

PMC-EF2a

(20102)

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



RECIPIENT: California State University, Los Angeles

STATE: CA

PROJECT TITLE : Sustainable Hydrogen Fueling Station, California State University, Los Angeles

Funding Opportunity Announcement Number Congressionally Directed Project	Procurement Instrument Number EE0000443	NEPA Control Number GFO-10-067	CID Number EE443
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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:

California State University, Los Angeles (CSULA) will use Congressionally Directing Funding through DOE to install a hydrogen fueling station. The unit will dispense gaseous hydrogen at 5,000 psi and 10,000 psi with a storage capacity of 60 kg. The station will be capable of refueling approximately fifteen vehicles (passenger cars and buses) per day at approximately 4 kg of hydrogen per vehicle. The station will be powered by one hundred percent renewable resources and be accessible by existing campus roads.

Location and Traffic:

The site is located on the eastern edge of the CSULA campus on Circle drive, on publicly accessible land, and on the exterior of the campus adjacent to freeway 710. The station is 500 yards north of campus residential housing, 50 yards west of the technology labs, 50 yards south of the baseball fields and located on land that is currently unoccupied. The nearest commercial and non-campus housing facilities are more than one mile away. The only additional traffic created on campus roads will be approximately one to fifteen passenger vehicles and buses that will refuel throughout the day. This is not anticipated to have a significant impact on the traffic flow in the area.

Construction and Installation:

From start to finish it is expected to take 12 months - the delivery of the custom made equipment will take 6-9 months and construction will take 4 months. Construction will start after funding has been received. Hydrogen generation, high pressure gaseous hydrogen storage, compression equipment, and dispensing equipment will be located onsite.

Two dispensers will be located curbside for vehicles to access, one hose at 350 BAR and one hose at 700 BAR. The contracted builder/designer is responsible for the design and build for the project including, but not limited to, planning, design, engineering, drawings, specifications, permitting, equipment (except the hydrogen production unit, compressors and storage vessels), fabrication, installation, construction, and operation/maintenance (1 year) for the completed fueling station.

The compression, storage, and hydrogen production equipment will be fabricated and purchased from outside vendors and shipped to the site for installation by the contractor.

CSULA is contracting with Weaver Construction Inc., as design builder to design, engineer, fabricate, permit, install, test, warrant, operate and maintain the new hydrogen fueling station. The fueling station will include temperature compensated 350 BAR and 700 BAR fast fill capability for light-duty and heavy-duty vehicles. The hydrogen production plant and fuel dispensing station will be designed for approximately 60 kg/day with 60 kg of 350 BAR

storage. The dispensing system will consist of one hose at 350 BAR and one hose at 700 BAR.

The station will be constructed on Circle Drive on the east side of the campus adjacent to the 710 Freeway.

Additional responsibilities provided by the station designer/installer will include:

- * Complete of all drawings, specifications, and calculations stamped by the appropriate Registered Engineers in the State of California;
- * Submit all documents drawings and specifications required for internal CSULA approvals, permit acquisition, obtaining permits, scheduling permit inspections, and final signoff of permits;
- * Design and construct the new hydrogen facility, including the site grading and paving, building structure, fueling island canopy and dispensing facility, per the drawings and specifications permitted and approved by CSULA;
- * Obtain the new hydrogen facility "Permit to Operate" or "Certificate of Occupancy";
- * Operate and maintain the new hydrogen facility for a minimum of 1 year from startup and acceptance by CSULA;
- * Coordinate with CSULA to minimize disruptions to campus operations during construction;
- * Conduct tests to insure the complete fueling station meets or exceeds the operations performance criteria;
- * Connect utility supply services, including electrical power, water, sewer, and telephone, from the utility point of connection to the station and/or dispenser island. Utilities will be installed according to drawings, and electrical drawings and the specifications;
- * Provide remote computer monitoring of the hydrogen production system and fueling island;
- * Provide a video monitoring system with two (2) cameras that is compatible with the existing campus system;
- * Provide leak gas detection and alarm systems, install local white strobe light and horns, and connect the station alarm system to the campus alarm system;
- * Design and Install a hydrogen gas relief venting system to an approved onsite location;
- * Provide a 1 day training class for the CSULA staff and the local Fire Department prior to station's startup;
- * Provide input to CSULA for revision of the existing CSULA Hazardous Communication Plan to include the new station and fueling island;
- * As built drawings at the completion of the project in hardcopy and CD-ROM to CSULA;
- * Provide 6 copies of Operations and Maintenance manuals containing hydrogen station operating procedures and vendor equipment;
- * Assist CSULA in investigating any station safety, accident or performance situations,
- * During construction no hazardous materials will be used;
- * During operation the station will have appropriate safety features which will be integrated into the operation as described above.

Noise:

There will be compressors and cooling systems which will generate noise. However the campus is building a brick wall to surround the station which will reduce any associated increase in noise. The 710 highway generates the noise up to 75 dBA (<http://www.nonoise.org/library/highway/traffic/traffic.htm>), due to distance and uphill location the ambient noise at the station could be estimated as 55-60 dBA. The loudest equipment at the station will be 2 high-pressure compressors supplying hydrogen during fills up 10,000 psi. The noise produced is ~ 80 dBA at 1m each according to manufacturer. For the station operating at full capacity the compressors' total running time is estimated as 3min/vehicle x 15 vehicle/day = 45 min/day. The station is planned with a brick front wall further mitigating the noise.

Hydrogen Storage & Dispensing:

Two dispensers will be located curbside for vehicles to access, one hose at 350 BAR and one hose at 700 BAR. The compression, storage, and hydrogen production equipment will be fabricated and purchased from outside vendors and shipped to the site for installation by the contractor.

Multiple safety measures are in place to ensure that any potential risks in the fueling process are mitigated. The refueling rate is limited to 1 kg/min to ensure that the storage tanks on the vehicles are not over-pressurized. The refueling system has 24/7 computer monitoring of the hydrogen production system and the fueling island.

Operational and System Safety:

Multiple safety measures are in place to ensure that any potential risks in the fueling process are mitigated. The refueling rate is limited to 1 kg/min to ensure that the storage tanks on the vehicles are not over-pressurized. The refueling system has 24/7 computer monitoring of the hydrogen production system and the fueling island. This monitoring system is integrated into a video monitoring system with two cameras that is compatible with the existing campus system.

There is hydrogen gas detection in place both at the dispensing area and at the storage and compression area, as well as an ultra violet detection/monitoring/system installed in both areas. Additional safety measures include on site alarm systems, on site strobe lights/horns, and hydrogen alarms integrated into the campus alarm system. A hydrogen

gas relief venting system will also be integrated for emergency situations.

The dispensing nozzle is specially designed per SAE J2600 and has undergone extensive third party testing and approval processes. A one day training class for the CSULA staff and the local Fire Department prior to the station startup will be provided. CSULA will also revise their existing CSULA Hazardous Communication Plan to include the new hydrogen station and fueling island.

Once operational, access will be limited to card read holders. Protective columns will be in place to protect the dispensing units. CSULA and the contractor will work with local authorities to obtain construction and operating permits and the refueling station will comply with the latest editions of NFPA 72, NFPA 72E, and the IFC.

The CSULA states it will follow worker safety and equipment maintenance procedures. The station will integrate safety features that protect users and workers during operation as well as during periods when no use is occurring. The station will feature heat and smoke detectors, self shut down, and hydrogen leak sensors and infrared sensors which communicate with the campus first responders and will operate during all hours of use.

CSULA will provide safe handling instruction to all users of the station.

Applicable Codes and Standards:

The proposal was designed in accordance to NFPA 52 & 55 guidelines and meets the California Fire Code. The system components—storage vessels, relief devices, piping and valves, and vents are designed in accordance with applicable codes and standards.

- 2007 California Building Code
- 2001 California Fire and Safety Code including Section 2209
- CSU Seismic Requirements
- California OSHA Title 8 Article 7
- California Electric Code
- Uniform Fire Code (UFC) Article 52
- National Fire Protection Association (NFPA)-#52 2006 Edition
- ANSI B 31.3 Refinery and Process Piping
- SAE J 1600 HYDROGEN Fueling Connectors
- SAE 2799 70 MPA Compressed HYDROGEN
- SAE J 2719 for HYDROGEN Fuel Quality
- American Society of Testing Materials (ASTM)
- American National Standards Institute (ANSI)
- American Institute of Steel Construction (AISC)
- American Welding Society (AWS)
- National Institute of Standards and Testing (NIST)
- California Code of Regulations (CCR)
- California Environmental Quality Act (CEQA)
- National Electric Code (NEC)
- South Coast Air Quality Management District (SCAQMD)
- American Concrete Institute (ACI)
- National Electrical Manufacturers Association (NEMA)
- Underwriters Laboratory (UL) or Factory Mutual (FM)
- American Gas Association Natural Gas Vehicle (AGA-NGV)
- International Approval Services (IAS)
- Instrument Society of America (IAS)
- Society of Automotive Engineers (SAE)
- American Petroleum Institute (API)
- California Weights and Measures

The hydrogen station monitoring and alarm system must be operational at all times and reports to Campus Police. Bypassing of alarms and shutdown systems will not be allowed without specific approval. The monitoring and alarm system will be tested monthly, preferably on Friday end of shift during minimum vehicle operation. Flow, pressure, and temperature measurement instruments must be checked every six months with an independent hand gage or other method to insure it is accurate. The ESD system will be tested weekly and reset.

A Sierra Monitor, General Monitor, Sentry, RelTek or approved equal gas leak detection/monitoring and warning system will be installed inside the Hydrogen Building and under the fueling island canopy. The system must meet the requirements of NFPA and be approved by the local Fire Department prior to installation.

A Sierra Flame, UVS Smart or approved equal UV detection/monitoring and warning system will be installed inside the Hydrogen Building and under the fueling island canopy. The system must meet the requirements of NFPA and be

approved by the local Fire Department prior to installation.

The following will be included in the design in addition to any specific requirements by the Fire Department:

- * System will consist of UL or Fire Department approved gas detection and UV system with audio and visual alarms in accordance with NFPA 72 and 72E;
- * Each sensor will have an amber light to indicate alarm with proper piping and instrumentation for calibration in place;
- * The UV and gas detection system is to be connected to the Utility Room Alarm Control Panel. All alarms will be connected to the UPS systems and will be fully functional during a power outage or ESD activation;
- * The hydrogen production skid will have a 100 dBA warning horn and a white strobe light above the production unit enclosure and connected to the overall detection system; * All components will be Class 1 Division 2 and UL rated;
- * The hydrogen production building compound and the canopy will have 2 levels of notification, at 25% of LFL for the alarm, and at 50% for the complete system mechanical and electrical shutdown and isolation. These levels of annunciation will be included on a main annunciator panel at the station's Building Utility Room;
- * The Hydrogen Building Utility Room main control panel will record system shutdowns, either via PLC or otherwise, caused by the 50% LEL alarms;
- * The design/builder, its subcontractors, and all of its personnel will observe and obey all construction safety rules and regulations prescribed by CAL-OSHA;
- * The design/builder and subcontractors will have the proper insurance covering CSULA as additionally insured before performing any work on the property;
- * The design/builder will adhere to all of CSULA'S safety requirements, which will include wearing orange-reflective safety vests, hardhat, goggles, and obeying speed limits, and traffic patterns within the facility as required;
- * The design/builder will conduct a final walk-thru with the Fire Department;
- * The design/builder will coordinate with CSULA'S Safety Department and develop an emergency response plan;
- * The design/builder will inform and train all personnel as requested by the local Fire Department on the complete of the hydrogen fueling system.

The design/builder and submit the following to CSULA during the course of the project for CSULA approval:

- * Dedicated safety drawings related to system safety signs and safety labels;
- * A plan for HYDROGEN station and fueling systems startup and debug;
- * Checklist for testing safety equipment and alarms before startup;
- * Safety audit upon completion of the project;
- * Permit to Operate posted at the site;
- * Material Safety Data Sheets posted in the hydrogen Fueling Station Utility Room for hydrogen gas and all of the other lubricating oils and other chemical solids and liquids used in hydrogen production processes;
- * Operations and Maintenance Manuals provided prior to startup. Hard hat, safety goggles, ear plug and hydrogen detector;

Permits:

Construction activities within CSULA'S property are subject to permit processes by the State of California. The design/builder will follow standard plan check or other procedures/processes required by the CSULA or other governing agencies, such as OSHA Title 8 Article 7, State Fire Marshal, CSU Seismic Review Board, and the Division of State Architects (DSA). The design/builder will be responsible for the research/ investigation and determination of the project's permitting requirements. This includes obtaining all Building, Fire permits and operating permits.

The site has also been granted California Environmental Quality Act (CEQA) Notice of Exemption for this project on February 17, 2009.

This project is not expected to have any adverse environmental impact. All operation and installation will take place on CSULA's property. There will be no hazardous materials used, no impact on water quality, with only minimal increases in noise levels. Concrete barrier walls will be integrated in order to offset the increase in noise from the compressors.

In addition to the safety measures listed above, the DOE Hydrogen Program mandates that a draft Hydrogen Safety Plan be submitted within 90 days after the award is approved. Subsequently, the revised Safety Plan is due 30 days after DOE has provided comments on the draft plan.

Based on the information discussed above and provided supporting documentation, the DOE deems this project's impacts to the human and natural environment as less than significant and determines that this project qualifies for Categorical Exclusion 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:

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You are required to:


DOE Hydrogen Program mandates that a draft Hydrogen Safety Plan be submitted within 90 days after the award is approved. Subsequently, the revised Safety Plan is due 30 days after DOE has provided comments on the draft plan.

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:


NEPA Compliance Officer

Date:

2/23/10

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:

Field Office Manager

Date:
