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Joint Comments to the California Energy Commission Light-Duty Electric Vehicle Infrastructure Allocation Workshop

Joint Comments of The Climate Center, Sierra Club California, Synergistic Solutions, and 350 Bay Area to the California Energy Commission Light-Duty Electric Vehicle Infrastructure Allocation Workshop.

Additional submitted attachment is included below.

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Joint Comments to the California Energy Commission
Light-Duty Electric Vehicle Infrastructure Allocation Workshop
Docket #20-TRAN-04

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As the CEC considers how to effectively allocate funding for Light-Duty Passenger Electric Vehicle Charging Projects, we respectfully submit the following comments in response to the request for comments on allocation of funds, pursuant to the workshop held on January 26, 2023.

In summary, funding for vehicle chargers should a) prioritize low-income, disadvantaged communities and b) feature or support bidirectionality via vehicle-grid integration (VGI) technology to the greatest extent possible.

1) Funding allocations should prioritize chargers in frontline communities that suffer the most from air pollution and power outages.

Low-income communities must contend not only with the disproportionate adverse environmental, economic, and health impacts of climate change, but also the barriers to accessing and acquiring the very tools that can rapidly mitigate its effects: electric vehicles and related charging equipment. They are also the communities most harmed by combustion vehicles and most acutely in need of reductions in toxic NOx and PM2.5 pollution from transportation emissions. Communities with high rates of EV adoption have *already* experienced reduced incidents of asthma and other respiratory illnesses[1], and it is reasonable to assume that where there are significant volumes of EVs, absence of emissions from internal combustion vehicles results in improved air quality, leading to mitigated adverse public health effects from fossil fuel combustion.

Unfortunately, these positive environmental health effects are currently mostly available to wealthy communities with access to upfront capital and charging equipment. Whereas wealthy families can afford to install charging equipment in a private garage, low-income families usually live in multi-unit rental housing, and therefore need to either persuade the landlord to install shared charging equipment or venture to a public or workplace charging station to charge their EVs. Worse yet, curbside charging is currently concentrated in wealthy neighborhoods because those neighborhoods have EV concentrations that yield the most profit for charging equipment providers following market trends favoring affluent consumers With few charging opportunities within a reasonable distance of home, low-income drivers have little economic or logistical incentives to purchase an EV even as more affordable new and used models become available. Consequently, EV ownership in low-income communities lags far behind their more affluent counterparts. Investment in public curbside charging in low-income neighborhoods would mitigate some of the obstacles to EV ownership for low-income Californians. To correct this inequity, California should prioritize funding vehicle chargers in low-income communities to address both these barriers to access and affordability that are preventing EV adoption. We propose that CEC require that a minimum of 50 percent of charging infrastructure goes into disadvantaged communities, in keeping with similar

[1] Univ. of So. California, Keck School of Medicine, "Study links adoption of electric vehicles with less air pollution and improved health," February 2, 2023. https://keck.usc.edu/study-links-adoption-of-electric-vehicles-with-less-air-pollution-and-improved-health/

allocations adopted in recent years for transportation and building electrification programs administered through the CPUC and CEC. At a minimum, such an allocation will start to remedy the already large affluence gap in EV adoption.

Significant investment in charging infrastructure in low-income and disadvantaged communities is also imperative given pending state regulations that will require all Californians to eventually switch to EVs. Federal and state tax credits and market transformation should help low-income Californians gain access to EVs, but without charging infrastructure, important climate regulations could penalize renters and drivers without dedicated parking. Low-income Californians deserve to be equal and active participants in a just transition away from internal combustion engine vehicles that spew NOx and other pollutants into their neighborhoods. Allocating state funding for EV charging to these communities will help ensure that.

Lastly, support for greater EV adoption in low income communities helps to reduce the disproportionate energy cost burden on low income households by both reducing the operational cost per mile driven relative to conventional vehicles and supporting higher and more efficient utilization of energy resources and infrastructure to mitigate rate increases. The CPUC estimates $130 per month average O&M savings for EV use by 2030, and a 1-2¢/kWh mitigation of forecast electric rates from transportation and building electrification in the same time period.[2] CARE customers see particular benefit from switching from gasoline to electricity, and CARE rates should be available from public charging stations for qualified customers or their vehicles.

Note that this cost benefit crucially applies to both public transit and private vehicle electrification initiatives.

2) The state should prioritize utilization of funds for *bidirectional* vehicle chargers so that California can harness its largest clean untapped DER asset— bidirectional electric vehicles— in support of the grid.

California already has sold over a million light-duty EVs and when that total reaches 8 million EVs on the road by 2030 (as expected based on current market trends), the total available power capacity (assuming instantaneous power export capacity of 10kW per passenger vehicle) would equal approximately 80 GW. Assuming 10% of that capacity would be reliably available for export or V2B islanding during evening peak periods, 8 GW of dispatchable energy would be ready and able to serve as a flexible grid asset, with a capacity larger than six of the largest gas

[2] California Public Utilities Commission: 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 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

power plants in California, *combined*[3]. A newly published MIT study explains how dispatchable distributed energy could improve the resiliency and emissions intensity of our grid.

If California additionally places 180,000 medium and heavy-duty EVs in service by 2030, as CARB said is necessary for meeting California's climate goals, these vehicles' combined power capacity would total 27 GW, assuming an average export capacity per vehicle of 150KW.

CARB has already acknowledged the need for rapid deployment of bidirectional vehicles to meet California's climate and resilience goals. The agency's 2022-23 funding plan states, "Additionally, as HVIP continues to push for advanced technologies that support California's climate and energy resiliency goals, staff proposes to introduce a new requirement for V2G functionality, or bi-directional charging, on all battery electric school buses purchased with HVIP vouchers."

The state should be prioritizing reducing peak demand through distributed resources, not only because gas peaker plants increase emissions substantially, but also because studies have shown that peaker plants tend to be located in disadvantaged communities.[4]

Given its compelling value proposition, California should take the following actions to more quickly deploy bidirectional EV capacity:

- **Mandate that state-funded vehicle charging equipment purchases and customer incentive programs incorporate bidirectional features**, so such infrastructure can serve a dual purpose as grid reliability assets. This mandate would ensure that taxpayer funds produce the greatest public value per dollar and prevent widespread deployment of unidirectional charging equipment from becoming stranded assets.

- **Mandate that by a date certain, all chargers installed in California have bidirectional capability to the extent practical,** building upon the Governor's Executive Order N-79-20, calling for all passenger vehicle sales in California to be ZEV by 2035 and medium- and heavy-duty vehicles in the State be zero-emission by 2045. Currently, only about 4% of EV's on the road in California have bidirectional capability per CEC data. The recently passed Inflation Reduction Act (IRA) offers new federal incentives to acquire EVs, further accelerating rapid deployment of EVs, which in turn increases the urgency to incorporate bidirectionality into all EVs and vehicle charging equipment.

- **Develop a new state program to incentivize installation of bidirectional charging equipment at existing public facilities that already have on-site solar PV capacity.** For example, roughly 2,800 schools already have solar PV installed on-site that could complement the rapid proliferation of electric school buses that can charge during

[3] PSE Health Energy, California Peaker Plants: Energy Storage Replacement Opportunities (May 2020), https://www.psehealthyenergy.org/wp-content/uploads/2020/05/California.pdf

[4] Id.

midday and provide grid support during evening peak hours as grid reliability assets (see related case study in the Appendix).

- **Partner with California's fleet operators to incentivize bidirectional fleet electrification.** A logical place to start would be publicly owned vehicle fleets in California, which include hundreds of thousands of vehicles. During outage conditions, the combined capacity of these vehicles could keep critical public facilities operational.

- **Provide incentives for consumers to utilize privately-owned EV chargers as grid reliability assets.** EVs cannot be fully optimized for grid use and resiliency without market structures that compensate EV owners for the use of their batteries and EV charging systems. PG&E recently announced it will offer the nation's first export rate for commercial electric vehicles in California. This rate will likely support bidirectional school buses and other fleets of electric vehicles to participate in V2G backup power systems to support the grid during grid outages. New rates offer fair compensation to individual bidirectional EV owners are also needed. Under the right market conditions, bidirectional EVs could deliver valuable grid services over a broad range of use cases: individual homes, commercial/industrial buildings, or wholesale markets under FERC Order 2222, which allows DER assets to compete in wholesale markets on a more level playing field. This regulation, which is being designed and implemented for independent system operators such as CAISO, would allow mixed aggregations of DER assets, including bidirectional EVs with capacity as small as 100 kW to provide grid services to wholesale transmission markets, setting the stage for bidirectional EVs to serve as a significant source of widely dispersed dispatchable energy. The enablement of such a massive energy reservoir could generate savings for ratepayers by avoiding the redundant investment in and development of additional stationary capacity needed to cover shortfalls during peak conditions. As noted above, this reserve energy would also allow for the early retirement of dirty and expensive peaker plants that are typically sited in frontline communities. It is important to note that incentives for bidirectional EV's and bidirectional charging and V2G infrastructure not only benefit the owners of the assets, they also benefit all ratepayers. By leveling supply and demand of the grid through VGI, the peaks and valleys of the duck curve are also leveled, thereby lowering the cost of energy for everyone by reducing the need for fossil fuel peaker power plants.

- **Provide subsidies to low-income Californians to purchase bidirectional charging equipment.** Bidirectional chargers currently cost several thousand dollars more than unidirectional chargers. The state should direct public funds to subsidizing the marginal cost so that low-income households can access this technology.

- **Develop a Conceptual Framework for Scaling VGI/V2B Infrastructure.** While community engagement is critical to effective planning, funds should also be allocated towards developing a conceptual framework for scaling VGI/V2B, as this effort will require extensive coordination between multiple sectors (energy, transportation and housing) and stakeholders (EV/EVSE suppliers, real estate developers, transit

authorities, DAC and low-income community representatives etc.). This framework should prioritize the identification of reliability options (such as electric public transit, school buses, etc.) in DAC and low-income communities. The broad implications of VGI and bidirectional energy flows require proactive funding, and we propose that funds be allocated this year to convene the broad spectrum of stakeholders needed to deploy bidirectional VGI infrastructure effectively and efficiently. For example, an essential Year 1 milestone would be for public and private stakeholders to reach a consensus on developing bidirectional standards for light/medium/heavy-duty vehicles, EV charging stations, and buildings (via updated electrical codes) to ensure that deployment efforts will encounter the least amount of resistance and surplus retrofit cost. Creating such a uniform approach at the program's outset will help avoid future conflict and redundancy in later years.

The cost-effectiveness of strategic VGI deployment cannot be overstated, as such infrastructure allows California to utilize a large volume of dispatchable energy for multiple purposes, operating externally and independently of the transmission/ distribution grid. The overwhelming benefits from creating a secondary, mobile bidirectional energy system should permeate all aspects and aspirations of state policy to efficiently integrate the massive public and private investments to be made over the coming years in energy, transportation, and construction. This incredible opportunity is why CEC staff, in its draft Clean Energy Reliability Investment Plan (CERIP), states that "***An initiative that strategically deploys capital to empower VGI and V2B could be the most cost-effective investment of this investment portfolio.***"[5]

[5] Erne, David, California Energy Commission. 2023. Draft Clean Energy Reliability Investment Plan ("CERIP"). Publication Number: CEC-200-2023-003, p.15