Clean Energy Supply Chain and Manufacturing Competitiveness Analysis for Hydrogen and Fuel Cell Technologies – Webinar Transcript

Thursday, June 5th (1:30pm EDT)

Presenter: Nancy Garland, DOE Fuel Cell Technologies Office

Title Slide (Slide #1):

Good [afternoon/morning], everyone and welcome to our webinar. Thank you for your interest in the U.S. Department of Energy's efforts on renewable energy and energy efficiency. You are joining us for the Informational Webinar for Applicants and other interested parties for the "Clean Energy Supply Chain and Manufacturing Competitiveness Analysis for Hydrogen and Fuel Cell Technologies" Funding Opportunity Announcement, or FOA, which was issued on May 20, 2014. My name is Nancy Garland and I am a Technology Manager and Team Lead in the Fuel Cell Technology Office within the DOE's Office of Energy Efficiency and Renewable Energy. We hope to cover the basic aspects of the Funding Opportunity Announcement during this webinar.

Before we begin, I'd like to draw your attention to the email address on the left hand side of this cover page: FCTOmanufacturing@go.doe.gov. This is the official mailbox to direct all of your questions during the entire FOA process. Please do not contact EERE individuals directly with questions, including myself. All questions received at this mailbox are posted publicly at the Q&A section of the FOA page on EERE Exchange in an anonymous way. The official answers to your questions will typically also be posted within 3 business days. Please be careful not to submit any language that might be business sensitive, proprietary or confidential.

Also, just to be clear, there are no particular advantages or disadvantages to the application evaluation process with respect to participating on the webinar today. Your participation is completely voluntary.

Let's get started!

Slide #2:

This slide shows the anticipated schedule for the FOA. The FOA has already been posted, and we are conducting the FOA Informational Webinar now. Please note that there are a few requirements that we will go over in the presentation that are different than in past FOAs, such as Replies to Reviewer Comments – we will cover all requirements for this FOA later in the presentation.

Slide #3:

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

Slide #4:

The agenda for this presentation is as follows:

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

We encourage you to have a copy of the FOA in front of you for reference as we go through the presentation.

Slide #5:

FOA 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.

Slide #6:

- 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.

Slide #7:

- 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).

Slide #8:

- 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

Slide #9:

- 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.

Slide #10:

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

Slide #11:

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. competiveness 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.

Slide #12:

- Clean Energy Manufacturing Initiative: http://www1.eere.energy.gov/energymanufacturing/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

Slide #13:

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.

Slide #14:

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

Slide #15:

EERE expects to make approximately $2 million of Federal funding available for new awards under this FOA subject to the availability of appropriated funds. The average award amount is anticipated to range from $200K to $600K.

EERE intends to fund cooperative agreements under this FOA. Cooperative Agreements include Substantial Involvement, which we will discuss next.

Slide #16:

Under cooperative agreements, there will be what is known as "substantial involvement" between EERE and the Recipient during the performance of the project.

- 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.

Slide #17:

Cost sharing is not required under this FOA

Slide #18:

EERE's Evaluation and Selection Process is shown in blue here. EERE will review Replies to Reviewer Comments (which we will cover later in the presentation), and Full Applications. The gray boxes represent the actions that apply to applicants throughout the FOA process.

Slide #19:

Letters of Intent will be used by EERE to plan for the merit review process.

Slide #20:

The Full Application includes:

- Technical Volume: The key technical submission. Applicants submit info pertaining 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. Includes cost share amounts and Federal certifications and assurances.
- SF-424A Budget & Budget Justification: Budget documents that asks applicants to submit a detailed budget and spend plan for the project.
- Summary for Public Release: Applicants must provide a 1 page summary of their technology appropriate for public release.
- Summary Slide: Powerpoint slide that provides quick facts about the technology. Slide content requirements are provided in the FOA.
- Administrative Documents: E.g., FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, etc.

Slide #21:

- The key technical component of the full application is the Technical Volume, which helps applicants frame the technical information that the application will be evaluated on. The Technical Volume provides information regarding what the project is, how the project tasks will be accomplished, and the project timetable.
- The Technical Volume is comprised of a cover page, project overview, technical description, innovation, and impact, workplan, technical qualifications and resources. Please note that the percentages listed here are suggested and are not mandatory.
- The Cover Page will be a one page document and provides basic information on their project, such as title, topic area, points of contact, etc.
- The Project Overview constitutes approximately 10% of the Technical Volume and provides information on project background, goals, impact of EERE funding
- The Technical Description, Innovation, and Impact section is approximately 25% of the Technical Volume. It provides information on project relevance and outcomes, feasibility, and innovation/impacts. This ultimately provides the justification as to why EERE should fund the project.

- The Workplan is the key element to the Technical Volume, and constitutes approximately 50% of the Technical Volume. It details the proposed milestones and project schedule. If selected for award negotiations, the Workplan serves as the starting point when negotiating the Statement of Project Objectives.
- The Technical Qualifications and Resources section is approximately 15% of the Technical Volume. It provides applicants and opportunity to provide information about the proposed project team and demonstrate how the applicant will facilitate the successful completion of the proposed project.

Slide #22:

As we previously pointed out, applicants must submit full applications by 6/30/14. EERE will conduct an eligibility review, and full application will be deemed eligible if:

- 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.

Slide #23:

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.

Please note that nonprofit organizations described in Section 501(c)(3) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

Also, note that all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. If a foreign entity applies for funding

as a Prime Recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a State or territory of the United States to be the Prime Recipient. The Full Application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Slide #24:

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

Slide #25:

- 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

Slide #26:

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)

Slide #27:

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

Slide #28:

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

Slide #29:

The Full Applications are reviewed by experts in the FOA topic area(s). After those experts review the applications, EERE will provide applicants with reviewer comments. Applicants will have a brief opportunity to review the comments and prepare a short Reply to Reviewer Comments responding to comments however they desire. The Reply to Reviewer Comments is due by the date and time provided on this slide. Applicants should anticipate receiving the independent reviewer comments approximately three business days before this due date. The Reply to Reviewer Comments is an optional submission; applicants are not required to submit a Reply to Reviewer Comments.

This a customer centric process that provides applicants with a unique opportunity to correct misunderstandings and misinterpretations and to provide additional data that might influence the selection process in their favor. The Replies are considered by the reviewers and the selection official.

Replies to Reviewer Comments must conform to the content and form requirements listed here, including maximum page lengths. If a Reply to Reviewer Comments is more than three pages in length, EERE will review only the first three pages and disregard any additional pages.

Please see Sections IV.F. and V.A.3 for additional information regarding Replies to Reviewer Comments

Slides #30:

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

Slide #31:

After the Merit Review process, the Selection Official may consider program policy factors to come to a final selection decision.

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.

Slide #32:

- 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 eere-xhang.energy.gov
- Although not required to submit an Application, the following registrations must be complete to receive an award under this FOA:
    - There are several one-time actions before submitting an application in response to this FOA, and it is vital that applicants address these items as soon as possible. Some may take several weeks, and failure to complete them could interfere with an applicant's ability to apply to this FOA, or to meet the negotiation deadlines and receive an award if the application is selected.

    - DUNS Number
      Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number.

    - System for Award Management
      Register with the System for Award Management (SAM). Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually.

- Fedconnect
  Register in FedConnect. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at the FedConnect site.

- Grants.gov
  Register in Grants.gov to receive automatic updates when Amendments to this FOA are posted. However, please note that [Delete if Letters of Intent are not applicable] Letters of Intent, Concept Papers, and Full Applications will not be accepted through Grants.gov.

Slide #33:

All required submissions must come through EERE Exchange. EERE will not review or consider applications submitted through any other means.

Slide #34:

- 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

Slide #35:

- 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

Slide #36:

- 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

Thank you.