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Comments of VGIC on 2025 IEPR Draft Scoping Order

Additional submitted attachment is included below.

February 13, 2025

Email to: docket@energy.ca.gov
Docket Number: 25-IEPR-01
Subject: 2025 Integrated Energy Policy Report

RE: Comments of the Vehicle Grid Integration Council on the Draft Scoping Order for the 2025 Integrated Energy Policy Report

Dear Sir or Madam:

The Vehicle-Grid Integration Council (VGIC) appreciates the opportunity to provide comments on the Draft Scoping Order for the 2025 Integrated Energy Policy Report (IEPR) published by the California Energy Commission (CEC) on January 28, 2025.

As California electrifies its transportation sector, significant new flexible, customer-sited energy resources will be added to California's grid in the form of electric vehicles (EVs), which sit idle approximately 95% of the time.¹ This creates opportunities to leverage EVs to not only decarbonize transportation, but also support the evolving electric power sector, apply downward pressure on electric utility rates through reduced infrastructure costs, ensure community resilience, and foster economic activity.

CARB has estimated that in order to meet AB 32 goals of carbon neutrality in 2045, California will need 105,555 GWh of electricity annually to power over 22 million light-duty and 1.2 million medium- and heavy-duty vehicles.² Without proactive measures to shape this load and unlock EVs as a flexible grid asset, California's transportation sector transition could increase net peak demand and necessitate costly distribution infrastructure investments, especially in locally constrained areas.

Through vehicle-grid integration (VGI) strategies, EVs can be leveraged to absorb excess renewable energy, manage charging load to better align with real-time grid conditions, and discharge power through bidirectional charging solutions. However, realizing these benefits while ensuring that consumers' mobility needs are met requires a focused and intentional effort from policymakers.

¹ David Z. Morris. Fortune. *Today's Cars are Parked 95% of the Time*. March 13, 2016. <https://fortune.com/2016/03/13/cars-parked-95-percent-of-time/>

² CARB, 2022 Scoping Plan. Available at: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>
Data available here: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx>

As detailed in these comments, to maximize the benefits of VGI and ensure EVs contribute to a flexible, least-cost grid, VGIC strongly recommends that the CEC establish two clear and measurable VGI targets: one for managed charging (not including static EV time-of-use rates) and one for bidirectional charging.

BENEFITS OF VEHICLE-GRID INTEGRATION

As has already been detailed by the CEC, “VGI could provide significant benefits to the electrical grid and customers,” and “[w]idespread VGI (and load flexibility generally) will help achieve California’s climate and decarbonization goals.”³ In addition to minimizing long-term distribution upgrade costs, VGI can help accelerate charger deployment in the near term by managing load in grid constrained areas that would otherwise require upgrades that, in turn, delay EV charger deployment. This allows the state to meet its climate and air quality mandates more quickly.

It is critical that California begins earnestly leveraging vehicle-grid integration (VGI) strategies, which the CEC defines as “technologies and strategies that alter the time, charging level, or location of charging in a manner that benefits the grid while ensuring driver needs are met.”⁴

While VGIC appreciates the CEC’s focus on managing EV charging, we note the formal California VGI definition, as adopted by the California Public Utilities Commission in Decision 20-12-029 pursuant to Senate Bill 676, includes discharging as well as charging:

“Electric vehicle grid integration” means any method of altering the time, charging level, or location at which grid-connected light-duty electric vehicles, medium-duty electric vehicles, heavy-duty electric vehicles, off-road electric vehicles, or off-road electric equipment charge or discharge, in a manner that optimizes plug-in electric vehicle or equipment interaction with the electrical grid and provides net benefits to ratepayers by doing any of the following:

- (A) Increasing electrical grid asset utilization and operational flexibility.
- (B) Avoiding otherwise necessary distribution infrastructure upgrades and supporting resiliency.
- (C) Integrating renewable energy resources.
- (D) Reducing the cost of electricity supply.
- (E) Offering reliability services consistent with the resource adequacy requirements established by Section 380 or the Independent System Operator tariff.”

³ CEC, Assembly Bill 2127 Second Electric Vehicle Charging Infrastructure Assessment: Assessing Charging Needs to Support Zero-Emission Vehicles in 2030 and 2035 (Second AB 2127 Report) at p.89.

⁴ CEC, Assembly Bill 2127 Second Electric Vehicle Charging Infrastructure Assessment: Assessing Charging Needs to Support Zero-Emission Vehicles in 2030 and 2035 (Second AB 2127 Report) at p.88.

To further simplify references to VGI solutions throughout these comments, we offer the following graphic:

What is Vehicle-Grid Integration (VGI)?

VGI encompasses the suite of ways EVs can provide services to the grid and increase the value proposition of EVs:

V1G	V2X Grid-Isolated	V2X Grid-Parallel	Flexible Service Connection	DER-Paired Charging
Unidirectional managed charging or "smart charging"	Islanded bidirectional charging to power a load, home, building, or microgrid, for example during a grid outage	Grid-parallel bidirectional charging to minimize customer bills and/or provide grid services	Minimizing time and costs for infrastructure deployment using charge management solutions or paired DERs	Co-located or integrated EV charging with customer generators and/or stationary energy storage

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SEVERAL KEY BARRIERS STAND IN THE WAY OF WIDESPREAD VEHICLE-GRID INTEGRATION.

Despite the potential benefits of VGI, several policy barriers limit the ability of EVs to provide meaningful load flexibility, including:

- **Limited managed charging programs:** While static time-of-use (TOU) rates have helped shift EV charging away from peak periods, they do not fully optimize load-shifting potential and can lead to "snapback effects" where charging demand spikes after TOU peak periods end. California is working on dynamic pricing frameworks under the CEC’s Load Management Standards and the CPUC’s CalFUSE initiative, however, the necessary platforms and communication standards for real-time pricing remain under development. Additionally, it is unclear whether the CalFUSE implementation is well-suited to address local distribution system optimization. Ultimately, California is behind other states in its development of optional managed charging programs for customers.
- **Need for diverse VGI programs beyond time-varying pricing:** In addition to TOU and dynamic rates, California should expand programmatic VGI options, such as active managed charging programs designed to reduce distribution constraints, demand response

programs like the Demand Side Grid Support Program (DSGS) or the Emergency Load Reduction Program (ELRP), V2G-specific performance-based compensation programs that address the lack of utility V2G export rates, and load modification contracts that create predictable EV load forecasts. A broad portfolio of managed charging and bidirectional charging programs will provide EV customers with the flexibility to select participation models that best fit their needs and economic considerations, especially considering the highly diverse duty cycles and charging behaviors of millions of passenger EVs, public EV fleets, and private EV fleets.

- **High interconnection costs for bidirectional charging systems:** The high cost of interconnection, such as California’s \$800 Rule 21 application fee for bidirectional EVs, discourages widespread adoption of grid-parallel vehicle-to-grid (V2G) and vehicle-to-home (V2H) bidirectional charging technologies. Reducing these costs, for example creating parity with low-cost rooftop solar interconnection, will be essential to unlocking grid-parallel bidirectional charging as a key component of California’s energy future.

THE CEC SHOULD CONSIDER ESTABLISHING A VEHICLE-GRID INTEGRATION TARGET IN THE 2025 IEPR LOAD SHIFT GOAL TRACK.

To ensure that EVs contribute to grid reliability, the CEC should consider setting a specific VGI target within the 2025 IEPR load shift goal track. Unlike other load flexibility technologies such as smart thermostats or electric appliances, EVs serve a dual role as both transportation assets and grid resources. A dedicated VGI target would acknowledge these unique attributes and enable a more strategic policy approach to managed EV charging and bidirectional charging market development. Critically, state agencies, utilities, and other key stakeholders exhibit little motivation to address the above-noted barriers, as to date is little overarching imperative to do so.

A well-defined VGI target should include two sub-targets:

- Managed unidirectional charging (not including static TOU rates)
- Bidirectional charging

These targets could be expressed in several ways, such as:

- Megawatt (MW) peak load reduction / discharge.
- Megawatt-hour (MWh) load shift / discharge.
- A percentage target for EVs participating in managed charging / bidirectional charging programs.
- A percentage target for EV customers participating in managed charging / bidirectional charging programs.

Lastly, these targets should be attached to a specific timeframe. VGIC recommends targets be established for 2035, with interim targets established for 2030.

By establishing a formal VGI target, the CEC can drive the development of policies and programs that ensure EVs are an asset to the grid, rather than latent load flexibility and energy storage capacity. Such targets will help California manage the increasing EV load while maximizing grid benefits, ultimately facilitating a more sustainable, reliable, and affordable energy future.

CONCLUSION.

VGIC appreciates the opportunity to provide these comments and looks forward to collaborating with the CEC and other stakeholders in this docket.

Respectfully submitted,
/s/ Zach Woogen
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