sulfur emissions are proposed to be reduced through the use of the EOR CO<sub>2</sub> sequestration process. . The objective of the technology is to mitigate impacts related to climate change by reducing average annual greenhouse gas emissions.
- The water source of the project would be brackish groundwater supplied by the Buena Vista Water Storage District and treated on site. Potable water would be supplied by West Kern Water District for drinking and sanitary purposes.
- There would be no direct surface water discharge of industrial wastewater or storm water. Process wastewater would be treated on site and recycled within the gasification and power plant systems. Other wastewaters from cooling tower blowdown and raw water treatment would be collected and directed to one of the two on-site plant wastewater zero liquid discharge (ZLD) units.
- The proposed project gasification process would feature near zero sulfur emissions during steady-state operation, and incorporate technology to minimize flaring during startup and shutdown operations.

Major-on-site components of the HECA project would include:

- Solids handling, gasification, and gas treatment
  - Feedstock delivery, handling, and storage
  - Sour shift/low temperature gas cooling (for producing syngas as part of the gasification process)
  - Mercury removal
  - Acid gas removal

- Power generation
  - Combined-cycle power generation
  - Auxiliary combustion turbine generator
  - Electrical switching facilities
- Supporting Process Systems
  - Natural gas fuel systems
  - Air separation unit
  - Sulfur recovery unit/tail gas treating unit
  - Zero liquid Discharge system for process and plant wastewater streams
  - Carbon dioxide compression
  - Raw water treatment plant
  - Other plant systems
- All temporary construction equipment laydown and parking, including construction parking, offices, and construction laydown areas, will be located on the proposed project site.

Major off-site facilities:

- Electrical transmission line - A new length electrical transmission line would interconnect the project to PG&E's (Pacific Gas and Electric) existing Midway Substation by a 230 kilovolt (kV) transmission line. Two alternative transmission routes are proposed; each alternative is approximately 8 miles in length extending from the western edge of the proposed project site to the north, and west to the north side of the substation.
- Natural gas supply - A natural gas interconnection would be made with either PG&E or Southern California Gas Company natural gas pipelines. The proposed new natural gas line would be approximately 8 miles long located southeast of the proposed project site. The interconnect would consist of one tap off of an existing natural gas line, one meter set, one service pipeline service connection, and a pressure limiting station located on the proposed project site.
- Water supply pipelines - The project would utilize brackish groundwater supplied from the Buena Vista Water Storage District located to the northwest. The proposed new raw water supply pipeline for cooling and process needs would be approximately 15 miles in length. Potable water for drinking and sanitary use would be supplied by the West Kern Water District located near the State Route 119 (SR 119)/Tupman Road intersection (southeast of the project site). The potable water supply pipeline would be approximately 7 miles in length.
- Carbon dioxide pipeline - The proposed new carbon dioxide pipeline would transfer the carbon dioxide captured during gasification from the project site southwest to the custody transfer point for enhanced oil recovery and sequestration. The project may utilize two alternative pipeline routes (each four miles in length).

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If approved, construction of the project would begin in May 2011 with commissioning and initial startup occurring October 2014 through August 15, 2015, with full scale operation by September of 2015.

### **Energy Commission's Facility Certification Process**

The Energy Commission is responsible for reviewing and ultimately approving or denying all applications to construct and operate thermal electric power plants, 50 MW and greater, in California. The Energy Commission's facility certification process carefully examines public health and safety, environmental impacts, and engineering aspects of proposed power plants and all related facilities, such as electric transmission lines and natural gas and water pipelines. The Energy Commission is the lead agency under the California Environmental Quality Act (CEQA), but through its certification regulatory program, produces several environmental and decision documents rather than an Environmental Impact Report.

The first step in the review process is for Energy Commission staff to determine whether or not the AFC contains all the information required by our regulations. When the AFC is deemed complete or data adequate, we will begin the data discovery and issue analysis phases. At that time, a detailed examination of the issues will occur.

Over the coming months, the Energy Commission will conduct a number of public workshops and hearings on the proposal to determine whether the proposed project should be approved for construction and operation and, if so, under what set of conditions. These workshops will provide the public as well as local, state and federal agencies the opportunity to ask questions about, and provide input on, the proposed project. The Energy Commission will issue notices for these workshops and hearings at least ten days prior to the meeting.

### **Agency Participation**

We request that you provide any written comments you may have regarding potential issues of concern by **July 17, 2009**. Please address your comments to Rod Jones, Project Manager, 1516 9<sup>th</sup> Street, MS-15, Sacramento, CA 95814, or by email to [rjones@energy.state.ca.us](mailto:rjones@energy.state.ca.us). Your agency may also present its comments and recommendations in person at the Energy Commission's **July 15, 2009** Business Meeting. The limited purposes of that meeting will be to determine whether the AFC is data adequate in accordance with our regulations and, if so, to assign a committee of two Commissioners to oversee the proceeding.

When the AFC is accepted as data adequate, your participation in the proceeding will continue to be valuable and encouraged and will allow you to identify and try to resolve issues of concern to your agency. There may be specific requests for agency review and comment during the proceedings after the AFC has been determined to be data adequate.

Assuming that the proposed project is found to be data adequate on July 15, 2009, your agency's preliminary and final determinations and opinions (such as those contained in a Determination of Compliance, wastewater discharge requirements, biological opinions, and land use decisions) would be due by **November 10, 2009** (120 days) and **January 11, 2009** (180 days), respectively.

Enclosed is a copy of the AFC in electronic format (CD). If you would like to have a hard copy of the AFC sent to you, if you have questions, or if you would like additional information about

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reimbursement or how to participate in the Energy Commission's review of the proposed project, please contact Rod Jones, Project Manager, at (916) 654-5191, or by email at [rjones@energy.state.ca.us](mailto:rjones@energy.state.ca.us). The status of the proposed project, copies of notices, an electronic version of the AFC, and other relevant documents are also available on the Energy Commission internet website at

<http://www.energy.ca.gov/sitingcases/hydrogenenergy/index.html>. By being on the mailing list, you will receive notices of all project related activities and documents related to the proposed project's evaluation and review. You can also subscribe to receive email notification of all notices at <http://www.energy.ca.gov/listservers>.

Sincerely,

**Original signed by**

Eileen Allen, Manager

Energy Facilities Siting and Compliance Office

Enclosure