BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Transportation Electrification Policy and Infrastructure	Rulemaking 23-12-008 (Filed December 14, 2023)

COMMENTS OF 350 BAY AREA AND THE CLIMATE CENTER ON ORDER INSTITUTING RULEMAKING REGARDING TRANSPORTATION ELECTRIFICATION POLICY AND INFRASTRUCTURE

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January 19, 2024

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I. INTRODUCTION

Pursuant to Rule 14.3 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), 350 Bay Area and The Climate Center jointly submit these opening comments on the *Order Instituting Rulemaking Regarding Transportation Electrification Policy and Infrastructure* ("OIR"), dated December 14, 2023.

350 Bay Area ("350BA") and The Climate Center ("TCC") strongly supports the Commission's continued efforts to advance transportation electrification and carry forward the work of prior proceedings, including refinements to utility grid planning and incentives to better align with evolving public interest priorities.

We appreciate the opportunity to comment on the preliminary scope and schedule of the OIR. We strongly support the Preliminary Scoping Memo in its entirety and recommend several refinements and additions to the listed new and outstanding Issues which we discuss in comments below.

II. DESCRIPTION OF THE PARTY

350 Bay Area is a non-profit organization focused on ensuring a sustainable climate and associated environmental and economic justice for all, with a reach of over twenty-two thousand people, primarily concentrated in the nine Bay Area counties. The vast majority of 350 Bay Area's members obtain residential electrical service from Pacific Gas & Electric or from

Community Choice Energy organizations. We thus comment from both an environmental and ratepayer perspective.

The Climate Center is a non-profit organization focused on making climate solutions a reality at speed and scale. The Climate Center works across California with businesses, local governments, labor unions, environmental justice leaders, and other nonprofits to deliver the equitable climate solutions that will ensure a climate-safe future for all. The Climate Center has been advocating for policy to ensure that electric vehicles can be used as energy resilience and reliability assets, reducing the need to burn fossil fuels.

III. COMMENTS

350 Bay Area and The Climate Center note and strongly support the comprehensive focus defined in the OIR - "[T]he scope of this proceeding broadly includes all issues related to transportation electrification"[1] and the planned close coordination with related proceedings, including R.22-07-005 addressing "Demand Flexibility policies and modifications to electric rates to, among other things, enable widespread electrification of buildings and transportation to meet the state's climate goals."[2]

The scope of the proceeding for Rulemaking 23-12-008 should clearly include an analysis of the costs associated with distribution and transmission infrastructure upgrades in the process of large-scale transportation electrification. Relatedly, the Public Utilities Commission ought to consider how its investments in transportation electrification can be maximally used to provide grid planning, operation and reliability benefits and thus potentially offset or reduce those costs for distribution and transmission infrastructure upgrades, as required by the Public Utilities Code [3].

The estimated costs vary widely depending on the assumptions employed regarding load profiles reflecting customer behavior and responsiveness to price signals in current and future rate design. A CPUC commissioned study by Kevala estimates that approximately $50 billion could be needed for distribution grid investments to accommodate unmitigated load growth for a

[1] Ruling (at 12)
[2] Id (fn 16)
[3] Section 740.12(a)(1)(G) of the Public Utilities Code requires the deployment of electric vehicles to "assist in grid management, integrating generation from eligible renewable energy resources, and reducing fuel costs for vehicle drivers who charge in a manner consistent with electrical grid conditions."

high electrification future by 2035.[4] The study's conclusion assumes that current time-of-use and behind-the-meter tariffs and adoption patterns continue as they are, without any alternative dynamic ratemaking or load management strategies employed for mitigation of load impacts. Of the projected load increases by 2035, over 60% of the demand stems from electrified light-duty vehicles, the study found. The Kevala report recommends utilities look out over longer time horizons in their planning processes, and we concur. California's current distribution planning process spans five years, but with the expected adoption rate of technologies, the report suggests increasing it to align with other regulatory processes that span between 10 and 20 years.[5] Part II of Kevala's study will incorporate load mitigation factors and offer insight on the potential avoided cost value of these mitigations. An indication of this value is seen in an independent study by the CPUC Public Advocate's Office which estimated the total cost of upgrading the IOUs' distribution grids by 2035 to be approximately $26 billion,[6] a 50% lower figure, based primarily on better management of EV charging loads in line with TOU rates.

New load will require investment in resources and infrastructure to serve that load, but these costs could be mitigated by the cost savings of preparing the grid for a future in which electrification measures, especially EVs and other DERs, are utilized in grid operation and grid reliability. The flexibility of demand inherent in electric vehicle ("EV") battery charging profiles offers enormous opportunities to more efficiently utilize grid capacity, mitigate peak demand, and match load to both variable renewable generation profiles and real-time grid conditions. These opportunities are effectively doubled where EV batteries are also capable of discharging in a manner similar to stationary batteries deployed both on the customer side and the utility side of grid connections, constituting vehicle-to-load or vehicle-to-grid ("V2G") configurations.

According to California analysis from the Electric Power Research Institute, the potential annual benefits of V2G to California ratepayers, based on assumption regarding the number of electric vehicles and the percentage of them which are V2G enabled, are

[4] CPUC Electrification Impacts Study Part 1: Bottom-Up Load Forecasting and System-Level Electrification Impacts Cost Estimates. Kevala. https://www.kevala.com/resources/electrification-impacts-study-part-1

[5] Utility Dive. "California could face $50B price tag by 2035 to prepare grid for DERs, study finds." https://www.utilitydive.com/news/california-50b-2035-grid-ders/650242/

[6] Distribution Grid Electrification Model Findings. The California Public Advocates Office. https://www.publicadvocates.cpuc.ca.gov/press-room/reports-and-analyses/distribution-grid-electrification-model-findings

approximately $670 million in the medium forecast and $1,020 million in the high forecast.[7] On a national scale, the Department of Energy found that deploying 80-160 GW of Virtual Power Plants in the United States by 2030 to help address national capacity needs could save on the order of $10B in annual grid costs and direct grid spending back to electricity consumers.[8] These cost savings emerge from harnessing the batteries of EVs as energy storage devices, which means they can feed electricity to meet loads during peak demand and capture abundant solar during the day, leveling grid demand and reducing the need to build out new transmission lines.

The scale of the value of coordinated grid planning and operation of distributed storage, and related load modification inherent in EVs and other DER, was evaluated in the detailed production cost modeling optimization study of California's electric system, uniquely incorporating distribution system and resource capacity, conducted by Vibrant Clean Energy.[9] This study found that after 2030, load growth due to electrification accelerates resulting in significantly more generation added to the grid. The solutions modeled in the "Utility-scale Only" resource scenario show dramatically larger increases in cost compared with the "Local Solar & Storage Future" scenario. The cost savings in the "Local Solar & Storage Future" scenario is driven mainly by savings in the distribution sector. The cumulative savings, from 2018 to 2050, in total system costs in the "Local Solar & Storage Future" scenario compared to "Utility-scale Only" is $120 billion. While the maximum value reflects ideal optimization, achieving only half of the value would fully mitigate the costs foreseen in Kevala's Electrification Impact Study (part 1). Given that the capacity embedded in EV batteries is widely distributed and offers tens of gigawatts of flexible energy or demand, the aggregated customer owned resources are likely to meet or exceed the capacity required for optimization across most portions of the electric grid.

The parties urge the Commission to consider within the scope of the proceeding the enormous potential of vehicle-to-load and vehicle-to-grid technologies to reduce costs for grid upgrades and to integrate such forecasting into proactively planning for a high DER future amidst expanding load growth due to transportation electrification. As previously reference,

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[7] Open Standards-Based Vehicle-to-Grid: Value Assessment. Electric Power Research Institute. https://www.epri.com/research/products/000000003002014771

[8] Department of Energy, Pathways to Commercial Liftoff: Virtual Power Plants, September 2023

[9] Role of Distributed Generation in Decarbonizing California by 2045; Vibrant Clean Energy, July 2021. Available at https://vibrantcleanenergy.com/wp-content/uploads/2021/07/VCE-CCSA_CA_Report.pdf

California law requires the deployment of electric vehicles to "assist in grid management, integrating generation from eligible renewable energy resources, and reducing fuel costs for vehicle drivers who charge in a manner consistent with electrical grid conditions."[10]

Lastly, the OIR identifies grid needs, but does not identify resource location as a mitigation method - siting local distributed (peak) generation and storage near new (local peak) loads directly reduces the infrastructure needed to deliver energy to those loads and all associated costs, and we urge the scoping to consider and incorporate this factor in the scoping.

350 Bay Area and The Climate Center offer the following recommendations to strengthen the OIR scoping and outcomes of the proceeding.

IV. Recommended modifications to the Preliminary Scoping Memo

1. Timely Energization of Electric Vehicle Charging.

1.c. *"Consider Impacts on Ratepayers*: assess how IOU side-of-the meter transportation electrification investments and policies, including those related to implementation of Electric Vehicle Infrastructure Rules 15 and 16, impact affordability and rates."

In line with the Commission's own En Banc on Rates and Affordability Rulemaking (R.18-07-006), we recommend that the Scoping Memo:

- Explicitly consider both investments and revenues when assessing impacts on rates. The increased electric sales associated with EV adoption will offset the cost of serving this new load, and is broadly anticipated to reduce the average rate per kWh required to meet revenue requirements. A CPUC White Paper in 2021[11] and subsequent 2022 En Banc in the Affordability Rulemaking (R.18-07-006) finds that transportation electrification investments are not expected to contribute to significant rate growth in the near term,[12] and may have the effect of placing downward pressure on rates.[13]

[10] Section 740.12(a)(1)(G) of the Public Utilities Code
[11] Utility Costs and Affordability of the Grid of The Future: An Evaluation of Electric Costs, Rates and Equity Issues Pursuant to P.U. Code Section 913.1, May 2021 https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2021/senate-bill-695-report-2021-and-en-banc-whitepaper_final_04302021.pdf
[12] Id at 7
[13] Id at 71

- Explicitly consider the total annual customer cost impacts associated with adoption of EVs and other electrification measures and associated rate tariffs, including the avoided costs realized from switching from fossil fuels to electricity.

  The White Paper reference above also demonstrated that transportation electrification and building electrification ("BE") can *save* households over one hundred dollars a month in total energy bills (including gasoline) even at current rate escalation projections.[14] As shown in the En Banc and White Paper, families are expected to typically realize real direct total monthly cost savings even as their electric bill increases. These savings include direct reductions in fossil fuel expenditures, as well as other lower maintenance and operational costs associated with EVs, and indirect or societal savings associated with toxic pollutant and GHG emission reduction.

  Adoption of EVs and BE to realize these savings will require programs to support low- and middle-income households through up-front subsidies or accessible low-cost financing. This is particularly true if rate design leverages the time of use and demand flexibility inherent in most EV battery charging patterns. As noted previously, the Public Utilities Code expressly looks to electric vehicle integration to "assist in grid management, integrating generation from eligible renewable energy resources, and reducing fuel costs for vehicle drivers who charge in a manner consistent with electrical grid conditions."[15]

- The Societal Cost Test should be included among the various Standard Cost Tests employed, and its results considered in assessing ratepayer impacts.

  Ratepayers as a class are clearly impacted financially and otherwise by externalized costs not directly reflected in their electric bills. Each Standard Cost Test is designed to provide specific insights and should be employed as warranted for complete assessment. For example, the Ratepayer Impact Measure does not assess the impact of future infrastructure revenue requirements that have not yet been booked, and in failing to account for avoiding those expenses, it will assess an improvement in efficiency or conservation as a reduction in revenue net only the avoided energy purchases, resulting in

[14] Id at 8
[15] Section 740.12(a)(1)(G) of the Public Utilities Code

an apparent negative impact even when the actual future impact on ratepayers would have been worse without the efficiency and conservation improvements.

- Grid Services and resilience value of EVs should be considered in assessing ratepayer impacts.

  The presence of EVs and ECSE equipment, especially where responsive to load modification signals and/or with bidirectional energy flow capabilities, offers significant added value in grid operation, deferral of grid infrastructure investment, and resilience value. As EVs become prevalent, and offer bidirectional capabilities, use of this very large local EV battery capacity (typically 80kWh, comparable to 8 home battery installations per vehicle) offers very significant value in improving resilience at far lower ratepayer cost than conventional grid upgrades or reliance on fossil fueled back-up generators.

  The use cases for grid services provided by EVs is addressed in the High DER Grid Modernization proceeding R.21-06-017, Track 3, and included in the associated Report of the Smart Inverter Operationalization Working Group, which identifies the reasoning and justification for asking or requiring EVs to provide certain distribution grid services, both during abnormal conditions and during normal conditions. This includes simple vehicle-to-load services in the event of a planned or unplanned outage event, in both behind-the-meter and multi-customer islanded service.

  Both the resilience value and avoided or deferred infrastructure value should be considered.

  Crucially, when evaluating avoided ratepayer costs, the Commission should consider not only deferral of planned upgrades, but also the mitigation of future grid stresses which would have resulted in future Grid Needs Assessment project planning but for the presence of EVs and related mitigation measures utilizing this capacity.

  The Commission's current Microgrid proceeding R.19-09-009 has taken up approaches to the valuation of resilience and development of the Resilience Node Cluster Analysis Tool (ReNCAT) which among other things provides a social burden index as an indicator of meeting basic needs during an electric power outage, and probabilistic weighting of outage frequency and duration. Outage risk is borne by customers, and improving reliability incurs costs to ratepayers, costs that may be reduced through use of EVs.

2. Transportation Electrification Grid Planning to Support Charging Infrastructure Deployment.

2.a. *Zero Emission Freight Infrastructure Planning; &*

2.b. *Continuous Assessment of Transportation Electrification Infrastructure Planning Needs:*

- We strongly support the proposed special emphasis on "reducing emissions from communities disproportionately burdened by pollution in areas that are highly trafficked."
- In balancing the need for reducing ratepayer burden and the achievement of other state policy goals, we urge the scoping to explicitly consider the ratepayer impact factors recommended previously in relation to 1.c., including the offsetting of costs by increased sales revenues, improved utilization of existing infrastructure capacity outside of peak periods and deferred upgrades, the use of the Societal Cost Test, and valuation of resilience.
- We further recommend that this scoping explicitly include consideration in the category of "inputs and assumptions" the customer adoption of existing and potential rate tariffs and incentives that will materially influence long-term planning (distribution, transmission, and generation). Adjustments to TOU rate schedules, EV tariffs, self-generation and export tariffs, and forthcoming Demand Flexibility tariffs, and their customer adoption profiles, will strongly impact the upstream infrastructure long-term planning needs. Customer sited or front-of-meter distributed generation and storage located near Zero Emission Freight Infrastructure can have a profound impact on associated grid planning.

2.e. *Consider Impacts on Ratepayers*

- See 1.c. recommendations above regarding ratepayer impact factors.

3. Deployment of Behind-the-Meter Charging Infrastructure to Support State Goals.

- We recommend that this topic area explicitly consider charging infrastructure and rates for multi-family dwellings.

There is a critical need to address EV charging access and rates/costs in multi-family dwellings. Single family homes are eligible for EV retail rates and NEM/NBT self-supply, but customers in multifamily buildings typically cannot charge their EVs on their own meter, rarely have access to solar self-generation, and even when available they cannot utilize current virtual net metering tariffs on shared facilities, and pay higher rates at third party owned charging stations. This is both a major barrier to California's EV adoption goals and a fundamental matter of equity in both access to charging infrastructure and access to favorable rates for EV charging. EV charging represents a large portion of an owner's electric bill, lower income customers disproportionately reside in multi-family housing and rental units, and these customers should not have to pay higher rates when charging their vehicles.

Given that more than one third of all households are multi-family buildings, half of new homes construction is multi-family and the state is seeking higher density construction, and less than half of households are owner occupied, a failure to address the needs of this portion of the population in transitioning to EVs will result in adoption rates below state goals and excess retention of gasoline vehicles where EV charging is less accessible, more expensive, or both.

- Utility programs to support level 1 and level 2 EV charging for multi-family housing should be prioritized, including both dedicated and shared meters for utility sales at EV retail tariff rates.

  Level 1 charging for customers in multi-family buildings will meet most needs with minimal infrastructure/grid upgrades. Level 1 EV charging facilities for multi-family housing should be in sufficient numbers to accommodate overnight charging and access to favorable TOU schedules for all households, and can minimize/mitigate the need for grid upgrades and EVSE equipment costs. Level 1 charging is sufficient to meet the average daily personal commuting and other uses of EVs. This can be supplemented with level 2 charging as needed to meet less common faster charging needs while limiting utility/ratepayer installation costs relative to sales revenue.

- OIR identifies grid needs, but does not identify resource location as a mitigation method. As noted previously, siting local distributed generation and storage near new loads, and coordinating the demand and export (including V2G), directly reduces the infrastructure needed to deliver energy to those loads and all associated costs. EV charging infrastructure support and rate tariff design should reflect these opportunities for localized coordinated operation to mitigate grid investment.

4. Vehicle-Grid Integration.

This topic area may establish goals and targets for the advancement of vehicle-grid integration, assess programmatic and policy interventions, and affordability considerations with a focus on the following strategic areas: (a) technology enablement; (b) rates and demand flexibility programs; and (c) transportation electrification grid planning.

- We support the preliminary scoping and recommend adding explicit reference to equitable access to affordability, rates, and demand flexibility programs.
  As discussed in reference to #3 above, customers in multi-family dwellings face major barriers and highly restricted access to EV and VGI rates, severely restricting their ability to utilize their EV charging in demand flexibility programs. These barriers are not only perversely inequitable, saddling those who can least afford it with higher costs to charge their vehicle and missing out on compensation for grid services their EVs can offer, but also inhibits utility VGI utilization of all this potentially flexible and dispatchable EV battery capacity as a gigawatt scale grid resource, resulting in higher ratepayer costs to procure these grid resource services from other sources.
  Additionally, since VGI or vehicle-to-load access for these EVs is also required for resilience and outage mitigation, multi-family building occupants and renters will be denied equal access to these services from their own EVs and suffer greater impacts and burden from outages, as discussed in 1.c. above.

V. CONCLUSION

350 Bay Area and The Climate Center thank the Commission for this opportunity to submit comments on the OIR and support the Commission's continued efforts to both advance electric vehicle transportation and optimize grid planning and integration to leverage the

enormous opportunities provided by these and other DER to advance State goals and public interest. We appreciate consideration of our recommendations and look forward to working with staff and parties throughout this proceeding.

Respectfully submitted,

_____/s/_____

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Dated: January 19, 2024