PMC-EF2a
(2/6/02)

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

RECIPIENT: GENCO Infrastructure Solutions, Inc. **STATE:** SC

PROJECT TITLE : Fuel Cell-Powered Lift Truck Fleet Deployment (Topic 7B) - Kimberly-Clark

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-PS36-08GO98009	DE-EE0000483	GFO-10-089-003	EE483

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:

GENCO Infrastructure Solutions, Inc. has DOE ARRA funding available to support the construction of a hydrogen fueling storage and dispensing system for fuel cell-powered lift-trucks at the Kimberly-Clark site located at 1043 Global Avenue, Graniteville, SC 29829 in the Sage Mill Industrial Park.

GENCO is the prime recipient under this award, the facility manager, and the 3rd party logistic provider for the site and this grant. The project has an additional three subawardees/subcontractors under this award: Kimberly-Clark owns the distribution center and forklifts; Plug Power will be supplying and installing the fuel cell units for the forklifts; and Air Products will be supplying and installing the hydrogen compressor, storage, and dispensing equipment.

Funding will be used for the purchase of 25 Plug Power GenDrive class 1 systems, installation of the units into lift trucks, installation of the hydrogen fueling infrastructure near the Kimberly-Clark facility, and the daily operation of the lift trucks and infrastructure. Data collection and evaluations will also be ongoing throughout the project.

The fork lift trucks will be retrofitted to accept the fuel cell units. No modifications to the trucks will be required as the new fuel cell units are designed to have the same size, weight, and center of gravity as existing battery packs. The fuel cell systems will range from 5-kW to 20-kW and will replace the existing lead/acid base batteries and their charging station infrastructure.

The Project activity is divided among the following 5 tasks:
Task 1 – Program Management and Reporting
Task 2 – Fueling Station Installation
Task 3 – Power Unit Construction
Task 4 – Start-Up and Training
Task 5 – Lift Truck Operation and Evaluation

Location and Traffic:
The Kimberly-Clark distribution center is an existing 450,000 ft2 distribution center located in Graniteville, South Carolina. The new hydrogen forklifts would be used in this area of the Sage Mill Industrial Park.

The only additional traffic created by this project will be the hydrogen delivery truck that arrives every 20 days. The Kimberly-Clark distribution center has numerous truck deliveries and deployments of products on a daily basis; therefore the addition of a truck delivery of hydrogen every 20 days will not greatly increase the current level of traffic for the area.

Construction/Installation:
Two wall mounted refueling dispensers will be installed indoors at the Sage Mill Industrial Park. The refueling units will provide fuel to both Kimberly Clark/GENCO and the neighboring Bridgestone-Firestone facility fuel cell forklift operators.

The hydrogen supply (liquid storage), compression, and high pressure storage will be located near the Kimberly-Clark building in a secure area on adjacent property of the Aiken County Economic Development Partnership Hydrogen Fueling Station. The hydrogen compression and storage equipment will be installed on concrete foundations and pads just to the east-southeast of the Kimberly Clark distribution center. This equipment will be fabricated at a vendor shop and shipped to the Kimberly-Clark site for installation. The interconnecting piping and electrical tie-ins will be completed on site. An underground trench will be required for the hydrogen feed from the storage equipment to the Kimberly-Clark distribution center and the Bridgestone facility. This will be dug by a trench excavator and will take place on ground that has been previously disturbed and paved. Fencing and additional lighting will also be installed around the compression and storage equipment.

Hydrogen Fueling Equipment and infrastructure construction will be conducted by Air Products technicians and local contractors working with and commissioned by Air Products's engineers. Installation will comply with latest editions of NFPA 52, 55 and IFC that specifies measures to protect environment and public safety.
GenDrive installations onto the lift trucks will be conducted by Plug Power Technicians. Installation will comply with latest editions of NFPA 52, 55 and IFC that specifies measures to protect environment and public safety.

Equipment:
The Hydrogen Fueling Station consists of four modules: Liquid Storage, Compressor system, Gaseous buffer storage, and Automated Dispensers. Hydrogen will be delivered to the site as a liquid (in ~ 12,000 gallon trailers). The hydrogen will be stored on site as a liquid and then vaporized and compressed for utilization as required. The trailer will temporarily park on the delivery pad and offload product via pressure transfer to the onsite tank. The flow of hydrogen from the liquid tank to the compressors is controlled by an automatic isolation valve. When required, hydrogen is fed to a compressor (CP-10) to increase the pressure to 350 bar. After leaving the compressor, gas is directed to one bank of high pressure storage tubes. Approximately, 2,400 kg of liquid and 60 kg gas will be stored on site within a cryogenic tank and high pressure storage tubes. It is estimated that approximately 55kg of hydrogen will be used each day to run the 25 lift trucks.

The compressor system will typically be in a "standby" mode with the buffer storage filled to nominally 6,600 psig. When a lift truck arrives at the indoor dispenser to fuel, a portion of the mass of hydrogen in the storage tubes is transferred by pressure to the vehicle tank until the local PLC determines a full fill (final pressure is compensated for temperature). After multiple fueling, the outdoor storage tube pressure becomes reduced and the compressor automatically restarts to keep it full. Per the refueling process designed by Kimberly-Clark and Air Products, operators scan their employee access badge and enter a PIN to commence the fueling process. Only those employees who have completed training and are authorized by the facility are able to activate the dispenser to refuel.

Operations/Training:
All on-site operators and maintenance personnel will be trained during a two-day session. It will include power unit training, including operation, planned maintenance, service, hydrogen safety and emergency response in a "train the trainer" arrangement. Additional sessions will be organized on an as needed basis. Fueling station operating manuals, service manuals and training materials will be available to all personnel. Air Products will conduct the training for hydrogen fueling system safety and vehicle dispensing practices/procedures. Plug Power will conduct the GenDrive fuel cell system training and safety-related training.

Permits:
Station design, equipment, and infrastructure will comply with latest editions of NFPA 52, NFPA 55 and IFC.

Permitting for the fueling station is currently being secured by a representative from Aiken County Economic Development Partnership. Permits will include building permit and a revise use permit. GENCO and Kimberly-Clark will obtain the required electrical, mechanical, and construction permits from local and state authorities for the site, with assistance from Air Products, as required.

Waste stream:
The GenDrive units will be installed in brand new electric lift trucks. If old batteries are removed these will be used as spares in other battery-powered lift trucks on site or at other sites. If not used as spares they will be disposed of accordingly by the fleet owner.

Noise:
The project and installation site for the hydrogen fueling station unit is located at least 100' from other structures. Per Air Products, the hydrogen compressors make a minimal amount of noise and the compressor is not audible at distances further than 100'. Noise levels are less than 75 dB at 3 meters when the compressor is operating. The additional noise created by the hydrogen dispenser and compression units would not exceed existing noise levels

created by normal distribution center activities.

Safety:
Air Products has supplied to DOE a Safety Plan and Safety Review Plan that addresses their compressed hydrogen vehicle fueling protocols and mitigation being applied to all aspects of their fueling procedures, especially in regards to the indoor dispensing units and their safety protocols.

Additional safety measures in place include:
General - Multi-layer redundant features –
*Feed initiated only after system check,
*Refueling rate limited to 2 kg/min,
*24/7 monitoring & automatic shut-off,
*Pressure and Temperature limits for fuel tank,
*Gas detector, inside and outside,
*Fire eye for dispensing area,
*Emergency shut off,
*Local and remote (20 to 100 ft.),
*Class 1 div 2 within 15 ft,
*NFPA 52 2009, section 9.4.

Dispenser Safety Features –
*Non-interchangeable nozzles,
*Special design nozzles per SAE J2600,
*Extensive testing, third party approvals,
*Double block and bleed, unlike industrial connections,
*Cannot be opened unless connected,
*Multiple shutdown features,
*Storage isolated at outdoors before entering building,
*Two valves outside, additional valve inside,
*No mechanical fittings inside building except in cabinet,
*Self-sealing break away joints,
*For vehicle pull-away/accident,
*Vehicle and station electrically bonded through nozzle,
*Vehicle grounded through parking surface,
*Verified at startup.

No venting is anticipated under normal operating conditions.

The hydrogen fueling equipment control systems will include PLC alarming for both precautionary alarms and shut-down alarms. These signals are monitored by Air Products 24-hr control center via information transferred over dedicated phone lines at the site installation.

Emergency first-responder response protocols will be established with the site during preparations for site commissioning. If necessary, the alarm signals that Air Products receives at its 24-hr control center can also be sent to an emergency responder station (e.g. Fire Company).

GENCO, Air Products, Plug Power and Kimberly-Clark committed actions include, but will not be limited to: worker safety (include trainings and equipment provided), equipment maintenance (storage and forklift), acquisition of permits, and monitoring of fuel systems when in use.

Based on the information discussed above and the supporting documentation submitted to DOE, this project's impacts to the human and natural environment can be deemed less than significant and this project qualifies for a CXB5.1 "actions to conserve energy".

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

EF2a prepared by Casey Strickland

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 9/10/10
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