PMC-EF2a

(2.04.02)

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

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

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

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-PS36-08GO98009	EE0000483	GFO-10-089-002	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 Whole Foods Inc. at 1555 Cabin Branch Drive in Hyattsville, Maryland.

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: 1)Whole Foods Inc. owns the distribution center and forklifts; 2) Plug Power would be supplying and installing the fuel cell units for the forklifts; and 3)Linde would be supplying and installing the hydrogen compressor, storage, and dispensing equipment

Funding would be used for the purchase of 61 Plug Power GenDrive (45 Class-1 systems, 14 Class-2 systems, and 2 Class-3 systems), installation of the units on new lift trucks, installation of the hydrogen fueling infrastructure, and the daily operation of the lift trucks and infrastructure. Data collection and evaluations would also be ongoing throughout the project.

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

Location and Traffic:
The Whole Foods Inc. Cabin Branch Distribution Center is an existing 155,000 ft2 facility in Hyattsville, Maryland. The center is located in an industrial park and is surrounded by additional manufacturing and warehouse facilities. The proposed location of the hydrogen storage facility is on the north side of the building. The immediate surrounding area consists of additional manufacturing facilities. There are no residences, schools, or parks within a ¼ mile of the facility.

The only additional traffic created by this project would be the hydrogen delivery truck that arrives every 20 days. The Whole Foods 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 would not greatly increase the current level of traffic for the area.

Construction/Installation:
Two refueling dispensers would be installed and located inside the building for operators to re-fill the forklifts. The

hydrogen supply (liquid storage), compression, and high pressure storage would be located outside the warehouse building in a secured area. Liquid hydrogen would be delivered to the site by truck and transferred to the tanks via cryogenic hose.

The hydrogen compression and storage equipment would be installed on concrete foundations and pads (approx 26' x 65') on the north side of the Distribution Center building. This equipment would be fabricated at a vendor shop and shipped to the Whole Foods site for installation. The interconnecting piping and electrical tie-ins would be completed on site. An underground trench would be required for the hydrogen feed from the storage equipment to the distribution center wall. This would be dug by a trench excavator and would take place on a site that has been previously disturbed and paved. Fencing and additional lighting would also be installed around the compression and storage equipment.

Hydrogen Fueling Equipment and infrastructure construction would be conducted by Linde technicians and local contractors working with and commissioned by Linde's engineers. Installation would 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 would 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 would be delivered to the site as a liquid (in 7500 to 12,000 gallon trailers). The hydrogen would be stored on site as a liquid and then vaporized and compressed for utilization as required. The trailer would 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 250 bar. After leaving the compressor, gas is directed to a bank of high pressure storage tubes. Approximately 2,400 kg of liquid and 60 kg gas would be stored on site within a cryogenic tank and high pressure storage tubes. It is estimated that approximately 55kg of hydrogen would be used each day to run the 61 lift trucks.

The compressor system would typically be in a "standby" mode with the buffer storage filled to nominally 6,000 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.

Operations/Training:
All on-site operators and maintenance personnel would be trained during a two-day session. It would include power unit training, including operation, planned maintenance, service, hydrogen safety and emergency response in a "train the trainer" arrangement. Additional sessions would be organized on an as needed basis. Fueling station operating manuals, service manuals and training materials would be available to all personnel.

Linde would conduct the training for hydrogen fueling system safety and vehicle dispensing practices/procedures. Plug Power would conduct the GenDrive fuel cell system training and and any additional safety-related training.

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

No state or federal licensing is necessary other than PE license. Local permitting and inspections will be provided by licensed state and local inspectors for this project.

Genco and Whole Foods Inc. will obtain the required electrical and civil permits from local and state authorities for the site, with assistance from Linde, as required.

Waste stream:
If old batteries are removed to install the GenDrive units, the old batteries would be used as spares in other battery-powered lift trucks on site or at other sites. If not used as spares they would be disposed of accordingly by the fleet owner.

Noise:
The project and installation site for the hydrogen fueling unit is in a large and existing industrial park that is surrounded by additional manufacturing and industrial park buildings. The storage and compression units would be located outside the Distribution Center on the north side of the facility and over 100' from the property line.

Per Linde and Plug Power, 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 made by the adjacent industrial park facilities, traffic created by distribution trucks through the area, and additional warehouse distributing equipment found around the site.

Safety:
The Linde Group (Linde) has supplied to DOE a document titled: Indoor Fueling Protocol – a Risk Mitigation Strategy. This document addresses the compressed hydrogen vehicle fueling protocols and mitigation being applied to all aspects of the fueling procedure, especially in regards to the indoor dispensing units and their safety protocols.

Safety measures in place
□ General - multi-layer redundant features
o Feed initiated only after system check
o Refueling rate limited to 2 kg/min
o 24/7 monitoring & automatic shut-off
o Pressure and temperature limits for fuel tank
o Emergency shut off,
□ Local and remote (20 to 100 ft.)
o Class 1 div 2 within 15 ft.
o NFPA 52 2009, section 9.4

□ Dispenser safety features
o Special design nozzles per SAE J2600
o Extensive testing, third party approvals
o Double block and bleed, unlike industrial connections
o Cannot be operated unless connected
o Multiple shutdown features
o Storage isolated at outdoors before entering building
o Two valves outside
o No mechanical fittings inside building except in cabinet
o Self-sealing break away joints for vehicle pull-away/accident
o Vehicle and station electrically bonded through nozzle
o Verified at startup

The hydrogen fueling equipment control systems would include PLC alarming for both precautionary alarms and shut-down alarms. These signals are monitored by Linde 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 Linde receives at its 24-hr control center can also be sent to an emergency responder station (e.g. fire company).

Genco, Linde, Plug Power and Whole Foods Inc's 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 CX B5.1 "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: 9/13/10