



**Clean Energy Supply Chain and Manufacturing
Competitiveness Analysis for Hydrogen and
Fuel Cell Technologies**

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**FOA Webinar
DE-FOA-0000854
6/5/2014**

Anticipated Schedule:

FOA Issue Date:	5/20/14
Submission Deadline for Letter of Intent:	5/30/14
FOA Informational Webinar:	6/5/14
Submission Deadline for Concept Papers:	N/A
Submission Deadline for Full Applications:	6/30/14
Submission Deadline for Replies to Reviewer Comments:	8/5/14
Expected Date for EERE Selection Notifications:	Sep/Oct 2014
Expected Timeframe for Award Negotiations:	Nov/Dec 2014

Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement [DE-FOA-0000854](#) (“FOA”) and adhere to the stated submission requirements.
- This presentation summarizes the contents of FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document and applicants should rely on the FOA language and seek clarification from EERE.
- If you believe there is an inconsistency, please contact: FCTOmanufacturing@go.doe.gov

Agenda

- 1) FOA Description
- 2) Topic Areas/Technical Areas of Interest
- 3) Award Information
- 4) Statement of Substantial Involvement
- 5) Cost Sharing
- 6) Letters of Intent
- 7) Full Applications
- 8) Merit Review and Selection Process
- 9) Registration Requirements

FOA Description

DESCRIPTION/BACKGROUND

- The Department of Energy's (DOE) Fuel Cell Technologies Office (FCTO) within the Office of Energy Efficiency and Renewable Energy (EERE) is requesting applications to:
 1. Carry out outreach-type activities to facilitate the development and expansion of the domestic supply chain of components and systems necessary for the manufacturing and scale-up of hydrogen and fuel cell systems in the United States
 2. Conduct a global hydrogen and fuel cell manufacturing competitiveness analysis aimed at:
 - Understanding the key drivers of U.S. competitiveness
 - Prioritizing strategic investments to strengthen American competitiveness in domestic and global markets of hydrogen and fuel cell components and systems.

FOA Description

- These activities will support the FCTO's mission to enable the widespread commercialization of a portfolio of hydrogen and fuel cell technologies through applied research, technology development and demonstration, and diverse efforts to overcome institutional and market challenges.
- FCTO is also working to reduce institutional and market barriers that may impede the commercialization of hydrogen fuel cell technologies.

FOA Description

To accomplish these goals, the FCTO works with partners in state and federal agencies, industry, academia, non-profit institutions, and the national laboratories. DOE intends to provide financial support for this effort under authority of the Energy Policy Act of 2005, Public Law 109-58, Title VIII – Hydrogen. The Energy Policy Act (EPAcT) of 2005 promotes the development, demonstration, and commercialization of fuel cells and hydrogen technology, in partnership with industry (see EPAcT Section 802). These activities include applications in transportation, utility, industrial, commercial and residential sectors (see EPAcT Section 805).

FOA Description

- Significant challenges must be overcome to scale-up production of hydrogen and fuel cell components and systems, which are now typically built using laboratory-scale fabrication technologies, to commercially viable products manufactured at high volume.
- FCTO's Manufacturing Research and Development (R&D) Program aims to improve processes and reduce the cost of manufacturing components and systems for hydrogen production and delivery, hydrogen storage, and fuel cells for multiple applications.
- Cross-cutting technologies and capabilities such as metrology and quality control, standardization, modeling and simulation tools for efficient manufacturing processes, and the development of a domestic supplier base are necessary to continue the establishment of a robust, domestic hydrogen and fuel cell manufacturing industry.
- FCTO's Manufacturing R&D Program:
<http://energy.gov/eere/fuelcells/manufacturing-research-and-development>

FOA Description

- As the market for hydrogen and fuel cells grows, the need to develop a robust supply chain to fuel mass production of these systems grows as well.
- In addition, key opportunities must be identified in the hydrogen and fuel cell supply chain where the U.S. can achieve or maintain a competitive advantage.
- As noted earlier, the two topics of this Funding Opportunity Announcement (FOA) are:
 - expanding the supply chain for hydrogen and fuel cell production and
 - evaluating manufacturing competitiveness of the U.S.

FOA Description

Supply Chain Development for Hydrogen and Fuel Cell Systems (background for Topic 1):

- A Hydrogen and Fuel Cell Manufacturing R&D workshop was held recently at the National Renewable Energy Lab (NREL) to identify and prioritize R&D activities that government could support to overcome the barriers to manufacturing hydrogen and fuel cell systems and components.
 - The participants at the workshop specifically highlighted the need to expand the hydrogen and fuel cell supply chain as well as the need to standardize many of the components to lower the system costs.
 - They also noted that balance-of-plant (BOP) components in the hydrogen- and fuel cell-related technologies are either not specifically designed for their applications and thus incur performance penalties, or if they were specifically designed, the current manufacturing volumes are so low that costs are very high.
 - The participants suggested that Design for Manufacturing and Assembly (DFMA®) be applied during the development of standardized specifications to reduce part count and cost, and improve manufacturability.
 - The participants also suggested that FCTO facilitate a working group (or working groups) of hydrogen and fuel cell manufacturers and BOP suppliers to establish a consensus on standard specifications for items such as heat exchangers, blowers, humidifiers, water separation systems, and other components.
 - Last, the participants suggested that DOE consider coordinating efforts between the fuel cell and electrolyzer manufacturers to leverage buying power using the standardized designs to further reduce cost. The potential benefit of such an activity, beyond reduced costs and improved designs for BOP components, is further development of the hydrogen- and fuel cell-related supply chain.
- Hydrogen and Fuel Cell Manufacturing R&D Workshop: <http://energy.gov/eere/fuelcells/hydrogen-and-fuel-cell-manufacturing-rd-workshop>

FOA Description

Global Hydrogen and Fuel Cell Manufacturing Competitiveness Analysis **(background for Topic 2):**

- EERE established a Clean Energy Manufacturing Initiative (CEMI) with the following objectives:
- Increase U.S. competitiveness in the production of clean energy products through strategic investments in technologies that leverage American competitive advantages and overcome competitive disadvantages.
- Increase U.S. manufacturing competitiveness across the board by increasing energy productivity through strategic investments in technologies and practices to enable U.S. manufacturers to increase their competitiveness through energy efficiency, combined heat and power, and taking advantage of low-cost domestic energy sources.
- DOE previously funded NREL to conduct a global manufacturing competitiveness analysis for solar photovoltaic and wind to evaluate the competitive position of the U.S. in manufacturing and to prioritize strategic investments to strengthen American competitiveness in domestic and global markets.
- The Global Hydrogen and Fuel Cell Manufacturing Competitiveness Analysis supports CEMI's objective to increase U.S. competitiveness and is part of an EERE-wide effort.

FOA Description

- Clean Energy Manufacturing Initiative:
<http://www1.eere.energy.gov/energymanufacturing/>
- Assessing the drivers of regional trends in solar photovoltaic manufacturing:
<http://pubs.rsc.org/en/Content/ArticleLanding/2013/EE/c3ee40701b#divAbstract40701b#divAbstract>
- Supply Chain and Blade Manufacturing Considerations in the Global Wind Industry:
<http://www.nrel.gov/docs/fy14osti/60063.pdf>

Topic Areas/Technical Areas of Interest

This FCTO Funding Opportunity Announcement (FOA) seeks to fund outreach- and analysis-type projects to:

- Conduct outreach to develop strategies and new approaches to facilitate the development and expand the domestic supply chain of hydrogen- and fuel cell-related components in the U.S. (Topic 1).
- Conduct an extensive global manufacturing competitiveness analysis for hydrogen- and fuel cell-related technologies (Topic 2).
- The ultimate goal for both topic areas is to identify and capitalize on key opportunities in the hydrogen and fuel cell supply chain where the U.S. can achieve or maintain a competitive advantage and increase the U.S. manufacturing competitiveness. Areas that are unfavorable for the U.S. to compete should also be identified.
- Projects funded through this announcement will be included in FCTO's Manufacturing R&D portfolio. Collaborative approaches with teaming across multiple entities with complementary disciplines and expertise necessary for a holistic approach are encouraged. Projects selected under Topic 2 will be required to work closely with NREL to ensure that their analysis is closely aligned with prior competitiveness analyses conducted by NREL in other renewable energy sectors (e.g., solar photovoltaic, wind, and electric vehicle battery technologies) as noted above.

Non-Responsive Applications

The following types of applications will be deemed nonresponsive and will not be reviewed or considered for an award:

- Applications that fall outside the technical parameters specified in Section I.B of the FOA

Award Information

Topic Area Number	Topic Area	Anticipated Award Size for Any One Individual Award (Fed Share)	Anticipated Number of Awards to be Funded	Period of Performance	Number of Budget Periods and Length of Each Budget Period
1	Facilitate the Development and Expansion of a Robust Supply Chain for Hydrogen and Fuel Cell Systems and Components	\$200K to \$450K	Up to 3	24 to 36 months	2 to 3 Budget Periods each 1 Year in Length
2	Analysis of U.S. Hydrogen and Fuel Cell Manufacturing Global Competitiveness	\$400K to \$600K	Up to 2	48 months	4 Budget Periods each 1 Year in Length

Types of Funding Agreements	Cooperative Agreements
Cost Share Requirement	Cost sharing is not required under this FOA

*Subject to the availability of appropriated funds

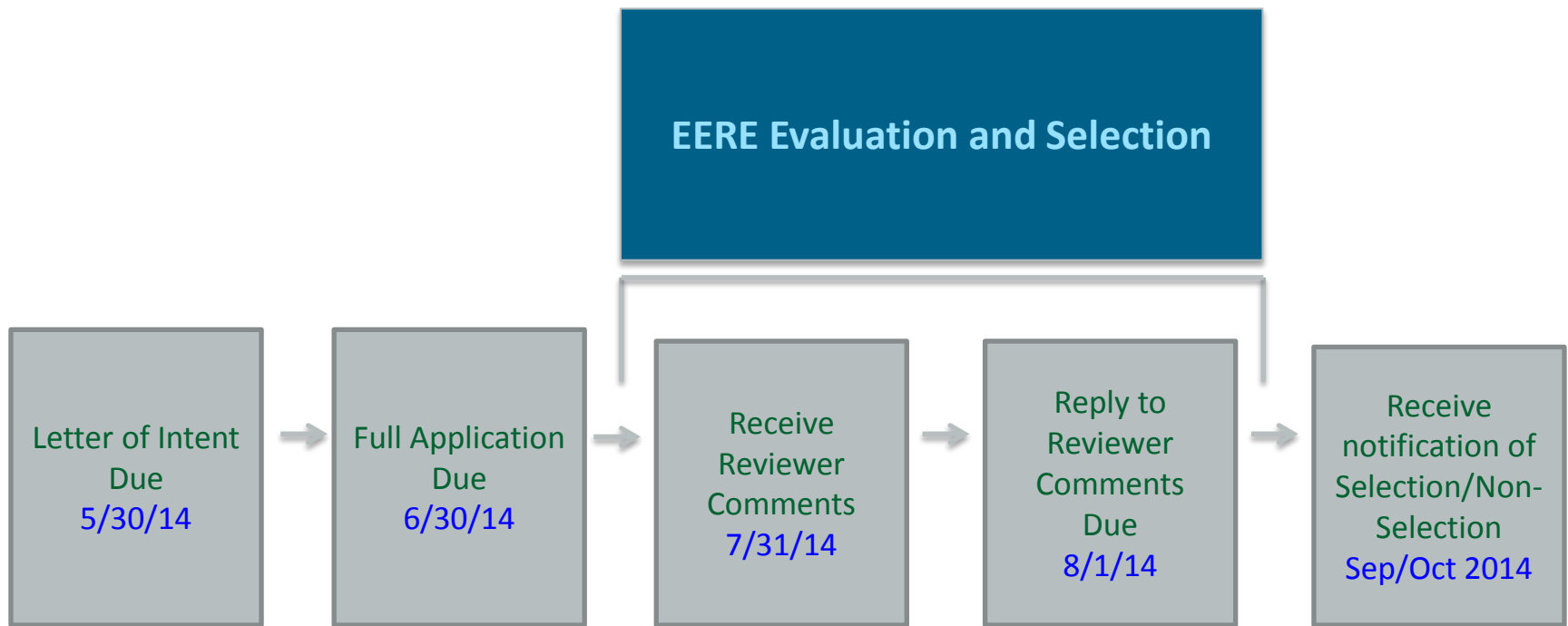
Statement of Substantial Involvement

- EERE has substantial involvement in work performed under Awards made following this FOA. EERE does not limit its involvement to the administrative requirements of the Award. Instead, EERE has substantial involvement in the direction and redirection of the technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:
 - EERE shares responsibility with the Recipient for the management, control, direction, and performance of the Project.
 - EERE may intervene in the conduct or performance of work under this Award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
 - EERE may redirect or discontinue funding the Project based on the outcome of EERE's evaluation of the Project at that the Go/No Go decision point.
 - EERE participates in major project decision-making processes.

Cost Sharing Requirements

Cost sharing is not required under this FOA

FOA Timeline



EERE anticipates making awards by November/December 2014

Letters of Intent (LOI)

- Potential applicants are encouraged to submit a Letter of Intent. Letters of Intent will be used by EERE to plan for the merit review process. The letters should not contain any proprietary or sensitive business information. The letters will not be used for down-selection purposes, and do not commit an applicant to submit an application.
 - The LOI should comply with the content and form requirements of [Section IV.B.1 of the FOA](#), and
 - The applicant must enter all required information and click the “Create Submission” button in EERE Exchange by the deadline stated in the FOA.
- EERE will not provide notification of acceptance for Letters of Intent

Full Applications

- The Full Application includes:
 - **Technical Volume:** The key technical submission - info relating to the technical content, project team members, etc.
 - **SF-424 Application for Federal Assistance:** The formal application signed by the authorized representative of the applicant.
 - **SF-424A Budget & Budget Justification:** a detailed budget and spend plan for the project.
 - **Summary for Public Release**
 - **Summary Slide**
 - **Administrative Documents:** E.g., FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, etc

Full Applications: Technical Volume Content

- **Technical Volume: the key technical component of the Full Application**

Content of Technical Volume	Suggested % of Technical Volume
Cover Page	
Project Overview	10%
Technical Description, Innovation and Impact	25%
Workplan	50%
Technical Qualifications and Resources	15%

Full Application Eligibility Requirements

- Applicants must submit a Full Application by 6/30/14
- Full Applications are eligible for review if:
 - The Applicant is an eligible entity [Section III.A of FOA](#);
 - The Full Application is compliant [Section III.C of FOA](#); and
 - The proposed project is responsive to the FOA [Section III.D of FOA](#)
 - The Full Application meets any other eligibility requirements listed in Section III of the FOA.

Who's Eligible to Apply?

Eligible applicants for this FOA include:

1. Individuals
2. Domestic Entities
3. Foreign Entities
4. Incorporated Consortia
5. Unincorporated Consortia

For more detail about each eligible applicant, please see [Section III.A](#) of the FOA for eligibility requirements

Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

Multiple Applications

Applicants may submit more than one application to this FOA, provided that each application describes a unique, scientifically distinct project

Merit Review and Selection Process (Full Applications)

- The Merit Review process consists of multiple phases that each include an initial eligibility review and a thorough technical review
- Rigorous technical reviews are conducted by reviewers that are experts in the subject matter of the FOA
- Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors, to make the selection decisions

Technical Merit Review Criteria

Criterion 1: Overall Merit and Impact (50%)

- Extent to which the proposed analysis or outreach project has the potential to expand the current body of knowledge
- Degree to which the current body of knowledge and the proposed analysis and outreach activities are clearly described
- Extent to which the application specifically and convincingly demonstrates how the applicant will expand the current body of knowledge
- Sufficiency of detail in the application to assess whether the proposed work will provide an impact, including relevant data, calculations and discussion of prior work in the literature with analyses that support the viability of the proposed work
- Degree to which the project supports the topic area objectives and provides innovative strategies and approaches to facilitate the development and expand the domestic supply chain of hydrogen- and fuel cell-related components in the U.S. (Topic 1)
- Degree to which the project supports the topic area objectives and provides confidence that the applicant can successfully conduct an extensive global manufacturing competitiveness analysis and assess the status of global hydrogen- and fuel cell-related technologies and markets (Topic 2)

Technical Merit Review Criteria - Continued

Criterion 2: Project Workplan (30%)

- Degree to which the approach and critical path have been clearly described and thoughtfully considered
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed workplan will succeed in meeting the project goals in a logical manner
- The level of clarity in the definition of the metrics and milestones
- Relative strength of the quantifiable metrics, milestones, and mid-point deliverables defined in the application, such that meaningful interim progress will be made

Technical Merit Review Criteria - Continued

Criterion 3: Team and Resources (20%)

- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a good chance of success. Qualifications, knowledge of international commercial activities, relevant expertise, and time commitment of the individuals on the team.
- The demonstrated ability to acquire knowledge of global fuel cell market status (shipments, revenue, supply chain, etc.) in various countries
- Demonstrated ability to obtain and handle company-sensitive information and compile and disseminate aggregate data
- Level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the workplan
- Reasonableness of budget and spend plan for proposed project and objectives

Replies to Reviewer Comments

- EERE provides applicants with reviewer comments
- Applicants are not required to submit a Reply - it is optional
- To be considered by EERE, a Reply must be submitted by [8/5/2014](#) and submitted through EERE Exchange
- Content and form requirements:

Section	Page Limit	Description
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Full Application.
Optional	1 page max	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

Selection Factors

The Selection Official may consider the merit review recommendation, program policy factors, and the amount of funds available in arriving at selections for this FOA

Program Policy Factors

The Selection Official may consider the following program policy factors in making his/her selection decisions:

- The level of industry involvement and demonstrated ability to commercialize energy or related technologies
- Technical, market, organizational, and environmental risks associated with the project
- Whether the proposed project is likely to lead to increased employment and manufacturing in the United States
- Whether the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty
- The degree to which the proposed project directly addresses EERE's statutory mission and strategic goals.

Registration Requirements

- To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange:
<https://eere-Exchange.energy.gov>
- Obtain a “control number” at least 24 hours before the first submission deadline
- Although not required to submit an Application, the following registrations must be complete to received an award under this FOA:

Registration Requirement	Website
DUNS Number	http://fedgov.dnb.com/webform
SAM	https://www.sam.gov
FedConnect	https://www.fedconnect.net
Grants.gov	http://www.grants.gov

Means of Submission

- Letters of Intent, Full Applications, and Replies to Reviewer Comments must be submitted through EERE Exchange at

<https://eere-Exchange.energy.gov>

- EERE will not review or consider applications submitted through other means

The Users' Guide for Applying to the Department of Energy EERE Funding Opportunity Announcements can be found at <https://eere-Exchange.energy.gov/Manuals.aspx>

Key Submission Points

- Check entries in EERE Exchange
 - Submissions could be deemed ineligible due to an incorrect entry
- EERE strongly encourages Applicants to submit 1-2 days prior to the deadline to allow for full upload of application documents and to avoid any potential technical glitches with EERE Exchange
- Make sure you hit the submit button
 - Any changes made after you hit submit will un-submit your application and you will need to hit the submit button again
- For your records, print out the EERE Exchange Confirmation page at each step, which contains the application's Control Number

Applicant Points-of-Contact

- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations
- It is imperative that the Applicant/Selectee be responsive during award negotiations and meet negotiation deadlines
 - Failure to do so may result in cancellation of further award negotiations and rescission of the Selection

Questions

- Questions about this FOA? Email: FCTOmanufacturing@go.doe.gov
 - All Q&As related to this FOA will be posted on EERE Exchange
 - You must select this specific FOA Number in order to view the Q&As
 - EERE will attempt to respond to a question within 3 business days, unless a similar Q&A has already been posted on the website
- Problems logging into EERE Exchange or uploading and submitting application documents with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov.
 - Include FOA name and number in subject line