PMC-EF2a
(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: Air Products and Chemicals Co., Inc. **STATE:** CA

PROJECT TITLE : Validation of An Integrated System for a Hydrogen Energy Station

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-FC36-01GO11087	GFO-06-173-001	GO11087

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

B5.1 Actions to conserve energy, demonstrate potential energy conservation, and promote energy-efficiency that do not increase the indoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, designers), organizations (such as utilities), and state and local governments. Covered actions include, but are not limited to: programmed lowering of thermostat settings, placement of timers on hot water heaters, installation of solar hot water systems, installation of efficient lighting, improvements in generator efficiency and appliance efficiency ratings, development of energy-efficient manufacturing or industrial practices, and small-scale conservation and renewable energy research and development and pilot projects. The actions could involve building renovations or new structures in commercial, residential, agricultural, or industrial sectors. These actions do not include rulemakings, standard-settings, or proposed DOE legislation.

Rational for determination:

Air Products and Chemicals Company Inc., in partnership with FuelCell Energy, is proposing to use DOE funding to design, construct, and operate a temporary Fuel Cell Energy Station at the Orange County Sanitation District (OCSD) in Fountain Valley, CA. The project will involve the installation of a demonstration scale high temperature fuel cell, which will use waste digester gas from the sanitation facility to co-produce electricity, heat, and hydrogen. The excess hydrogen will be routed to the onsite hydrogen fueling station funded by DOE under a separate cooperative agreement, DE-FC36-05GO85026. Energy produced by the fuel cell will be used onsite by the plant and hydrogen fueling station and excess heat will be utilized by the digester facility as heating water. The fuel cell will be located adjacent to several large trickling filters and digesters at OCSD's Reclamation Plant at 10844 Ellis Avenue. Once the installation is completed, the Hydrogen Energy Station will be operated for a demonstration period of six months to one year.

Equipment and Process:

The following equipment will be installed as part of this project:

1. Fuel Supply Lines – Anaerobic digester gas will be transported to the energy station from the plant 1 digester via a newly constructed supply line. The new supply line will be 1.5 inches in diameter and will extend a length of 90 feet to connect the site to existing pipes in the sanitation plant.

2. Fuel Pre-treatment Skid – The anaerobic digester gas will be treated to remove contaminants prior to entering the fuel cell system to avoid system damage.

3. Fuel Cell System – The Fuel Cell is a high-temperature, high-efficiency molten carbonate fuel cell with a power output of 300kW. The fuel cell system is a DFC300 model, produced by FuelCell Energy, and includes the fuel cell module, an electrical balance of plant (EBOP), and a mechanical balance of plant (MBOP). The MBOP performs such functions as the preheating of water and fuel and the supply of air, and the EBOP contains a DC/AC convertor, power metering and the voltage transformer. The entire fuel cell system will occupy a space of roughly 1,000 square feet.

4. Anode Exhaust Skid – The anode exhaust skid treats the anode exhaust gas produced by the fuel cell to remove contaminants and create hydrogen rich syngas.

5. Hydrogen Recovery Unit – The syngas is transferred to the Hydrogen purification skid where the hydrogen is recovered and compressed for use.

All equipment will occupy a small space adjacent to Plant 1 and will be surrounded by a barrier fence.

Location and Traffic:

The energy station will be located adjacent to Plant 1 at OCSD in Fountain Valley, CA. The energy station will be located in an active waste treatment facility and surrounded by large digester tanks, trickling filter tanks, and other waste treatment facilities. The site is also located near a major interstate, the San Diego Freeway, and the Santa Ana River Channel. The hydrogen energy station will be located approximately 1,440 feet from the hydrogen fueling station being funded under a separate DOE cooperative agreement.

This project is not expected to have an adverse effect on traffic patterns in the area as there will be no need for any deliveries of hydrogen or for any cars to visit the energy station post construction.

Construction and Installation:

All construction and installation will take place on previously disturbed land on OCSD property. The proposed construction site is currently an empty paved area located between Plant 1, and 2 large digesters. The construction will last approximately 4 weeks and will involve the use of cranes and forklifts to install the equipment. Due to the project location on an active waste treatment facility with close proximity to a major interstate, the temporary use of the construction equipment is not expected to have a significant impact on surrounding noise or traffic patterns. Additionally, aside from temporary dust that may be generated during the construction, no other air emissions or pollutants are expected to be generated during construction.

The energy station will use existing utilities at the sanitation plant, and no new power lines will be constructed as part of this project. Approximately 90 feet of buried piping will connect the energy station to plant pipes containing anaerobic digester gas. The pavement and sand sub-base will be restored after the construction of the piping. Additional piping will be installed to connect the hydrogen fueling station to the energy station. The construction of this tubing is being funded by DOE under a separate cooperative agreement, DE-FC36-05GO85026, and is therefore described in that NEPA determination.

Permits:

The project was granted an exemption under the California Environmental Quality Act (CEQA) on 5/5/2008.

The South Coast Air Quality Management District (SCAQMD) is an air pollution control agency with jurisdiction over the Fountain Valley area. This project was granted a research permit from SCAQMD for construction and operation of the hydrogen energy station.

The fuel cell was designed to Fuel Cell Industry Standard ANSI CSA America FCI-2004.

Air Products, FuelCell Energy, and OCSD will work with local authorities to obtain any additional construction and operating permits.

Waste Stream/Emissions:

The proposed Hydrogen Energy Station will not release more than the following quantities of criteria pollutants:
.0035 lbs/hr NOx
.00003 lbs/hr SOx
.000007 lbs/hr PM10
.003 lbs/hr VOC
.035 lbs/hr CO

All emissions from the Hydrogen Energy Station will be below the SCAQMD Rule 1401 Risk Assessment Tier 1 Screening Levels. OCSD has already received a permit from SCAQMD for the construction and operation of the hydrogen energy station. Additionally, small amount of hydrogen is expected to be released during system start up in order to meet product purity specifications. The hydrogen will be vented and monitored to ensure safe dispersal.

Waste water will be discharged from the hydrogen energy station as part of normal station operations. This water is approximately the same composition as the water supplied to the station by OCSD and will be discharged back to the plant via a drain.

No hazardous materials will be used or produced as part of this project.

Noise:

The hydrogen energy station will be located in a large and existing industrial park, will be surrounded by a number of

large digesters, and will be adjacent to a major interstate. Additionally the DFC300 fuel cell is designed to have quiet operation. The noise generated by the existing digesters and sanitation equipment, as well as noise from the nearby interstate is likely to offset any additional noise created by the energy station equipment.

Safety - Environment: The station is designed so that, under normal operation and utilization, hydrogen is captive. Prior to start-up, Air Products will complete an operational readiness inspection for the entire system to ensure that it meets the safety requirements as established in the HAZOP.

Public Safety: The energy station would be located on OCSD property in an area of controlled access with minimal public exposure. All equipment would be located behind a secure barrier fence within OCSD property.
Employee Safety: Onsite workers will not have direct interaction with the system. The system is designed to run unmanned and can be monitored and operated remotely. However, OCSD personnel will do a "walk by" of the system daily and will be trained on procedures to follow if an issue is detected.
Equipment Safety: The fuel cell was designed to Fuel Cell Industry Standard ANSI CSA America FCI-2004. All equipment will be tested extensively prior to start up.

This project is classified as a small scale renewable energy research and development project and is therefore categorically excluded from further NEPA review under CX B5.1.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

Caroline Mann 5/25/2010

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 5/28/10

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____

Field Office Manager