

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to
Modernize the Electric Grid for a High
Distributed Energy Resources Future.

Rulemaking 21-06-017
(Filed June 24, 2021)

**REPLY COMMENTS OF THE VEHICLE-GRID INTEGRATION COUNCIL ON CAL
ADVOCATES' DISTRIBUTION GRID ELECTRIFICATION MODEL STUDY AND
REPORT**

Zach Woogen
Senior Policy Manager

Albert Tapia
Policy Analyst

VEHICLE-GRID INTEGRATION COUNCIL
10265 Rockingham Dr.
Suite #100-4061
Sacramento, California 95827
Telephone: (510) 665-7811
Email: vgicregulatory@vgicouncil.org

November 7, 2023

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In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the Vehicle-Grid Integration Council (“VGIC”) hereby submits these reply comments on the *Administrative Law Judges’ Ruling Soliciting Comments on Cal Advocates’ Distribution Grid Electrification Model Study and Report* (“Ruling”), issued by Administrative Law Judge (“ALJ”) Manisha Lakhanpal and Kelly A. Hymes on October 17, 2023.

VGIC commends Cal Advocates' for its development of the Distribution Grid Electrification Model (“DGEM”) study and report. As stated by Southern California Edison Company (“SCE”) in opening comments, the DGEM and Kevala’s Electrification Impacts Study Part 1 (“EIS”), taken together, “illustrate the complexity of projecting distribution system investments required to support high electrification through 2035.”¹ However, both studies underscore one simple, immutable fact: **when and how EV charging occurs remains the largest factor in determining future electrification costs.** The DGEM study found that distribution system investments required to support high electrification through 2035 can be **cut**

¹ Opening Comments of SCE, pg. 1.

in half primarily through the use of EV load management strategies. We believe there are even greater cost saving opportunities from bidirectional charging and Vehicle-to-Grid (“V2G”) solutions. Senate Bill (“SB”) 676 and the VGI Strategies Implementation Decision (“D.”) 20-12-029 establish drivers for the Commission to advance VGI solutions and transition the VGI technology market from demonstrations and pilots to full-scale, sustainable commercialization. However, the comparative findings of EIS and DGEM establish an abundantly clear **\$25 billion core imperative** for the Commission to develop and enact a comprehensive VGI strategy to reduce the financial burden associated with transportation electrification on ratepayers.

Within the EIS and DGEM context of distribution system investments, VGIC makes the following key recommendations for unlocking latent EV load flexibility and export capability to support the potential \$25 billion cost savings opportunity:

- **Direct IOUs to establish EV distribution load optimization programs.** A recent IEEE case study indicates how coordinated distribution system EV load optimization differs from California’s current patchwork of EV load management strategies, which rely on traditional demand response, TOU rates, and emerging RTP pricing based solely on *system conditions*:²

² *Utility Planning for Distribution-Optimized Electric Vehicle Charging*. Matthew Mills, Manasseh Obi, Kendall Cody, Kyle Garton, Amanda Myers Wisser, and Sammy Nabahani. October 19, 2023. IEEE Power & Energy Magazine.

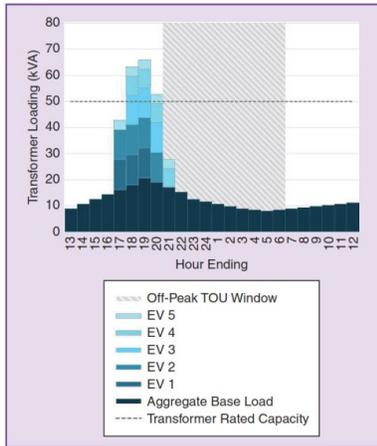


figure 2. An aggregate EV charging load on a single transformer with no management. kVA: kilovolt-amperes. (Source: WeaveGrid.)

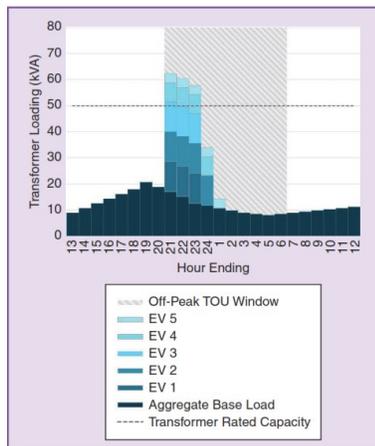


figure 3. An aggregate EV charging load on a single transformer when optimized solely for bulk system benefits. (Source: WeaveGrid.)

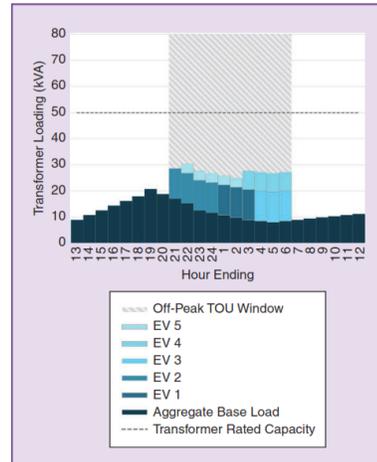


figure 6. An aggregate EV charging load optimization on a single transformer when considering distribution constraints. (Source: WeaveGrid.)

This data demonstrates the potential impacts of EV load management programs that target bulk system benefits (“Figure 3” above) compared to those that consider distribution load constraints (“Figure 6” above). In both cases, the system peak is reduced, but only in the distribution constraint case is the EV charging load kept below the distribution asset limit. Although California leads the nation in EV deployments, VGIC is unaware of any instances where the Commission has authorized a single IOU EV program that promotes distribution system EV load optimization. In recognition of EV-related distribution infrastructure costs causing the immense discrepancy between the DGEM and EIS cost studies, VGIC recommends the Commission direct IOUs to establish distribution system EV load optimization programs. At a minimum, VGIC respectfully urges the Commission to indicate in which proceeding, Advice Letter, or other procedural vehicle the IOUs should request approval for such a program, as it is unclear where an EV distribution load optimization program should be offered. Without the Commission's direction to establish these programs, California will steer toward the EIS outcome rather than the DGEM

impact, costing ratepayers an additional \$25 billion in distribution system investments that can be avoided.

- **Approve proposed EV distribution value adders/subtractors in emerging dynamic rate options, and direct IOUs to introduce new distribution components where relevant.** The Demand Flexibility Rulemaking (“R.”) 22-07-005 contemplates near-term proposals for expanding existing real-time pricing rate pilots and long-term proposals for the demand flexibility rate design guidance for IOUs. In both cases, there are several instances where dynamic distribution price components are incorporated, including in PG&E’s existing AgFIT Pilot and in SCE’s RATES TeMix Pilot. Other emerging RTP rates and pilots do not incorporate dynamic distribution components, including PG&E’s Commercial EV DAHRTP rate and SDG&E’s Export Compensation Pilot approved in D.23-11-006. VGIC considers both dynamic rates and the nonrate programs referenced above important levers to unleashing EV load flexibility to offset distribution upgrade costs. As demonstrated by the 2020 VGI Working Group Final Report, there are *thousands* of VGI use cases, which means a one-size-fits-all approach to recruiting and maintaining customer engagement is unlikely to be feasible. With this in mind, VGIC recommends the Commission direct IOUs in R.22-07-005 to update all emerging and proposed dynamic import and export rates to incorporate dynamic distribution components as a means to support a path that captures the \$25 billion in savings indicated by the DGEM findings compared to the EIS results.

- **Establish a clear framework and loading order guiding the use of automated load management solutions, including power sharing software and storage-backed charging, and critically evaluating existing make-ready incentives/tariffs within the context of ALM.** While PG&E has reported utilizing automated load management (“ALM”) solutions to mitigate up to \$200,000 in infrastructure upgrades per site, the Commission remains without a clear framework on how to utilize ALM to mitigate distribution infrastructure upgrades at the time of site design and construction.³ The rates and nonrate programs referenced above can support ongoing distribution optimization to defer and avoid distribution system upgrades generally, however, ALM solutions can defer and avoid upgrades triggered by specific EVSE deployments. Critically, customers should never be required to implement ALM solutions, nor should they be steered toward ALM solutions if it is not well-suited for their site. However, ALM should be an *option* for customers who, after receiving education on the topic, elect to implement these solutions. Today, the Commission’s policy and, as a result, the IOUs implementation of EV infrastructure deployment promote new distribution infrastructure upgrades at the time of construction. For example, the IOU make-ready programs and the EV Infrastructure Rules 29/45 nudge customers onto new service drops and separate meters as a condition of participation. While new infrastructure will surely be required to advance California’s overall TE goals, VGIC believes that customers should be given the

³ See Appendix D of D.20-12-029 “PG&E Electric Vehicle Infrastructure OIR Rulemaking 18-12-006 Data Response” <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M356/K212/356212163.pdf>

choice to utilize ALM solutions to mitigate distribution impacts if they would like to. In some cases, including the PG&E example cited above, utilities may allow the use of an ALM solution, while in other cases, customers seeking to leverage an ALM solution may be turned away while being informed that the service connection request may not be processed for several years. Customer marketing, education, and outreach within existing TE programs and Rule 29/45 websites do not mention, explain, or share any information about ALM solutions when they may be permitted, and the customer benefits (i.e., reduced service connection time). Without remedy, the existing paradigm locks in future grid costs that lean much closer to the EIS study than the DGEM study results, potentially triggering an additional \$25 billion in ratepayer burden. VGIC reiterates that new infrastructure will be needed to advance TE, and that ALM alone will not solve all of the EV deployment infrastructure challenges facing California. However, VGIC urges the Commission to take action in this proceeding to promote flexible service connections – and export interconnections – that use software- or hardware-based solutions to allow for customers to choose to construct EV charging equipment that exceeds the electrical capacity at a given site in nameplate but not in operation, including the accommodation of bidirectional charging. Promotion of ALM could include (1) establishing a flexible service connection tariff, (2) revising to Rules 2, 15/16, 29/45, and/or other Rules that define and assess load shapes, (3) incorporating ALM marketing, education, and outreach into make-ready programs and tariffs, (4) establishing a shared savings model to ensure IOUs are appropriately incentivized to reduce grid connection

size and/or install EVSE on existing service drops, and/or (5) a clear loading order for utilities to use before upgrading distribution grid at sites, namely looking at whether ALM use at the site would avoid or reduce infrastructure upgrades.

- **Ensure that California’s cost-effectiveness and evaluation frameworks are appropriately capturing distribution value.** It is expected that the current Avoided Cost Calculator (ACC) does not capture the vast majority of distribution value derived from load management programs.⁴ Undervaluing distribution-focused load management deters the existence and expansion of load management programs, like those referenced above, that can ultimately reduce costs for ratepayers. Unfortunately, the Avoided Transmission and Distribution Cost Study was not completed in time to be incorporated into the 2024 ACC Update.⁵ Looking forward, we recommend that the Study be completed in a timely fashion and incorporated into the ACC as soon as possible, potentially in an interim ACC update before the 2026 update cycle. Moreover, we recommend that the Commission consider this gap in benefits measurement when it is in the process of determining which pilots and programs may be approved, particularly on the grounds of cost-effectiveness, for example in the recent Proposed Decision (“PD”) in A.22-05-002, et al., which proposes declining SDG&E’s proposed EV DR Pilot on these grounds.

⁴ D.22-05-002 *Adopting Changes to the Avoided Cost Calculator.* <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M474/K624/474624547.PDF>

⁵ Integrated Distributed Energy Resource (IDER) 2024 Avoided Cost Calculator Staff Proposal – Addendum. Pg. 20. <https://webproda.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-efficiency/ider-cost-effectiveness/2024-acc-staff-proposal-with-addendum.pdf>

VGIC appreciates the opportunity to submit these reply comments on the DGEM Study and Report. We look forward to further collaboration with the Commission and stakeholders on this initiative.

Respectfully submitted,

/s/ Zach Woogen

Zach Woogen

Senior Policy Manager

VEHICLE-GRID INTEGRATION COUNCIL

Date: November 7, 2023