

DOCKETED

Docket Number:	23-ERDD-01
Project Title:	Electric Program Investment Charge (EPIC)
TN #:	262544
Document Title:	Paired Power Comments - EV Charging Solar Microgrids
Description:	N/A
Filer:	System
Organization:	Paired Power
Submitter Role:	Public
Submission Date:	4/1/2025 4:31:36 PM
Docketed Date:	4/1/2025

*Comment Received From: Paired Power
Submitted On: 4/1/2025
Docket Number: 23-ERDD-01*

EV Charging Solar Microgrids

See attached document.

Additional submitted attachment is included below.



April 1, 2025

Paired Power, Inc.'s Response to CEC/EPIC Scoping Workshop on Electric Vehicle Charging with Solar Microgrids

Paired Power appreciates the opportunity to provide this response to the questions posed by the CEC in its recent scoping workshop on EV Charging with Solar Microgrids. We thank the CEC for its leadership in recognizing this important emerging topic, recognizing both the increasing grid constraints as well as the potential of overbuilding grid capacity in response to growing EV adoption and demand for charging.

As the pioneer of direct-DC, solar-powered EV charging in 2016 and as one of the leading providers of solar microgrids for EV charging, Paired Power has a long track record of accomplishment for this topic area. We address our comments here to several questions that were raised during the workshop around both DER-maximized EV charging and utility coordination.

DER-Maximized EV Charging

The state is now in the fortunate position that there are hundreds of already-built solar canopy DER projects throughout the state interconnected to the grid. Many of these sites – at commercial campuses, schools, and public facilities – are now interested to add significant numbers of EV chargers to be installed beneath those canopies.

In the traditional approach in providing this capability, the new EV chargers are delivered as a completely separate system from the interconnected DER solar. However, this creates problems for grid stability and resiliency in that there is no coordination between the two types of systems. The solar plants are typically delivering energy into the grid during sunny daytime hours. Furthermore, solar intermittency (clouds going over that suddenly reduce solar power output) can interfere with grid stability. And the EV chargers can be drawing significant power from the grid, either during the day or at night, but those draws are not coordinated or managed in conjunction with solar generation.

A much better architecture for such potential systems is a fully integrated microgrid consisting of a combination of solar generation, EV chargers, and optionally, energy storage and an energy management system that can coordinate the energy flows among generation, load, and storage in an intelligent manner that enhances grid stability and resiliency while simultaneously preventing overbuilding the grid to meet capacity.

Furthermore, there are many potential opportunities for conversion of existing solar DER systems to such fully integrated microgrids combining solar with EV charging. Many of such systems are not dramatically large, but they could serve as important test beds for proving out many of the concepts that could then be applied to much larger projects later (for example, to the larger challenge of providing sufficient infrastructure for charging class-8

trucks). Based on this perspective, therefore, we provide the following answers to the CEC's questions from the workshop:

What level of funding is required for such projects?

- For small projects that can demonstrate the value of solar microgrids with managed charging, lower levels of funding (\$300K to \$750K) would significantly enhance the ability of public entities to consider and afford them (for example, for the many schools and public facilities that have existing solar canopies but insufficient EV charging infrastructure). Large dollar funding for large projects is neither necessary nor desirable to prove the concepts and results that the CEC will undertake through this initiative.

What verifications are needed to ensure power control systems' interoperability with IOUs and coordination with customer energy management systems?

- Strong consideration should be given to allowing such microgrid projects to proceed under existing utility interconnection agreements for the solar DER facilities. Energy management systems as part of the projects can be programmed to prevent energy arbitrage via storage or V2X, and the benefits of demonstrating effective microgrid control and operation built on top of existing solar DER facilities would permit verification and demonstration of the financial, operational, and resiliency advantages of such a system, both to the utilities and to the site hosts.

Should there be a minimum size for the integrated solar microgrid (e.g. 1.5 MW solar, 3MWh storage)?

- We urge the CEC not to set a high minimum size for such integrated solar microgrid projects as the example figures stated in the question. If a minimum is to be set, we urge you to consider a much lower threshold such as 250 kW of solar and 250 kWh of storage. As noted earlier, there are many existing solar projects that could benefit from conversion to EV charging microgrids either with or without the addition of energy storage, and such smaller projects will be extremely useful for demonstrating the concepts of managed EV charging through microgrids that can be proven at small scale and then applied later to larger projects. Having a lower size threshold will also greatly expand the potential number of projects that could be considered and undertaken with available funding.

Utility Coordination

We were pleased to learn more during the workshop about the IOUs efforts to support pilot microgrid programs through PG&E's Flex Connect and SCE's LCMS programs. However, as noted during the workshop such programs could be greatly enhanced by providing greater flexibility around relaxed requirements for strict separation of Rule 21 and Rule 15/16 or 29 interconnections. Instead, the CEC should lead an effort to develop a set of guidelines for pilot implementations that permits them to proceed by allowing EV chargers, storage, and energy management systems to be connected to *existing* solar DER facilities that are already interconnected under Rule 21.

Undertaking such an effort will have great benefits to the utilities and to enhancing grid stability and resiliency for the state. Expanding existing solar DER facilities to enable them to be coordinated with new load in the form of EV charging while simultaneously managing energy flows can reduce the impacts of load ramp during the duck curve. For example, with the addition of new EV chargers (new load) and energy storage to existing solar facilities, intermittency and demand spikes will be reduced, and grid capacity and predictability will be increased, preventing the potential of overbuilding the grid to meet such new capacity requirements. With that perspective, therefore, we provide the following answers to the CEC's questions from the workshop:

How do we verify support from IOUs in the application phase? Letters of support?

- The CEC should work with the IOUs to develop a simple mechanism by which pilot applications under this solicitation could be identified and approved for proceeding. A utility representative within each IOU (a utility person from each of the Flex Connect and LCMS programs would be a good choice) should be identified who would have the ability to review and approve applications and provide a letter of support for proceeding with pilot projects that will demonstrate the benefits to the utility and to the CEC of proceeding with an integrated solar microgrid based on existing DERs for EV charging.

Is it feasible for IOUs to treat these projects as combined systems, alleviating the need for separate energization and interconnection requests?

- Not only is it feasible, we strongly urge the CEC to treat potential projects as combined solar+EV charging microgrid systems that on a pilot basis are able to continue to operate under Rule 21. As outlined earlier, such combined projects will have enormous benefits to the state in the form of enhanced grid stability and resiliency and the streamlined approval process that will allow them to be tried out quickly on a pilot basis.

How should the CEC coordinate with IOU staff to align research goals?

- Because of the many benefits that will accrue both to the utilities, to customers, and to the state's energy goals, it is imperative that the CEC help to assure a streamlined process for consideration, approval, and evaluation of potential solar+EV microgrid projects. We recommend a point person be appointed within the CEC under this docket to work closely with a representative from each of the IOUs to form a steering committee that will work to streamline and coordinate the overall research goals of the program and assure fast decisions and actions to work through the requirements and approvals process.

Thank you for the opportunity to provide comments regarding this important initiative to enhance the state's energy goals.