

PMC-EF2a

(20102)

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



RECIPIENT: Proton Energy Systems

STATE: CT

**PROJECT TITLE :** Validation of an Advanced High Pressure PEM Electrolyzer and Composite Hydrogen Storage at the SunHydro Stations

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0000626	DE-EE0005887	GFO-0005887-001	

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:

**A9 Information gathering, analysis, and dissemination** Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)

**B5.22 Alternative fuel vehicle fueling stations** The installation, modification, operation, and removal of alternative fuel vehicle fueling stations (such as for compressed natural gas, hydrogen, ethanol and other commercially available biofuels) on the site of a current or former fueling station, or within a previously disturbed or developed area within the boundaries of a facility managed by the owners of a vehicle fleet. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

**Rational for determination:**

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Proton Energy Systems to conduct research, development, modification and installation of two hydrogen (H<sub>2</sub>) fueling stations. DOE funding would be used to advance the viability of packaged, compact H<sub>2</sub> fueling infrastructure through the validation of advanced gas generation, compression, storage, and component integration technologies. Proton proposes to upgrade an existing H<sub>2</sub> fueling station (SunHydro #1) and install a new, fully containerized H<sub>2</sub> fueling station (SunHydro #2). Proton would be partnering with West Virginia University for the data processing and analysis portion of the proposed project.

**Station #1**

The SunHydro #1 facility is located at 10 Technology Drive, Wallingford, Connecticut 06492 on Proton's property just off highway I-91 in a rural area. This station came online in October of 2010 and under this project would undergo an upgrade to demonstrate new storage and H<sub>2</sub> generation equipment, as well as the installation of data collection equipment. The facility would be upgraded to include an advanced high pressure electrolyzer and advanced H<sub>2</sub> storage. The dispensed capacity of this facility is an average of 20 kg H<sub>2</sub>/day with a maximum storage replenishment capacity of 65 kg H<sub>2</sub>/day. The updated SunHydro #1 station would store approximately 135 kg H<sub>2</sub>/day at a pressure of 87 MPa using six banks comprised of nine high-pressure composite storage tubes.

All installation work would be completed within the existing H<sub>2</sub> fueling station. No ground disturbance or modifications to the outside fuel dispensers would occur. A crane would be used to place new storage tubes at the facility. Proton has completed a H<sub>2</sub> Fueling Station Questionnaire addressing their control technologies and best management practice protocols for safety, emergency response and H<sub>2</sub> storage and dispensing monitoring. No new permits would be required for the proposed project. The proposed project would not result in any incremental storage, transport, or disposal of radioactive, toxic, or hazardous materials. Any hazardous materials utilized in the project would be below state and federal reporting thresholds. No solid wastes would be generated and no regulated incremental air emissions would be generated during the performance of the proposed project. The station compression, storage and dispensing (CSD) is containerized and secured from inadvertent internal access. The station has an automated monitoring system that incorporates heat and smoke detectors, self-shut down, hydrogen leak and infrared sensors and fire alarms that automatically communicate with the local fire department.

The U.S. Fish and Wildlife Service Endangered Species Program website identifies two species in New Haven, Connecticut; the Piping Plover and Roseate tern. DOE has determined that the modification to an existing H<sub>2</sub> fueling facility would have minimal ground disturbance at a previously disturbed site and is not likely to adversely affect the resources in the area. The proposed project would not have adverse effects to wetlands, floodplains or cultural

resources as these resources are not known to occur at the proposed site.

#### Station #2

The proposed location for the SunHydro #2 is 240 Wood Road, Braintree, Massachusetts 02184, just off highway I-95. The proposed location is in a previously disturbed parking lot, adjacent to several retail and whole sale businesses, each more than 65 ft. away. The fully containerized, skid-mounted facility would be approximately 40 ft. long by 8 ft. wide. Minimal excavation would occur to install load bearing pile foundation supports. A crane would be used to place the new facility in the proposed location. Crane operators and riggers licensed by the State of Massachusetts and bonded would perform the equipment placement. Procurement, installation and commissioning of the facility would be expected to take 28 weeks.

H2 would be produced on-site by PEM-based water electrolysis within the containerized station and no H2 deliveries would be required. The station would store approximately 45 kg H2 at a pressure of 87 MPa using three banks comprised of three high pressure composite storage tubes. The proposed project would fuel as many as four vehicles per day depending on vehicle mix and time of day demand, therefore not affecting the traffic of the area. A new 480v-3 phase 200 kVA electrical service would be required. A HOGEN C-series H2 generator would be installed in an unclassified containerized section adjacent to the classified compression, storage, and dispensing containerized section. A new lightweight, lower cost alternative to conventional masonry firewalls would be used to divide the classified and non-classified areas, reducing or eliminating typical code-directed separation distances through application of new NFPA 2 H2 model code. The power distribution/fire panel and an integrated chiller/cooler would then be co-located in the non-classified area to save on the cost of EX-rated versions and to achieve the desired footprint.

Proton has completed a H2 Fueling Station Questionnaire addressing their control technologies and best management practice protocols for safety, emergency response and hydrogen storage and dispensing monitoring. The proposed project would not result in any incremental storage, transport, or disposal of radioactive, toxic, or hazardous materials. Any hazardous materials utilized in the project would be below state and federal reporting thresholds and contained within the facility. No solid wastes would be generated and no regulated incremental air emissions would be generated during the performance of the proposed project. The station CSD is containerized and secured from inadvertent internal access. All CSD gas bearing components are open to ventilation. Storage is set behind a 2 hour rated firewall. The station has an automated monitoring system that incorporates heat and smoke detectors, self-shut down, hydrogen leak and infrared sensors and fire alarms that automatically communicate with the local fire department. The station is in a well-lit area, under 24 hour closed circuit TV surveillance.

The proposed project would be installed at an existing location, in an area that has been previously disturbed. The proposed H2 fueling station would not have adverse effects on threatened and endangered species, wetlands, floodplains or cultural resources as these resources are not known to occur at the proposed site.

DOE has determined that the modification of the existing H2 fueling station to install data collection equipment and the subsequent analysis of collected data and the installation of a new H2 fueling station would not have a significant individual or cumulative impact to human health and/or environment and is consistent with actions defined in DOE categorical exclusion A9 "information gathering," and B5.22 "installation, modification, operation, and removal of alternative fuel vehicle fueling stations".

#### NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Kelly Daigle 12/10/2012

DOE Share: \$1,400,000  
 Cost Share: \$1,400,000  
 Total Project Cost: \$2,800,000

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: \_\_\_\_\_

NEPA Compliance Officer

Date: \_\_\_\_\_

12/10/2012