

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

Order Instituting Rulemaking to  
Establish Policies, Processes, and  
Rules to Ensure Reliable Electric  
Service in California in the Event of an  
Extreme Weather Event in 2021.

Rulemaking 20-11-003  
(Filed November 19, 2020)

**COMMENTS OF THE VEHICLE-GRID INTEGRATION COUNCIL ON THE  
PROPOSED DECISION DIRECTING PACIFIC GAS AND ELECTRIC COMPANY,  
SOUTHERN CALIFORNIA EDISON COMPANY, AND SAN DIEGO GAS &  
ELECTRIC COMPANY TO TAKE ACTIONS TO PREPARE FOR POTENTIAL  
EXTREME WEATHER IN THE SUMMERS OF 2021 AND 2022**

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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 comments on the *Proposed Decision Directing Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company to Take Actions to Prepare for Potential Extreme Weather in the Summers of 2021 and 2022* (“PD”), issued by Administrative Law Judge (“ALJ”) Brian R. Stevens on March 5, 2021. Pursuant to Rule 14.6(a)(1) and Rule 14.6(a)(8) and the guidance provided in the PD, these comments are being timely filed and served on March 15, 2021 with electronic copy submitted to [brc@cpuc.ca.gov](mailto:brc@cpuc.ca.gov) and the Assigned Commissioner.

**I. INTRODUCTION.**

VGIC is a 501(c)6 membership-based advocacy group committed to advancing the role of electric vehicles (“EV”) and vehicle-grid integration (“VGI”) through policy development, education, outreach, and research. VGIC supports the transition to a decarbonized transportation

and electric sector by ensuring the value from EV deployments and flexible EV charging and discharging is recognized and compensated in support of achieving a more reliable, affordable, and efficient electric grid.

VGIC is generally supportive of the PD's establishment of an Emergency Load Reduction Program ("ELRP") that recognizes and compensates flexible EV discharging, a class of "low hanging fruit" energy storage capacity that has already been deployed at scale but not yet been "brought online" and leveraged to support emergency reliability needs – or any grid needs – in California. Additionally, VGIC appreciates the PD discussion on *Expanded Electric Vehicle Participation* and identification of the March 9, 2021 EVs in Demand Response ("DR") Workshop ordered by D.20-12-029 as a potential opportunity to explore these issues. VGIC offers comments in support of the PD but also provides recommendations on how the ELRP pilot and the PD's discussion on EV Participation in DR can be improved to prepare for potential extreme weather events in Summer 2021 and 2022.

**II. VGIC SUPPORTS THE PROPOSED EMERGENCY LOAD REDUCTION PROGRAM BUT BELIEVES SEVERAL MODIFICATIONS SHOULD BE MADE TO BETTER LEVERAGE EVS AND ENSURE PROGRAM SUCCESS.**

VGIC commends the Commission for establishing a new five-year ELRP pilot, and supports many aspects of the proposed ELRP, including 1) the eligibility of V2G resources in Subgroup A.3, 2) the deviation for certain government agencies that wish to provide V2G exports by utilizing a portion of previously approved continuous export permission to operate, 3) the development of an export counting methodology to promote behind-the-meter exports other than

Net Energy Metering (“NEM”), and 4) the allowance of dual participation in third-party DR provider (“DRP”) portfolios and existing DR programs.<sup>1</sup>

VGIC also appreciates the Commission’s attention and consideration of bi-directional EV and EV supply equipment (“EVSE”) systems given an estimated 26,000 V2G-capable Nissan LEAFs are on California’s roads today, equal to approximately 844 MWh of energy storage capacity.<sup>2</sup> In addition, Blue Bird has delivered over 100 V2G-capable electric school buses providing a potential 15 MWh of energy storage<sup>3</sup>, with many other school bus manufacturers working to deploy V2G-capable vehicles. There are also V2G-capable Mitsubishi EVs in California, the i-MiEV and Outlander PHEV, which contribute an additional 2,121 vehicles and potential 27 MWh of energy storage capacity on the road in California.<sup>4</sup> Notably, the inclusion of Rule 21 Exporting Distributed Energy Resources (“DERs”) (under Sup-group A.3), which D.20-09-035 confirmed includes V2G Direct Current (“DC”) EV Supply Equipment (“EVSE”), places V2G systems on a level playing field with stationary energy storage systems within the context of a specific compensation pathway for behind-the-meter exports. To VGIC’s knowledge, this is the first such action taken in California to compensate V2G resources alongside stationary energy

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<sup>1</sup> PD at 21 and Attached Guidance at 5.

<sup>2</sup> As of the end of 2019, an estimated 26,020 V2G-capable Nissan LEAFs are on the road in California, totaling an estimated 843.82 MWh of energy storage capacity, assuming only vehicles model year (“MY”) 2013 or later are V2G-capable, MY2013-2015 vehicles have a 24 kWh battery, 2016 30 kWh, and 2017-2019 40 kWh.

California Energy Commission (2021). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated August 28, 2020. <https://www.energy.ca.gov/zevstats>

<sup>3</sup> According to Blue Bird Corporation, they have delivered more than 400 electric school buses, with more than 100 V2G-capable buses to California, each with a 155kWh battery pack.

<sup>4</sup> Mitsubishi i-MiEV has a 16 kWh battery and Outlander PHEV has a 12 kWh batter pack. There are 1,750 Outlander PHEV and 371 i-MiEV in California.

California Energy Commission (2021). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated August 28, 2020. <https://www.energy.ca.gov/zevstats>

storage resources for exports. VGIC appreciates that V2G resources are being taken into consideration when designing pilots, including in this PD, the SB 676 Implementation and VGI Strategies Decision (D.20-12-029), and the Rule 21 Interconnection Working Groups 2, 3, and V2G Alternating Current (“AC”) Subgroup Decision (D.20-09-035). D.20-09-035 also directed actions to facilitate the development of temporary non-Rule 21 interconnection pathway(s) for V2G AC pilot projects and the advancement of stakeholder work toward a Rule 21-compliant pathway for V2G AC interconnection. VGIC respectfully urges the Commission to continue and accelerate where possible the reasonable incorporation of VGI applications, including both unidirectional and bi-directional technologies, into California’s energy planning toolkit.

Unique to VGI, the most expensive part of the energy storage ecosystem – the storage capacity itself – can be considered an embedded cost as the energy storage asset is primarily used for a transportation use case. However, a share of the estimated 844 MWh of V2G-capable energy storage capacity on the road could be used to support the grid when needed, and it is critical that California work to unlock this latent export capacity by placing well-designed incentives and programs to promote V2G DC EVSE deployment and reduce installation and soft costs.

Although VGIC generally supports the proposed ELRP pilot, we detail several recommended modifications below.

**A. The customer eligibility criteria for Sub-Group A.3 should be revised to better enable customer participation from single-site residential customers.**

VGIC reiterates our support for the consideration of Rule 21 Exporting DERs, which can include V2G DC EVSE, as part of the proposed ELRP pilot. As proposed, Subgroup A.3 seems to target non-residential sites with Rule 21 Exporting DERs capable of exporting 25 kW for at least one hour. This excludes Rule 21 Exporting DERs that may

be located at residential sites, such as V2G systems. As of the end of 2019, an estimated 26,000 V2G-capable Nissan LEAFs (i.e., Model Year 2013 or later) have been sold in California, with battery capacity of 24 kWh to 62 kWh, depending on Model Year.<sup>5</sup> In total, these passenger EVs represent an estimated 844 MWh of energy storage capacity that could be utilized by Rule 21 V2G-capable EVSE, including at residential sites. VGIC strongly recommends the PD be revised to ensure Subgroup A.3 includes Rule 21 V2G at residential sites and either reduce the Minimum Export Threshold to 15 kW to accommodate V2G-capable EVSEs or provide an exemption from the 25 kW for V2G-capable EVSE. VGIC believes such a revision or a specific exemption for V2G-capable EVSE is reasonable given the tremendous opportunity to leverage already-deployed energy storage capacity to support system reliability during extreme weather events. Additionally, opening ELRP to additional V2G resources will support the state’s broader transportation electrification goals, whereas other Rule 21 Exporting DERs do not have this added benefit. An exemption from the Minimum Export Threshold for V2G exports may also be found reasonable in light of the fact that V2G-enabling technologies, such as V2G DC EVSE, are not eligible for technology incentives targeted toward stationary storage (e.g., the Self-Generation Incentive Program), even though they can bring similar – and perhaps even greater – greenhouse gas emissions benefits. Taken together, VGIC believes there is considerable justification for exempting V2G DC EVSE from the 25 kW Minimum Export Threshold requirement. Notably, D.20-09-035 requires IOUs to add a checkbox in the Rule

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<sup>5</sup> As of the end of 2019, an estimated 26,020 V2G-capable Nissan LEAFs are on the road in California, totaling an estimated 843.82 MWh of energy storage capacity, assuming only vehicles model year (“MY”) 2013 or later are V2G-capable, MY2013-2015 vehicles have a 24 kWh battery, 2016 30 kWh, and 2017-2019 40 kWh.

California Energy Commission (2021). California Energy Commission Zero Emission Vehicle and Infrastructure Statistics. Data last updated August 28, 2020. <https://www.energy.ca.gov/zevstats>

21 Application for V2G systems, which will enable IOUs to easily track whether a Rule 21 Exporting DER would be eligible for an exemption from the Minimum Export Threshold for the purposes of the ELRP pilot.

If a Minimum Export Threshold is ultimately adopted and applicable to V2G DC EVSE, the PD should clarify that it is based on the physical interconnection capacity to export, not their actual deliveries of exports. Since actual level of exports are impacted by onsite customer load levels, a minimum export requirement based on actual deliveries of exports would in effect raise the minimum export requirement, which may deter participation from V2G resources and other smaller DERs. For example, a system interconnecting at 25 kW may still not meet the minimum one-hour export requirement if it must meet 5 kW of site load in that hour, resulting in only 20 kW exported to the grid.

**B. The customer eligibility and size threshold criteria for Sub-Group A.4 should be revised to better enable customer participation from aggregations of distributed energy resources.**

Similarly, the Subgroup A.4 definition may also insufficiently leverage the capabilities of aggregating EVs at residential sites. VGIC believes eligibility under A.4 should be expanded to include aggregations of BTM Rule 21 resources more generally, rather than limiting eligible aggregations to sites with stationary energy storage paired with NEM solar systems. For example, an aggregated VPP could include NEM-paired storage as well as non-NEM storage and V2G resources. As referenced in the PD's discussion on EV participation in DR programs, the VGI Working Group Final Report noted that V2G resources are not eligible under NEM.<sup>6</sup> As such, VGIC respectfully requests the PD be

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<sup>6</sup> PD at 44.

revised to expand A.4 eligibility to include VPPs consisting of all types of BTM DERs, not just NEM-paired storage systems.

VGIC also recommends that the minimum size thresholds for VPP be reduced from 500 kW to 100 kW to encourage greater participation from aggregators and align with the Proxy Demand Resource (“PDR”) threshold, the Base Interruptible Program (“BIP”) threshold, and the intent of FERC Order No. 2222.

**C. The ELRP should include additional compensation incremental to the energy-only payment to drive participation, promote new-build resources, and spur market development for select technology types.**

The PD adopts \$1/kWh as an ELRP compensation rate as being set to be “substantial enough to drive participation without over-compensating participants.”<sup>7</sup> Importantly, the PD allows for dual participation in existing DR programs, which means customers and aggregations can account for ELRP as an additional revenue stream to be stacked with others. Even so, VGIC questions whether the proposed energy-only rate will drive the intended enrollment and participation in the ELRP to fulfill the PD’s vision of providing “insurance” against rolling blackouts. If the proposed ELRP pilot was offered last year to customers between May 1, 2020 and October 31, 2020, an estimated Group A.3 V2G using a 40 kWh Nissan LEAF and a 15 kW Rule 21 Exporting V2G DC EVSE could have theoretically earned approximately \$325 in ELRP payments in the most optimistic scenario responding to a Day-Ahead (“DA”) trigger prompted by a CAISO Alert.<sup>8</sup>

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<sup>7</sup> PD at 23.

<sup>8</sup> See CAISO “AWE Grid History Report – 1998 to Present” <http://www.caiso.com/Documents/AWE-Grid-History-Report-1998-Present.pdf>.

CAISO issued nine Alerts between May 1, 2020 and October 31, 2020 ranging in duration from 1 hour to 7.5 hours, totaling 36.25 hours. Assuming an ELRP window of 4 pm to 9 pm, there would have been 32.75



However, after incorporating less optimistic assumptions, the actual revenues will mostly likely be much lower.<sup>9</sup>

Given the relatively nascent state of V2G DC EVSE deployment in California, a site looking to capture this \$325 in the most optimistic scenario would first need to make upfront investments in the V2G DC EVSE and navigate the Rule 21 Interconnection process, which has a minimum cost of the \$800 Application Fee and potential additional costs for interconnection review/study and upgrades if needed. From the customer perspective, these costs represent potential disincentives that – due to the upfront nature of these costs – may be disproportionately weighed against the \$1/kWh energy-only compensation and the uncertainty of the number of events and level of payment.

As proposed by parties, a capacity-based payment for ELRP resources may be warranted. VGIC believes this additional payment may still be reasonable even if the proposed ELRP pilot remains outside of the RA framework, primarily to drive meaningful participation and support the deployment of new-build resources, and lay the foundation for a robust future market for V2G services. VGIC respectfully urges the Commission to reconsider a capacity-based payment for the ELRP either in 2021 or in revisions to the ELRP pilot for Summer 2022.

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hours in which DA ELRP customers triggered by a CAISO Alert could have been eligible to earn compensation. Assuming a Nissan LEAF battery with usable capacity of 40 kWh exporting through a V2G DC EVSE with continuous power of 15 kW began each event with 100% state of charge, it could have earned \$325.00 in ELRP compensation by using all of its capacity in each hypothetical ELRP event, except for the October 1, 2020 and October 15, 2020 Alerts lasting 1 hour and 2 hours in which only 15 kWh and 30 kWh, respectively would have been exported.

<sup>9</sup> This estimation: (a) assumes the system began each event with 100% state of charge and was plugged in throughout duration of each event; (b) does not account for charging costs before or after each event; and (c) includes hours in which a customer may have been exposed to rolling blackouts on August 14, 2020 and August 15, 2020 and would therefore not have been able to export.

Another potential pathway to spur participation, promote new-build DERs, and support broader market development goals, such as the vision of SB 676 Implementation and VGI Strategies adopted in D.20-12-029, is to offer an enrollment incentive to help offset upfront technology costs and interconnection fees. VGIC believes this may be an especially effective and reasonable policy lever for promoting the deployment of V2G EVSE, which are currently ineligible for the typical energy storage value streams that help offset these costs either on an upfront basis (e.g., the Self-Generation Incentive Program) or ongoing basis (e.g., NEM).

**D. The ELRP should either not require test events or pay participants for responding to test events.**

VGIC supports the proposed voluntary nature of the ELRP, with after-the-fact performance-based payments and no penalties. However, the inclusion of test events and the pathway for IOUs to deem ELRP resources ineligible for compensation due to under-performance during these test events seems inconsistent with the voluntary nature of this program.<sup>10</sup> The test event structure has been used for DR programs supplying RA capacity, where there is a higher expectation for load reduction capabilities and commensurate payment. Under the proposed ELRP, inclusion of test events without payment but with potential penalties is all stick and no carrot. If this higher expectation of load reduction capabilities is desired as part of the ELRP, the pilot should be modified to include capacity payments as noted above, such that resources will be paid for their response to test events. If ELRP remains a voluntary program without a capacity payment, as proposed, customers and aggregators should be subject to test events. At a minimum, if test events are

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<sup>10</sup> PD at 24.

implemented but not compensated with a commensurate capacity reservation payment, VGIC recommends these resources be paid during the test event at the ELRP compensation rates applicable during actual events.

**E. The ELRP pilot should be iterated on for Summer 2022 and beyond, and lessons on export counting methodologies should be referenced in other proceedings as needed.**

As explained above, VGIC believes the proposed energy-only compensation structure may be insufficient to drive load reduction and exports from the hundreds of thousands of flexible EVs in California, 26,000 of which are V2G-capable. VGIC urges the Commission continue to iterate on the ELRP in future years and consider revisions to the ELRP pilot ahead of Summer 2022, especially as EV adoption and EVSE deployment are anticipated to continue accelerated growth toward widespread implementation. VGIC believes seeking a third-party program evaluator and facilitator would provide value in assessing the ELRP pilot in its first year and working with stakeholders to develop recommendations for future years, either in this or future years.

VGIC also believes the establishment of a compensation structure for V2G exports per Subgroup A.3, while a critically important step in the advancement of VGI for emergency reliability purpose, should not be considered a substitute for the development of pathways to promote V2G exports to support the grid during normal operating conditions (i.e., not during extreme weather events). As such, VGIC respectfully urges the Commission to take bold action in the Resource Adequacy proceeding (R.19-11-009) and/or DRIVE OIR (R.18-12-006) to develop pathways to compensate currently latent and yet-to-be-deployed V2G resources for the full value they can provide to the grid.

### **III. THE PD SHOULD CLARIFY CURRENT PLANS TO ADVANCE EV PARTICIPATION IN DR.**

The PD discussion on expanded EV participation in DR states, “we believe it is reasonable to explore the issue of how EV aggregations with export capability could be leveraged as DR to provide grid services, and an upcoming workshop ordered by D.20-12-029 may provide an opportunity for that discussion.”<sup>11</sup> The EVs in DR workshop referenced here and ordered by Decision D.20-12-029 took place on March 9, 2021, and included a robust and lively discussion on current DR participation options for EVs, existing barriers, and potential next steps. The IOUs will file a post-workshop report, per D.20-12-029, by April 8, 2021. However, D.20-12-029 did not direct IOUs to take any further action to address key barriers to greater EV participation. Throughout the D.20-12-029 comment and reply comment period, VGIC was supportive of both the workshop and post-workshop report, and we believe the workshop was an important knowledge sharing opportunity. However, VGIC remains concerned that without explicit direction to address the identified barriers and/or work toward a target metric for EV participation in DR programs, increased EV participation in DR programs will be hampered. As such, VGIC respectfully requests the PD Section 10 discussion on *Expanded Electric Vehicle Participation* acknowledge the current limited regulatory requirements for IOUs to advance EV participation in DR programs.

VGIC urges the Commission to establish a concrete set of actions to expand EV participation in DR programs, either in this proceeding or in the DRIVE OIR (R.18-12-006). VGIC proposes a goal of achieving 200 MW of EVs as DR resources by 2025 (i.e., within the next IOU DR portfolio application cycle to be filed in November). Assuming a very conservative 1.5 million

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<sup>11</sup> PD at 44.

LDV by 2025, 10 kW average charger rate, and a modest 5% participation rate could result in 1,500 MW of capacity (assuming exports are encouraged). For comparison, the 2018-2022 DR portfolios contain about 1,600 MW of DR resources. This would send a strong market signal and support greater EV participation in DR programs and market products. VGIC believes 200 MW is a reasonable starting target and may even be too low given the opportunity to reduce peak demand and promote adoption of EVs by providing additional value streams to customers, thereby offsetting transportation emissions.

#### IV. **CONCLUSION.**

VGIC appreciates the opportunity to these comments on the PD. We look forward to further collaboration with the Commission and stakeholders on this initiative.

Respectfully submitted,

/s/ Edward Burgess

Edward Burgess

Senior Policy Director

**VEHICLE-GRID INTEGRATION COUNCIL**

Date: March 15, 2021