EERE Notice of Intent

Notice of Intent to Issue
Funding Opportunity Announcement No. DE-FOA0000826

The Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Fuel Cell Technologies Office (FCT Office), a Funding Opportunity Announcement (FOA) entitled "Hydrogen Production Research and Development."

This FOA supports research and development efforts to address critical challenges and barriers for hydrogen production technology development. The long-term goal of production and delivery research and development (R&D) is a high-volume hydrogen cost of $2-$4 per gallon gasoline equivalent (gge) (delivered and dispensed, but untaxed) to allow fuel cell electric vehicles (FCEVs) to be competitive on a dollar per mile basis with gasoline in hybrid electric vehicles. More specifically, the portion of the cost goal apportioned to production is <$2/gge hydrogen. Innovative materials, processes, and systems are needed to establish the technical and cost feasibility for renewable and low carbon hydrogen production. With this FOA, the DOE through the FCT Office will seek to fund hydrogen production research and development projects in order to move technologies towards reaching the hydrogen production cost goal of <$2/gge.

It is anticipated that the FOA may include the following Areas of Interest:

Area of Interest 1: Integrated or hybrid systems for central, semi-central or distributed production of low-cost, low carbon hydrogen from natural gas. The DOE intends to solicit applications which propose development of novel integrated or hybrid systems using natural gas feedstocks combined with renewable/low-carbon resources (e.g., solar or wind energy, waste streams such as bio-gas or other fermentation byproducts) to produce hydrogen with greenhouse gas emissions reduced by at least 50% with respect to steam methane reforming. In addition, the system must be able to meet the cost goal. Deliverables of the proposed work must include demonstration of production of at least 20 kg H_2/day with a feasible pathway to scalability to at least 1,000 kg H_2/day for distributed or semi-central production, and up to at least 50,000 kg H_2/day for central production. The Technology Readiness Level (TRL) of these projects is anticipated to be 4 or higher.

Area of Interest 2: Thermochemical conversion of bio-derived liquids for distributed or semi-central production of low-cost hydrogen. Integrated system technologies for thermochemical conversion (e.g., reforming) of bio-derived liquids for the production of hydrogen, including approaches combining process steps, the use of low cost feedstocks (e.g., minimally-processed raw bio-derived liquids, waste streams from other processes), and/or feedstock flexible reformers, are of interest. Deliverables of the proposed work must include demonstration of production of at least 2 kg H_2/day with a feasible pathway to scalability to at least 100 kg H_2/day, and ultimately to at least 1,000 kg H_2/day for forecourt or semi-central production. The TRL of these projects is anticipated to be 4 or higher.

Area of Interest 3: Hydrogen production through direct solar water-splitting technologies: ***Advanced materials-based systems for direct solar water splitting for central or semi-central production of low-cost renewable hydrogen*****.** The DOE intends to solicit applications which propose development of innovative materials-based systems utilizing water-based feedstocks with solar energy input resulting in hydrogen production by direct solar water splitting. Production pathways of interest are: 1) photoelectrochemical processes based on wide-bandgap semiconductor materials systems and 2) solar thermochemical cycles based on closed-loop chemical reactant materials. Deliverables of the proposed work must include demonstration of significant progress toward relevant 2015 targets in the FCT Office multi-year research, development and demonstration plan for solar-to-hydrogen conversion efficiency (% STH) and solar hydrogen production rate (kg/s-m^2), and demonstration of 8 hours of continuous operation in sunlight with a cumulative production of at least 3 standard liters of H_2. In addition, a pathway to scalability to at least 50,000 kg H_2/day for central production at the production cost goal of <$2/gge hydrogen must be shown. Projects in response to this area of interest are expected to be at low TRLs (2-3).

DOE envisions awarding multiple financial assistance awards in the form of Cooperative Agreements. EERE encourages integrated teams to apply to this FOA. The estimated period of performance for each award will be approximately three years. Selection of projects is subject to appropriations.

This Notice is issued so that interested parties are aware of the DOE's intention to issue this Funding Opportunity Announcement in the near-term. Any of the information contained in this Notice is subject to change. The DOE will not entertain any questions or telephone calls at this time involving this Notice. Once the Funding Opportunity Announcement has been released, DOE will provide an avenue for potential applicants to submit questions.

DOE plans to issue the Funding Opportunity Announcement (FOA) in or around the July 2013 timeframe. The Funding Opportunity Announcement will be available for viewing at the EERE Exchange website https://eere-exchange.energy.gov/. If applicants wish to receive official notifications and information from EERE regarding this FOA they should register in EERE Exchange. When the Funding Opportunity Announcement is released, applications will only be accepted through Exchange.

This is a Notice of Intent (NOI) only. DOE may issue a FOA as described herein, may issue a FOA that is significantly different than the FOA described herein, or DOE may not issue a FOA at all.