

PMC-EF2a

(20402)

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

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

PROJECT TITLE : California Hydrogen Infrastructure Project (Fountain Valley, CA)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-FC36-05GO85026	GFO-07-044-001	GO85026

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 Co., Inc. is proposing to use DOE funding to plan, design and install a temporary hydrogen fueling station at the Orange County Sanitation District in Fountain Valley, CA. The station will be adjacent to an existing compressed natural gas station in the northeast corner of the Orange County Sanitation District's Reclamation Plant at 10844 Ellis Avenue. The hydrogen and electricity for the station will be supplied by a hydrogen energy station being constructed on site. The hydrogen energy station is being funded by DOE under a separate cooperative agreement, DE-FC36-01G011087. Over the course of the three year operation period, the station will provide hydrogen for a variety of alternatively fueled vehicles and help develop a better understanding of emerging vehicle and fueling infrastructure requirements.

The tasks to be funded as part of this project are as follows:

- Task 1 – Equipment Design and Selection
- Task 2 - Site Development, Permitting, and Safety Plan
- Task 3 – Procurement, Construction, and Installation
- Task 4 – Commissioning and Start-Up
- Task 5 – Operation and Maintenance
- Task 6 – Station Data Acquisition and Analysis

Location and Traffic:

The fueling station will be located adjacent to an existing compressed natural gas station, at Orange County Sanitation District in Fountain Valley, CA. The station is located in a waste treatment facility and surrounded by large digester tanks, trickling filter tanks, and other waste treatment facilities. The site is also located adjacent to Interstate 405 (the San Diego Freeway) and the Santa Ana River Channel.

There will be an estimated 20 cars a day (100 cars a week) visiting the fueling station. The station is designed for passenger cars and will be open to all OEM approved vehicles. Hydrogen will be produced onsite at the energy station and there will therefore be no need for any deliveries of hydrogen. The fueling site is located just off the entrance ramp to the San Diego Freeway, and any additional traffic created by this project is not expected to have a significant impact on the traffic flow in the area.

Construction and Installation:

All construction and installation will take place on previously disturbed land on Orange County Sanitation District property. The construction will last approximately 4 weeks and will involve the use of cranes and forklifts to install the equipment. Aside from temporary dust that may be generated during the construction, no other air emissions or

pollutants are expected to be generated during construction. Additionally, 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.

Each component of the station will be placed on modular skids, allowing for easy installation and removal. Approximately 150 meters of buried tubing and 540 meters of above ground tubing would be installed to connect the hydrogen fueling station to the hydrogen energy station being constructed under a separate DOE agreement. The above ground tubing will be attached to existing walls and fences for the majority of the length and will travel through an existing tunnel for the remainder of the length. The trenches for the underground tubing will be backfilled after construction.

Equipment:

The hydrogen storage system is comprised of two tank systems, one capable of holding 36 kg of Hydrogen gas at 7,000 psig and the other 20 kg at 13,200 psig max. There will also be a third tank located at the energy station that will provide 120 kg of Hydrogen gas at 7,000 psig. All hydrogen storage tanks will be designed in accordance with American Society of Mechanical Engineers (ASME) standards.

Two compressors will support the fueling station. One H35 compressor will service a 350 bar dispenser and one H70 compressor will service the 700 bar dispenser. The H70 compressor will be located at the fueling station site and the H35 compressor will be located offsite at the energy station.

A standalone outdoor dual H35/H70 dispenser will be installed and will dispense a maximum of 100kg a day of hydrogen. The dispensing equipment is equipped with overpressure and temperature sensors to prevent the storage tanks on the vehicle from over-pressurizing or overheating (in accordance with SAEJ2601). The dispensing equipment would be located curbside for vehicles to access, northwest of the storage and compression equipment. The storage and compression equipment would be surrounded by an 8ft chain link fence and sunscreen.

Permits:

Station design, equipment, and infrastructure will comply with the latest editions of ASME, NFPA, SAE, and NEC codes.

Air Products was granted a Conditional Use Permit by the City of Fountain Valley in October 2009. The permit has been extended until 6/30/2010 to allow for the construction of the facility and will then be amended to allow for systems operations.

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

Air Products and the Orange County Sanitation District will work with local authorities to obtain any additional construction and operating permits.

Waste Stream/Emissions:

When a fueling takes place, a few cubic centimeters of gaseous hydrogen will be vented from the valve actuation and the nozzle. Under normal station operation, no other hydrogen venting is expected. Aside from this very small amount of hydrogen emitted during normal fueling operations and some temporary dust likely to be created during the construction of the station, the fueling station project would not result in any adverse impacts to air quality. No hazardous materials will be used as part of this project and there will be no adverse impact to water quality.

Noise:

The hydrogen fueling station will be located in a large and existing industrial park, containing a number of large digesters, and adjacent to a major interstate. The proposed location is also an existing compressed natural gas fueling station. The noise generated by the existing natural gas compressors, highway traffic, and operational noise from the sanitation plant is likely to offset any additional noise created by the fueling station equipment.

Safety:

Environment: The station is designed so that, under normal operation and utilization, hydrogen is captive. Compressors utilize a minimum amount of oil in a sealed crankcase and are located on a concrete pad. Compressor skids are grouted to concrete pads for secondary containment. Station is also inspected and maintained to ensure correct operation.

Public Safety: The fueling station would be located 140' off of a main public thruway in an area of controlled access with minimal public exposure. All storage and compression equipment would be located behind a secure fence. The area is a dedicated area with minimal traffic. Equipment has been designed and would be installed per applicable codes and a safety review has been completed. Access to the station will be limited to those trained and approved to use the station.

Employee Safety: Only Air Products personnel will maintain or perform work on the station. Those who will be performing fuelings will be trained on hydrogen, fueling operation, and basic emergency response. Those who have been trained will be issued unique ID cards and PIN numbers that grant access to fuel from the station. Those onsite employees not performing fueling will be made aware of the station and will be trained in basic emergency response.

Equipment Safety:

- Sited outdoors in accordance with NFPA 55.
- Incorporation of all HAZOP and FMEA recommendations from previous projects as well as any identified for this project. Air Products has performed extensive analysis on dispensing safety.
- User-friendly controls: Clear instructions are on the front of the dispenser. The dispenser has an electronic interface that provides step-by-step instructions similar to commercial gasoline dispensers.
- Utilization of nozzles that meet the geometry requirements of SAE J2600. SAE J2600 geometry assures non-interchangeability between CNG and multiple hydrogen fueling pressures. These nozzles have undergone an extensive third party testing and approval process.
- Hose overpressure detection system with multiple levels of protection, including automatic shutdown and alarm. This overpressure protection is to prevent overfilling of the vehicle tank.
- Utilization of a breakaway device to prevent the release of hydrogen if a vehicle pulls away from the dispenser during filling.
- Redundant automatic shutoff valves that will close and stop the filling process in an emergency. A hydrogen gas relief venting system will also be integrated and employed in the event of an emergency.
- Local and remote Emergency Stop switches (red palm buttons) that can be operated by the vehicle driver or others to stop the filling process.
- Hose Leak detection system with automatic shutdown and alarm.
- Pressure and temperature compensation so fills do not exceed pressure and temperature limits of the vehicle tank, per SAE J2601.
- Protective columns to protect the dispensing units from accidental impact.
- Personal Identification Number capability to ensure only qualified operators can fill vehicles, and to act as user identification for tracking station usage.
- Excess flow programming to interrupt the fill process if parameters leave established norms for fast fills or measured flow exceeds set amounts.
- Piping and valve components designed using an ~ 6:1 safety factor.
- The dispenser will meet or exceed applicable US Codes and Standards.
- Control panels are UL listed.
- Storage vessels are ASME coded.

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 :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:


NEPA Compliance Officer

Date:

5/25/10

FIELD OFFICE MANAGER DETERMINATION