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Fleet impacts on transportation energy forecasting

During the DAWG meeting on June 14, EVgo inquired about missing data from private fleets - such as car sharing and ride sharing applications - in the energy forecasts. Please see section 3 of the attached for additional information, and do not hesitate to be in touch if we can be a resource.

Additional submitted attachment is included below.



11390 W. Olympic Blvd, Suite 250
Los Angeles, CA 90064

August 1, 2019

California Energy Commission
1516 Ninth Street
Sacramento, California 95814-5512

Re: Clean Transportation Program Benefits Report and Successes for 2019 IEPR

Dear Commissioner Monahan:

As the nation's largest public fast charging network, EVgo commends the California Energy Commission (Energy Commission) for its leadership in helping the state meet its climate and zero emission vehicle (ZEV) goals and appreciates the Energy Commission's partnership as we continue to develop a robust public fast charging network across California. Today, more than 80% of California residents live within a 15 minute drive of an EVgo fast charger, and we continue to expand our state-leading network including through our participation in Energy Commission programs like CALeVIP and the corridors grant.

Fast charging infrastructure is critical to reach the state's increasing population of EV drivers and is especially crucial to enable electrification for drivers without reliable access to charging at home or in the workplace, residents of multi-unit dwellings who rely on public charging for the majority of their charging needs¹, drivers utilizing key transit corridors, as well as light duty vehicle (LDV) fleets, including car sharing and ride sharing applications.

EVgo continues to deliver to expand EV access to these consumers as ZEV penetration grows. In addition to more than 1,200 DC Fast Chargers (DCFC) operating across the nation -- more than half of which are in California -- in the second quarter of 2019, EVgo energized and started delivering fast charging to 100 new DCFC and will have more than 1,350 operational by summer's end. Given California's leadership through programs from state agencies such as the Energy Commission, EVgo is on track to double our capacity by the end of 2020.

EVgo appreciates the opportunity to provide feedback on the Clean Transportation Program as a follow-up to the workshop on July 18. Below, we have included several suggestions for the Energy Commission's consideration as it finalizes its next investment plan and 2020 programs.

1. CALeVIP is the optimal program design for accelerating EV deployment

Increased and continuous funding is key to growing the state's EV infrastructure and meeting greenhouse gas reduction targets. EVgo applauds the Energy Commission staff and the Center for Sustainable Energy (CSE) for their work to implement CALeVIP. The administrative simplicity of CALeVIP compared to other programs minimizes administrative challenges faced by both program staff and grant applicants, serving to increase the velocity of EV charging deployments to meet state goals. EVgo strongly supports the extension and evolution of CALeVIP and recommends that the Energy Commission chart a course for a transition to a truly statewide, "always open" program to minimize disruptions to the market while enabling Electric for All.

¹International Council on Clean Transportation, Quantifying the Electric Vehicle Charging Infrastructure Gap Across U.S. Markets (January 2019), p. 9,
https://www.theicct.org/sites/default/files/publications/US_charging_Gap_20190124.pdf

2. **Minor changes to CALeVIP program design are necessary to further improve the program's success in increasing velocity of EV charging deployments.**

EVgo is committed to continued collaboration with CSE, the Energy Commission and other partner organizations to advance the deployment of EV infrastructure and meet state climate goals. As such, we believe that staff and CSE should consider program design improvements that may enhance the success of the program. As such, EVgo proposes the following for the Energy Commission and CSE's consideration.

- **Ensure the reservation system accounts for the most effective deployment of EV infrastructure.** EVgo is pleased to see the success of CALeVIP, and the strong demand that the program has seen. However, the first come, first serve nature of the program has led to funding being reserved sometimes within days of program opening. Then, the “queue” of applications takes months for churn as sites must meet certain milestones before they lose their reservations; this is problematic because the low barriers to entry for applications may lead to opportunistic or unfiltered applications. Many incentive regimes across different technologies have seen similar challenges, and EVgo recommends that staff and CSE look to these best practices and lessons learned from other incentive programs to better manage the queue and ensure that the most optimal applications are being received by staff. Moreover, EVgo recommends that the Energy Commission report regular data on applicant attrition and also ensure that applications are processed in a timely fashion to help “churn” through the queue.
- **Reexamine applicant caps to ensure parity among a variety of business models.** While EVgo agrees with the spirit of the applicant cap, to ensure a diverse range of charging locations for EV drivers, the cap is incompatible with the owner-operator model which has been the most successful for generating the largest deployment of public fast chargers across the state. EVgo and other owner/operators have established a range of charging site locations, including retailers, public parks, gas stations, hotels, and other entities, where the owner-operator is also the applicant – not the site host. EVgo recommends reexamining the cap to ensure that a diversity of site hosts are still served by CALeVIP, but that applicant caps do not unduly limit participation or favor certain business models over others.
- **Site size caps hinder economies of scale and user experience and should be reconsidered.** Limiting the number of chargers per site is incompatible with trends to build larger sites which improve economies of scale. Moreover, larger sites enhance user experience by reducing the likelihood of queuing by EV drivers as they wait for a charge. A prescribed number of chargers per site should be waived if sufficient utilization may be estimated to warrant the deployment of larger stations.

EVgo thanks the Energy Commission and CSE for its consideration of these comments and looks forward to further opportunities for engagement.

3. **Transportation energy forecasting units underestimate growing electricity from fleets.**

EVgo has been pleased to participate in the energy demand forecasting workshops as part of the IEPR. However, while the electric vehicle miles traveled (EVMT) for rental fleets and other smaller fleets are included, two major sources of load were excluded: carsharing and ridesharing fleets.² EVgo shared this with staff during the presentation, who mentioned that this a missing component of their model.

²http://dawg.energy.ca.gov/sites/default/files/meetings/1-Aniss%20Bahreinian_Plug-In%20Electric%20Vehicle%20Forecasting%20Scenarios%2006.14.19.pdf, slide 3.

The impact of these fleets on energy demand forecasts cannot be underestimated. In 2018, EVgo's public fast charging network increased its volume of electric miles powered by 88% compared to 2017, charging more than 75 million miles through its public network. More than a third of the miles fast charged were to light duty vehicle (LDV) fleets, comprised of rideshare, carshare, and delivery vehicles.

Two critical reasons driving outsized demand on EVgo's public fast charging network from rideshare drivers are:

- 1) Rideshare drivers' vehicle miles traveled are 3 to 7 times that of personal use drivers;
- 2) Fast charging represents the vast majority of charging for rideshare drivers, for whom every minute of charging represents lost potential revenue.

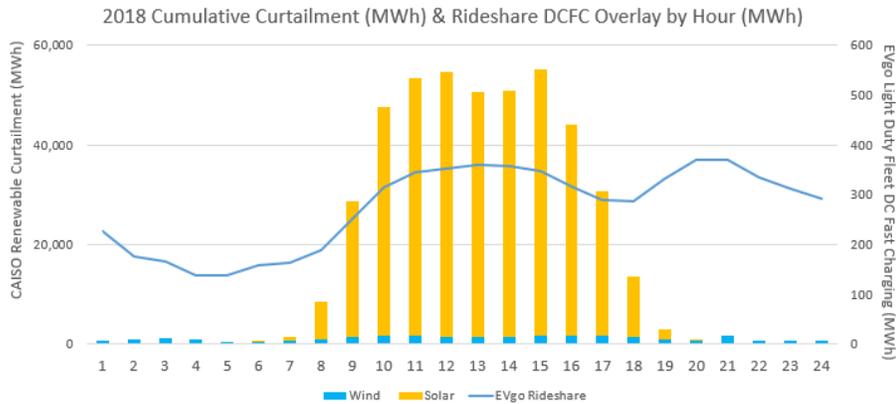
Home charging is rarely an option for many rideshare drivers in particular, and surveys from one of EVgo's partners, Maven Gig, confirms that more than 85% of rideshare drivers do not have access to home charging. Even those drivers who have access to overnight charging, and drive for a full day, will stop to charge midday based on direct customer reporting to EVgo of their driving habits.

The extremely fast growth in demand on EVgo's public network by LDV fleets in 2018 has led to congestion, and in regional EV hot spots, saturation, across its California urban chargers. Fast charging availability is the critical gating item for increased deployment of additional electrified LDV fleets in the strongest EV markets. In California, SB 1014, authored by California State Senator Nancy Skinner, was signed by Governor Brown in September, 2018, encourages rapid LDV fleet electrification for which commensurate fast charging capacity will be required to enable this transformation in transportation. In response, EVgo has accelerated its metropolitan network expansion and is working with rideshare partners to develop, own, and operate dedicated rideshare fast charging infrastructure to relieve pressure on EVgo's public infrastructure and serve more Californians across demographics and geographies.

Rideshare Electrification Grid Benefits

Grid benefits from EV fast charging have been forecasted and discussed, but no annualized data from the rideshare segment was available before the conclusion of 2018, explaining the large data gap in the Energy Commission's demand forecasting, as well as the ICCT report that EVgo quoted above. In addition to this high demand from these fleets, EVgo's 2018 LDV fleet fast charging load profile confirms a demonstrable and material benefit to the grid. Comparing the cumulative annual load profile by hour from EVgo's LDV fleet fast charging with the CAISO 2018 cumulative curtailment by hour demonstrates the alignment of LDV rideshare fast charging during midday hours. Fundamentally, LDV fleet drivers seek to maximize driving time and revenue during the morning and evening rush hours and maximize charging midday and at night. During 2018, EVgo's data demonstrates CAISO system benefits without price signals to align driving with peak retail pricing or peak wholesale demand, indicating the opportunity to improve the LDV fleet fast charging profile further.

The graph below reports EVgo's cumulative 2018 LDV fleet fast charging in MWh (blue line) aligning with the cumulative CAISO renewable curtailment in GWh. More than 45% of LDV fleet fast charging was performed during peak solar hours from 9 am through the 3 pm hour with more than 30% of charging during nighttime hours from 8 pm through the 4 am hour.



Sources: CAISO Curtailment http://www.caiso.com/Documents/Wind_SolarReal-TimeDispatchCurtailmentReportDec31_2018.pdf
 Rideshare, 2018 EVgo fast charging operational data



The 2018 operational data from EVgo’s fast charging for LDV fleet demonstrates:

- 1) Elevated midday demand for fast charging, mitigating solar curtailment;
- 2) Reduced charging during the early afternoon ramp, as drivers return to driving during rush hour;
- 3) A double benefit to the grid by reducing the depth of the duck belly as well as reducing the absolute ramp requirement during the duck neck period.

Based on the load profile shape shifting over the course of 2018, EVgo expects that congestion on its public network in high demand areas in the second half of the year pushed charging later into the afternoon on average, indicating that the natural preference without congestion would further reduce afternoon rush hour charging and concentrate additional charging activity during peak solar. Thus, the opportunity to provide benefits to the grid from fast charging LDV fleets are likely to increase as EVgo builds out its network. The demand by this market segment should be accounted for in future transportation

Conclusion

EVgo thanks the Energy Commission for its leadership and looks forward to working closely with staff to accelerate charging deployments to help California meet its ambitious greenhouse gas reduction goals. Please do not hesitate to be in contact if we can answer any questions or be a resource.

Sincerely,

Sara Rafalson, EVgo
 Director, Market Development
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