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Docket Number:	23-ERDD-01
Project Title:	Electric Program Investment Charge (EPIC)
TN #:	262551
Document Title:	Clean Coalition Comments on EV Charging with Solar Microgrids EPIC Scoping Workshop
Description:	N/A
Filer:	Ben Schwartz
Organization:	Clean Coalition
Submitter Role:	Other Interested Person
Submission Date:	4/1/2025 5:37:49 PM
Docketed Date:	4/2/2025



1 April 2025

California Energy Commission
715 P Street,
Sacramento, CA 9581
Via Electronic Filing

CEC Docket 23-ERDD-01: Clean Coalition Comments on Electric Vehicle Charging with Solar Microgrids – EPIC Scoping Workshop

Dear Chair Hochschild, Vice Chair Gunda, California Energy Commission Commissioners, and Staff,

The Clean Coalition is a nonprofit organization whose mission is to accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise. The Clean Coalition drives policy innovation to remove barriers to procurement and interconnection of distributed energy resources (“DER”) — such as local renewables, demand response, and energy storage — and we establish market mechanisms that realize the full potential of integrating these solutions for optimized economic, environmental, and resilience benefits. The Clean Coalition also collaborates with utilities, municipalities, property owners, and other stakeholders to create near-term deployment opportunities that prove the unparalleled benefits of local renewables and other DER.

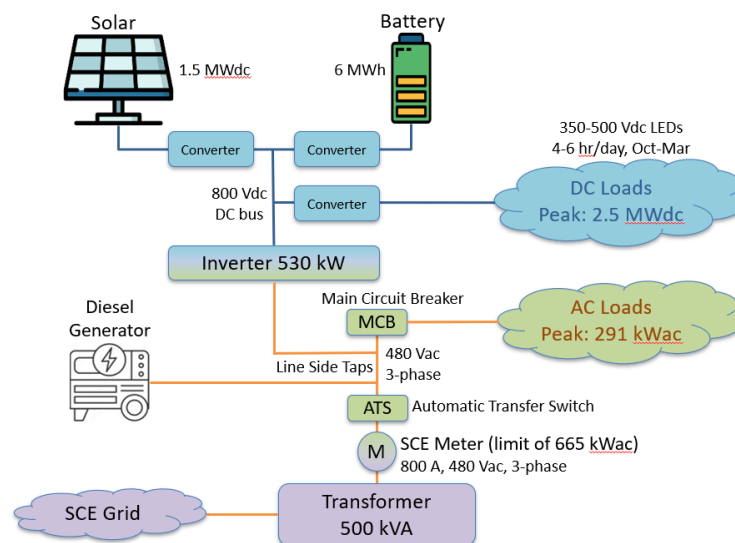
This grant is a very promising opportunity to develop learnings surrounding the flexibility that Solar Microgrids can provide in maximizing onsite loads while minimizing impacts to the distribution grid. Staff are already thinking with the right mindset about value stacking, compensation for infrastructure upgrade deferrals, and eliminating bottlenecks wherever possible to ensure that applications result in project deployments. Clean Coalition’s comments aim to help promote practical guidelines for the grant and emphasize the types of lessons learned that will be most beneficial, given the state of the grid and significant changes required to meet California’s energy and climate goals.

- Using Solar Microgrids to increase utilization of the existing grid and avoid grid upgrades will result in massive ratepayer savings. The deferral values from Solar Microgrids should be studied in a standalone manner, without a comparison to outcomes from the Distribution Investment Deferral Framework (DIDF).
- Lessons learned should include opportunities for value stacking and compensation structures that might increase encourage deployments that benefit the ratepayers.
- These demonstration projects can provide greater understanding of the value associated with the Energy Commission’s load modifier designation for behind-the-meter generation+storage projects.
- Flexible connections must be as streamlined as possible to avoid erecting barriers to participation.
- The grant should consider a scenario where the on-site Solar Microgrid generation is oversized to limit the total impact of a facility on the grid.

1. Flexibility can help defer grid upgrades, saving ratepayers billions of dollars.

An Electrification Impacts Study by Kevala suggested that the price tag of distribution electrification will be around \$52 billion, whereas the Public Advocates Office suggests that \$26 billion is likely on the lower end of the spectrum if costs can be managed. An increasing demand for energy, due to electrification, the deployment of electric vehicle charging infrastructure, data centers, etc....., necessitates new tools to mitigate the need for, and pace of, grid upgrades. Clean Coalition strongly believes that Solar Microgrids are a critical solution that provides an unparalleled trifecta of economic, environmental, and resilience benefits that may include managing large on-site loads during blue sky conditions while mitigating the impact on the distribution grid. Increasing the utilization of the existing grid to avoid overbuilding is a critical aspect of managing the affordability crisis the state is facing.

For example, consider the configuration below, which shows a DC Solar Microgrid design for a farm looking to serve new greenhouses. The feeder that the site is connected to is severely constrained, making a strict export limit of 665 kW(ac) the only way to avoid triggering a multi-million-dollar grid upgrade (that will take multiple years to complete). So, while the solar is sized at 1.5 MW(dc), the inverter is sized at 530 kW to ensure that system exports never exceeds the export limit. With the energy generated by the Solar Microgrid, the site only needs to rely on grid imports briefly throughout the day, when the solar+storage generation is insufficient to cover the loads.



1.5 MW DC coupled solar microgrid at a farm sited to serve 2.5 MWdc loads

This example demonstrates that a Solar Microgrid can serve onsite loads (substitute farm for EV charging depot) even with significant capacity constraints in place, if oversizing is possible. However, a static constraint does limit the ability to maximize the value of the energy, from the perspective of the customer and the grid. A flexible connection would enable a Solar Microgrid with this configuration to interact with the grid more effectively by increasing the amount of generation/load permitted beyond the existing 665 kW limit. The deployment of a Solar Microgrid like this can be achieved in six months or less if everything goes correctly (especially the interconnection process), far faster than the multi-year timeline associated with conducting the traditional grid upgrade. As a result, the Solar Microgrid and flexible

connection will enable the farm to scale up business operations, rather than being hampered by the standard inflexible process of conducting a grid upgrade.

2. Outcomes from the DIDF should not impact the CEC’s study of the value creation opportunities associated with Solar Microgrids and EV charging.

The DIDF demonstrated that DER have the capabilities to defer grid upgrades, albeit with limited success. SCE reported that two projects that deferred transformer upgrades will have combined ratepayer savings of around \$8 million.¹ However, complicated requirements, only choosing one or two opportunities per solicitation, last-minute contract cancellations, limited compensation, and strict participation criteria resulted in limited developer interest. Flexible connections and opportunities for Solar Microgrids exist throughout a utility’s service territory, making the potential for ratepayer savings significant. Deferring an upgrade, even if only for a short period of time, may provide the incumbent utility with a better understanding of the expected demand for capacity in subsequent years, allowing the eventual wires solution to be right sized rather than conducting a small upgrade with the intention of continually making small upgrades that need to be replaced every few years. In addition, flexible connections on an unconstrained feeder can also be valuable by reducing reliance on the transmission grid, reducing congestion, permitting optimal market outcomes to occur, and helping prepare the utility for a more equitable cost allocation if, and when, a grid upgrade is finally required.

3. Lessons learned should include opportunities for value stacking and compensation structures that might increase encourage deployments that benefit the ratepayers.

Determining that a project can create value is an important step forward, but progress is severely limited if no compensation is offered, or no market exists to provide services. Clean Coalition strongly supports part of the grant including consideration of different compensation structures (up-front payments, performance metrics, capacity payments until a grid upgrade is completed) The CEC’s efforts here are perfectly in line with Track 3 of the CPUC’s High DER proceeding (R. 21-06-017) and the Energizations proceeding (R. 24-01-018), which are starting to consider flexible connections. Lessons learned about compensation and how a streamlined market could help stimulate the deployment of Solar Microgrids will be extremely useful in maximizing ratepayer savings. In addition, the grant should clearly lay out the value stack and think through benefits from Solar Microgrids that are not currently valued in energy markets, such as resilience. A Solar Microgrid deployed at a public EV charging depot provides resilience to the entire community, including any EV driver that passes through the area and recharges using that EV charging equipment.

4. Flexible connections must be as streamlined as possible to avoid erecting barriers to participation.

One key point that past programs and grants make clear is that streamlining the process of requesting and being awarded a flexible connection must be streamlined to the extent possible to avoid preventing otherwise interested parties from deploying solutions, like Solar Microgrids. Wherever possible, the utility processes should mirror each other, avoiding exclusions based on configuration and customer class. Adding complication reduces effectiveness, especially where there is already a high barrier to

¹ CONFIDENTIAL DER PAYMENTS REPORT OF SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) at p. A-1 – A3.

entry. Disadvantaged communities, where the existing distribution capacity is often low and few upgrades have been conducted, stand to be substantial beneficiaries of flexible connections. Deploying Solar Microgrids and EV charging synergistically achieves multiple policy objectives, increasing resilience while avoiding high-cost upgrades. Single line diagrams, technical guidebooks, standard applications, best practices for utilities, and feasibility studies can all be helpful deliverables to move policies surrounding flexibility in the right direction.

5. The grant should consider a scenario where the on-site Solar Microgrid generation is oversized to limit the total impact of a facility on the grid.

The farm example above poses a situation where on-site load is increasing, but access to the grid is limited, which is directly aligned with the grant. Deploying a large amount of solar makes it possible to meet the load in most hours, but the grid is still required (and an upgrade is required to maximize the value). One option that is limited by barriers in the state's Net Energy Metering is oversizing the generation compared to the load to minimize grid imports. With a Solar Microgrid to optimize the on-site energy resources and load, the system is able to balance everyday energy consumption with the ongoing need for resilience and avoid triggering a grid upgrade. A flexible connection will increase the ability for grid utilization, but exports can be limited to prevent the percentage of the solar system that is greater than the load from being compensated. It is unclear whether a standard option (perhaps a NEM+non-export) exists amongst all three IOUs.

Conclusion

The Clean Coalition appreciates the opportunity to submit these comments and is very supportive of efforts to determine the value of Solar Microgrids and EV charging infrastructure. We encourage the CEC to incorporate the suggestions made in these comments to maximize the lessons learned from this granting opportunity.

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April 1, 2025