

**DOCKETED**

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| <b>Project Title:</b>   | Research Idea Exchange   |
| <b>TN #:</b>            | 231019   |
| <b>Document Title:</b>  | Request for Comments on Grant Funding Opportunity Concept  |
| <b>Description:</b>     | Staff is seeking stakeholder comments about a grant funding opportunity concept that will explore how the targeted use of distributed energy resource (DER) technologies and strategies can be used to enable the faster and more cost-effective integration of charging infrastructure for medium- and heavy-duty battery electric vehicles |
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| <b>Organization:</b>    | California Energy Commission   |
| <b>Submitter Role:</b>  | Commission Staff   |
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| <b>Docketed Date:</b>   | 12/9/2019  |



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| <i><b>IN THE MATTER OF:</b></i>   | ) | <b>Docket No. 19-ERDD-01</b>                               |
|   | ) |  |
| <i><b>Request for Comments on Grant<br/>Funding Opportunity Concept</b></i> | ) | REQUEST FOR COMMENTS                                       |
| _____   | ) | RE: DER Strategies for MDHD BEV<br>Charging Infrastructure |

## **REQUEST FOR COMMENTS ON GRANT FUNDING OPPORTUNITY CONCEPT**

California Energy Commission (CEC) staff is developing a competitive Grant Funding Opportunity (GFO) through the Electric Program Investment Charge (EPIC) program. The GFO will explore how the targeted use of distributed energy resource (DER) technologies and strategies can be used to enable the faster and more cost-effective integration of charging infrastructure for medium- and heavy-duty (MDHD) battery electric vehicles (BEVs). Staff is seeking input from stakeholders on the proposed research approach and on the questions asked at the end of this document.

### **Background**

MDHD BEVs need to be deployed rapidly in California for the state to meet its greenhouse gas and air pollution emission reduction targets. As original equipment manufacturers begin to make new vehicle models commercially available in this segment, multiple policy and market incentives are already driving their adoption. However, availability of the electrical infrastructure needed to charge these vehicles remains a barrier, and deploying more infrastructure is complicated by a number of factors. These factors include the need for high-power charging ( $\geq 1\text{MW}$ ), capacity constraints on the existing distribution grid, uncertainty about the speed and scale of MDHD BEV adoption, and operational and logistical considerations of vehicle owners and operators. Traditional utility solutions for accommodating these new capacity demands, including upgrading substations and other distribution infrastructure, can be expensive, inflexible, and time consuming. Furthermore, these traditional utility solutions may not be able to provide an adequate level of reliability and resiliency in the face of public safety power shutoffs and other disruptions to the grid.

### **GFO Focus**

This GFO aims to demonstrate that strategically deployed DER technologies and strategies can enable faster and more cost-effective integration of the charging infrastructure needed for MDHD BEVs. Projects will explore to what extent a DER strategy can reduce the need for upstream distribution system upgrades while also enhancing the resiliency and improving the environmental performance of the state's charging infrastructure. Projects selected under this GFO will identify a targeted use-case where distribution capacity constraints are a key barrier to the widespread

deployment of charging infrastructure, and will develop a replicable and optimized DER strategy to solve those capacity constraints. There is up to \$16 million available for grants awarded under this GFO.

### Target Technology

The GFO will broadly focus on advancing the commercial readiness of DER strategies aimed at the MDHD BEV charging infrastructure market. The DER strategy must include a source of renewable or zero-carbon distributed generation, such as solar photovoltaics (PV). Other sources of distributed generation can also be considered. The strategy should also include a managed charging strategy and a stationary energy storage system. Additional strategies and technologies can also be considered. It must also include an interoperable and modular control system that orchestrates the operation of the individual system components. The strategy must provide a level of reliability and resiliency equivalent to or greater than what could be provided by traditional system upgrades. Further, the strategy must have secure communication capabilities that allow the DER package to respond to price or dispatch signals and to communicate system information to third parties.

### Target Use-Cases

A goal of this solicitation is to target MDHD BEV use-cases where availability of vehicles and chargers is not a significant barrier and where fleet owners and operators are already developing plans to electrify. Candidate use-cases currently under consideration are:

- Transit buses
- School buses
- Delivery vehicles
  - Beverage
  - Parcel
- Off-road work vehicles and equipment
  - Construction
  - Agriculture
  - Airport Ground Support Equipment (GSE)
  - Transport Refrigeration Units (TRU)
- Drayage and other short-haul trucks
- Municipal vehicles
  - Refuse trucks
  - Street sweepers
  - Maintenance trucks
- Yard trucks
- Port equipment

### Intended Research Objectives

Pilot and demonstration projects selected under this GFO will pursue the following research objectives:

- Demonstrate to what extent the DER strategy would minimize or eliminate the need for major upstream distribution system upgrades and enable the integration

of charging infrastructure, particularly in locations that would have capacity constraints with the addition of new MDHD BEV loads;

- Assess and demonstrate the ability of the DER strategy to provide additional values to the customer, the distribution and transmission systems, and to society;
- Develop a business plan for follow-on commercial deployments that assesses the total market potential for the DER strategy and explores ownership models and financing options; and
- Provide data and insight to relevant planning processes underway at the CEC, California Public Utilities Commission, California Independent System Operator, California Air Resources Board, and other stakeholders that aim to accelerate the cost-effective deployment of DERs and electric vehicle charging infrastructure.

### Purpose of Funds

Funding from this GFO cannot be used to pay for the cost of vehicles, chargers, permitting, or interconnection. Projects selected under this GFO should instead leverage other programs, policies, and funding mechanisms to cover these expenses. Instead, funding from this GFO can be used to pay for a portion of the equipment costs associated with the DER package solution. It can also be used to pay for the labor expenses associated with the research, such as design, programming, installation, measurement & verification, and project management.

### **Questions**

The CEC staff is seeking input from interested stakeholders on the following questions:

1. **Of the candidate use-cases and vehicle types listed above, which ones should we prioritize in this solicitation and why?**
  - a. Will distribution capacity constraints be a major barrier to the deployment of the charging infrastructure needed for that use-case in the short- to medium-term?
  - b. Will vehicles and charging equipment be readily commercially available in the short- to medium-term?
  - c. Are there market and policy influences driving electrification in the use-case now?
  - d. Are there use-cases that would particularly benefit from the reliability and resiliency value of the DER strategy?
  - e. Are there vehicle types that are particularly suited to providing reliability services to the grid or to individual buildings during an outage?
  - f. What incentive or funding mechanisms already exist to support MDHD fleet operators looking to electrify?
  - g. What is the total potential market size in California for the use-case?
  - h. Which use-cases have the most potential to replicate the DER package and achieve a meaningful scale?
2. **What is the best way to characterize the grid impacts and other costs associated with deploying MDHD BEV charging infrastructure without a managed charging/DER strategy?**

- a. What metrics should be used to evaluate the cost and performance of the baseline incumbent technology? Metrics currently under consideration include:
    - i. Itemized balance of system costs considering both site host costs and utility costs,
    - ii. Carbon intensity,
    - iii. Cost of delays associated with upgrading upstream distribution systems/substations, and
    - iv. Risks associated with long-term investments in permanent upgrades.
  - b. What information about existing grid infrastructure, beyond the Integration Capacity Analysis (ICA) maps, is needed to evaluate capacity constraints that could limit deployment of MDHD BEV charging infrastructure?
- 3. How does the target technology need to improve?**
- a. What are the current balance of system costs associated with deploying DERs as a non-wires solution for integrating MDHD BEV charging equipment?
  - b. What publicly available resources provide visibility into these costs?
  - c. What types of costs can be further reduced through innovation and require demonstration (e.g., soft costs, software, design, hardware, permitting, interconnection, etc.)?
  - d. What is the revenue-generation potential and business model for the targeted technology (e.g., customer bill savings, low carbon fuel standard, wholesale market participation, distribution grid services, resiliency, etc.)?
  - e. What metrics can be used to evaluate cost and performance attributes of the targeted technology?
  - f. How can those metrics be normalized across different use-cases and project sizes (e.g., ratio of PV size to stationary energy storage size, ratio of soft costs to hardware costs, load factor on the utility distribution system, resiliency/reliability metrics)?
  - g. How well can the targeted technology meet the operational requirements of the priority use cases?
- 4. What level of investment would be needed from EPIC to make a meaningful difference on this issue?**
- a. What size of a project should we be targeting (MW, MWhs, number of charging ports, number of vehicles, etc.)?
  - b. What portion of the DER equipment costs should be covered by EPIC in order to appropriately incentivize site host participation?

## Public Comment

**Written comments:** Written comments must be submitted to the Docket Unit by **5:00 p.m. on December 30, 2019.**

Written comments, attachments, and associated contact information (e.g., address, phone number, email address) become part of the viewable public record. This information may also become available via any Internet search engine.

The CEC encourages use of its electronic commenting system. Visit <https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=19-ERDD-01>, which links to the comment page for this docket. Select or enter a proceeding to be taken to the “Add Comment” page. Enter your contact information and a comment title describing the subject of your comment(s). Comments may be included in the “Comment Text” box or attached in a downloadable, searchable Microsoft® Word (.doc, .docx) or Adobe® Acrobat® (.pdf) file. Maximum file size is 10 MB.

Written comments may also be submitted by email. Include the docket number 19-ERDD-01 and Research Idea Exchange in the subject line and send to [docket@energy.ca.gov](mailto:docket@energy.ca.gov).

If preferred, a paper copy may be submitted to:

California Energy Commission  
Docket Unit, MS-4  
Re: Docket No. 19-ERDD-01  
1516 Ninth Street  
Sacramento, CA 95814-5512

## **Public Advisor and Other Commission Contacts**

The CEC’s Public Advisor’s Office provides the public assistance in participating in CEC proceedings. For information on how to participate in this forum, please contact Public Advisor, Noemí O. Gallardo, at [publicadvisor@energy.ca.gov](mailto:publicadvisor@energy.ca.gov), (916) 654-4489 or toll free at (800) 822-6228.

Please direct requests for reasonable accommodation to Yolanda Rushin at [yolanda.rushin@energy.ca.gov](mailto:yolanda.rushin@energy.ca.gov) or (916) 654-4310 at least five days in advance.

Media inquiries should be directed to the Media and Public Communications Office at [mediaoffice@energy.ca.gov](mailto:mediaoffice@energy.ca.gov) or (916) 654-4989.

Questions on the subject matter of this meeting should be directed to Eric Ritter at [eric.ritter@energy.ca.gov](mailto:eric.ritter@energy.ca.gov) or (916) 327-1446.

Dated: December 9, 2019, at Sacramento, California

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Laurie ten Hope  
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