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Increase Adoption of Emerging Clean Energy Technologies through Procurement

Additional submitted attachment is included below.

March 13, 2017

Mr. Nicholas Blair
California Energy Commission
Energy Research and Development Division
1516 Ninth Street, MS-51
Sacramento, CA 95814-5512

Subject: Electric Power Research Institute ‘s Response to the Electric Program Investment Charge (“EPIC”) Request for Comments: Increase Adoption of Emerging Clean Energy Technologies through Procurement

Dear Mr. Blair:

The Electric Power Research Institute (“EPRI”) is pleased to provide our response to the Electric Program Investment Charge’s RFC: Increase Adoption of Emerging Clean Energy Technologies through Procurement. We appreciate this opportunity to provide our feedback. If we can provide further information or any clarification, please do not hesitate to contact me.

Sincerely,

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Electric Power Research Institute's Response to the EPIC Request for Comments:
Increase Adoption of Emerging Clean Energy Technologies through Procurement
Issued March 13, 2017

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1. (For all groups) What are barriers that large-scale customers face when procuring emerging energy technology solutions? Would projects funded from this solicitation help address those barriers? If not, what specific changes would you recommend to help ensure the resulting projects meet large-scale customer procurement needs?

   Response:

   Large-scale customers may face the following barriers:

   - Customers are wholly reliant on the claims of technology vendors when trying to understand the potential benefits of a new technology or product, and seldom have sufficient information about the potential costs. (Not presently addressed by any of the groups.)
   - Many emerging technologies and products have not been fully assessed with respect to safety and reliability in field applications. (Potentially addressed by Group 1.)
   - In the absence of objective guidelines for technology investment decisions, large-scale customers may find it difficult to choose among a potentially bewildering array of products and technologies, and as a consequence may choose not to invest in any of them. (Potentially addressed by Group 2; see further comments in question #3 below.)
   - There is an incomplete understanding of the potential effects of different technologies on the overall power system, and how they may evolve over the lifetime of the technology asset. As a result, there is no guidance to customers from local utilities and/or grid operators about potential incentives or costs that may affect the customer's investment decision, or about interconnection challenges that may block or delay the project after the investment is made. (Potentially addressed by Groups 1 and 2.)

   A program to develop commonly-accepted cost-benefit analysis frameworks, for potential customers to transparently assess the value proposition of a new technology or product, would address the first bullet above.

2. (For all groups) What are specific recommendations you can provide for improving the purpose of the solicitation outlined in this RFC? Please explain the rationale behind the recommendations.

   Response:

CEC can leverage the extensive Incubatenergy Network in order to maximize outreach and response when announcing solicitations and other key communications. The Incubatenergy Network (www.incubatenergy.org) is a national network of the top clean energy incubators and accelerators in the country supporting clean energy innovation, managed by EPRI in partnership with the National Renewable Energy Lab (NREL) and supported by the Department of Energy. For the purpose of improving this solicitation, the specific inclusion of existing incubator and accelerator programs within the Incubatenergy Network may be considered a deliberate strategy for launching clean technologies, as many of these groups are already engaged in effectively supporting pre-commercialized companies.

For example, in California, programs like the LA Cleantech Incubator (LACI) in Los Angeles, along with Prospect Silicon Valley, Cyclotron Road, and Powerhouse in the Bay Area, are all part of the Incubatenergy Network, and are currently running very effective programs supporting clean energy entrepreneurs in many of the technology areas that this solicitation is seeking. Reaching out to organizations in the Incubatenergy Network in partnership with EPRI could increase the response rate to solicitations and enhance the rate of innovative technology commercialization.

3. (For all groups) Are there existing efforts that complement the groups identified in this RFC? What specific changes to this proposed solicitation would you suggest to best leverage these existing efforts?

Response:

Development of commonly accepted methods of technology valuation, characterization, and integration is an important effort that complements the groups identified in the RFC. Commonly accepted methods have the potential to accelerate procurement by facilitating potential customers' evaluation of technology options. EPRI has undertaken common methods development efforts in several technology domains. Collaborations are now in progress among technology developers, utilities, research communities, regulatory personnel, and other stakeholders to identify key requirements, identify common guidelines, and publish templates, tools, and reports to serve as a common basis for understanding.

Energy storage. Since 2013, EPRI's Energy Storage Integration Council (ESIC) has been developing pre-standard guidelines for energy storage, with industry stakeholder input and review and careful technical review by EPRI. Representatives of over 300 organizations (including utilities, vendors, national labs and other experts) have requested to participate in this broad stakeholder collaboration. The publicly-available guidelines are updated periodically and are available at the ESIC website (www.epri.com/esic). They include:

- Common Functions of Smart Inverters: 4th edition
- Energy Storage Implementation Guide
- Energy Storage Technical Specification Template
- Energy Storage Test Manual
- Energy Storage Commissioning Guide
- Energy Storage Cost Template and Tool
- Energy Storage Safety Guide
- Storage Value Estimation Tool (StorageVET™), available at www.storagevet.com

Future EPIC solicitations could promote the evaluation of new potential guidelines, and adapt them, as appropriate, for any valuation, product characterization, or process integration related to energy storage.

Electric vehicles. EPRI conducts similar collaborative activities addressing electric vehicles and charging infrastructure in the Infrastructure Working Council (IWC), which could provide valuable insight.

Connected devices. EPRI leads a collaborative working group around grid integrated customer devices called the Customer Connected Devices Working Council (CCDWC), which could provide valuable insight. Initiated in 2015, the Customer Connected Devices Working Council addresses challenges and enables opportunities related to servicing a shared customer. The Working Council emerged from EPRI research focused on:

- Valuation of grid and customer services enabled by connected devices
- Vetting interoperability of connected device ecosystems through field evaluation and assessment
- Enabling device aggregation and integration through development of an open-source DER integration platform

EPIC projects could consider how connected devices can be integrated with the other DERs, electric vehicles, solar, and energy storage to enable load shape management and load shape flexibility to service an evolving power system. This observation is informed by EPRI's ongoing work in several EPIC projects focused on connected device development, integration and assessment to help meet California's 2050 decarbonization goals.

With appropriate lead time and advance engagement with EPIC solicitations, councils such as ESIC, IWC, and CCDWC could serve as forums for utilities, vendors, national labs, and industry suppliers for input and review of planned activities in their scope. Additionally, the councils could serve as industry collaboration models for the development of additional technology or functional scoping of demonstration projects.

4. (For all groups) Are the proposed funding amounts identified in this RFC appropriate for the work requested? Please explain the rationale behind the recommendations, and, if applicable, what would the expected cost be to adequately test and evaluate the technology types identified in this draft solicitation?

   Response: No EPRI response

5. (For Group 1) Should the Energy Commission require test bed locations in both Northern and Southern California? Please explain the rationale behind the recommendations.

   Response:

   In the event that CEC will stand up multiple testbed locations, there will be advantages to maintaining at least one in Northern and one in Southern California:

   1. For technologies related to building environmental controls (heating and cooling), it may be beneficial to run trials in at least two distinct climate zones that are relevant for California.

2. Reducing the travel requirements for technology innovators to access the testbed locations for meetings and product testing.

6. (Groups 1 and 2) Are there additional technologies we should consider or technologies we should remove from the lists provided in this RFC? Please explain the rationale behind the recommendations.

   Response:

   We believe this is a comprehensive list of targeted technologies that the solicitation is seeking. As mentioned in our response to question 2 above, a review of the nearly 500 companies supported by the Incubatenergy Network may uncover potential solutions in the specific technology areas proposed for the solicitation. A better return on CEC's investment may be possible if lessons learned from the U.S. DOE project that created Incubatenergy are incorporated into future CEC solicitations.

7. (Group 3) How can Group 3 most effectively build trust with target customers to ensure that the target customers are buying high quality products?

   Response: No EPRI response

8. (For Group 4) What are the largest impediments to successful deployment of solutions that can facilitate successful procurement of emerging energy technologies? Are there solutions not addressed under this proposed solicitation that would address these impediments? Please explain the rationale behind the recommendations.

   Response: No EPRI response