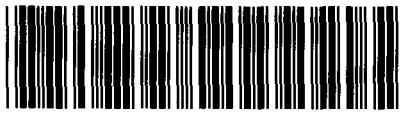

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**PROJECT NO. 49125**

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| **REVIEW OF ISSUES RELATING TO ELECTRIC VEHICLES** | § § § § § | **PUBLIC UTILITY COMMISSION OF TEXAS** |

## COMMENTS OF EVGO SERVICES LLC

EVgo Services LLC (EVgo) respectfully submits the following comments in response to the Public Utility Commission of Texas's (PUCT) request for comments on questions related to Project No. 49125, *Review of Issues Relating to Electric Vehicles*.

EVgo has strong roots in Texas, having originally been borne out of NRG in Houston in 2011[1]. The first public fast charging corridor built by EVgo was in Texas, and the vast majority of EVgo's existing Texas infrastructure is located in the Dallas-Fort Worth, Austin, and Houston areas. Today, EVgo operates America's largest public and most reliable electric vehicle (EV) fast charging network, with more than 790 DC fast charging (DCFC) locations in 34 states and 66 metro markets nationwide, including 50 locations across Texas. Currently, more than 115 million Americans live within a 15-minute drive of an EVgo fast charger. In early 2019, EVgo was proud to announce that it was the first North American charging network to be powered by 100% renewable energy.

EVgo is a leader in the competitive market of EV charging and commends the PUCT for opening this new EV project to explore issues related to transportation electrification, including deployment, load growth, and electric vehicle charging. With the perspective of an experienced owner and operator of public fast charging, EVgo appreciates the opportunity to provide select comments on the following questions related to light duty passenger vehicles and respective considerations.

[1] EVgo was acquired by LS Power in January 2020. https://www.evgo.com/about/news/ls-power-completes-acquisition-of-evgo/



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**General Data**

**The Commission requests that parties provide current data sources and projections for the expected deployment of electric vehicles in Texas over the next ten years. If available, the data sources should attribute the projections by vehicle class (i.e., personal, commercial short haul including fleets and buses, and commercial long-haul electric vehicles).**

While still nascent, adoption of battery electric vehicles has grown steadily over the last decade and will continue to grow in the years to come. According to the Advanced Technology Vehicle Sales Dashboard from Auto Alliance, an automotive trade group, there have been 677,324 full battery electric vehicle (BEV) sales in the United States since January 2011.[2] For light duty passenger vehicles, there is strong commitment in advancing electrification through near and long term investments. For example, General Motors announced this week a $2.2 billion announcement into an all-electric assembly plant in Michigan[3], part of a broader electrification strategy for the company. Additionally, the Volkswagen Group has committed €33 billion to develop electric vehicles and expects 1.5 million electric cars to be produced in 2025.[4] Along with Tesla, which has delivered more than 540,000 vehicles in the U.S. alone as of December 2019[5], numerous other automakers have committed billions of dollars to electrification, including Ford, Nissan, Hyundai/Kia, and new market entrants like Rivian.

In addition to light duty personal use vehicles, there is a growing trend toward light duty fleets such as carshare and rideshare. According to the International Council of Clean Transportation (ICCT), market economics for electric vehicles (EVs) are quickly improving, with internal combustion engine vehicles and electric vehicles meet parity in total cost of ownership in the 2023-2025 timeframe.[6] EVs are soon to become economically sound choice for fleet owners and drivers, leading to growth in adoption of electrified carshare and rideshare in addition to adopted personal use electric vehicles.

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[2] https://autoalliance.org/energy-environment/advanced-technology-vehicle-sales-dashboard/
[3] https://www.nbcnews.com/business/autos/gm-invest-2-2b-first-all-electric-vehicle-plant-create-n1124086
[4] https://www.volkswagen-newsroom.com/en/press-releases/volkswagen-significantly-raises-electric-car-production-forecast-for-2025-5696
[5] https://insideevs.com/news/392372/us-tesla-sales-graphed-through-q4-2019/
[6] https://theicct.org/sites/default/files/publications/Electric_shared_mobility_20190114.pdf

**Please provide any current data sources and information on the expected amount of new load attributable to electric vehicles over the next ten years. If available, the data sources should attribute this load by vehicle class (i.e., personal, commercial short haul including fleets and buses, and commercial long-haul electric vehicles).**

Electric vehicles bring new load to the system and reduce rates for all ratepayers. Rocky Mountain Institute (RMI) estimated ratepayer savings per EV ranged from $744 to $9,607 over the lifetime of the vehicle.[7] In Texas, as tracked by the Auto Alliance, total battery electric vehicle sales have totaled 21,683 BEVs up to June 2019, with year over year growth up until 2019.

While electric vehicle sales and adoption have trended positive, vehicle sales are still relatively low, with EVs making up less than 1% of the vehicle market share in Texas; thus, expected new attributable load is not expected to volumetrically increase in the near term, and grid impacts will thereby be minimal.

**Please identify any anticipated load "hot spots" in the state for electric vehicle charging. Please specify whether these hot spots are expected to result from personal, commercial short-haul, or commercial long-haul electric vehicle deployment and charging.**

To date, demand for electric vehicles and respective charging that creates load "hot spots" has been driven primarily by densely populated urban and suburban centers which see the highest adoption of electric vehicles from both light duty fleets and personal use drivers. While there is much rhetoric regarding the role of corridor charging to facilitate intrastate travel, EVgo's own proprietary utilization data of both its national network, as well as its Texas network, shows urban areas remaining the centers for EV adoption and fast charger use. Fast charging, which is typically a charger with a capacity of 50 kW and above, is especially suited to the urban use case. We will discuss this more in the below sections.

EVgo prioritizes investing in fast charging infrastructure where the needed demand is projected to be highest; this is predicted through proprietary mapping tools influenced by factors that include, but are not limited to, electric vehicle penetration, existing charger utilization based on EVgo's network data, traffic patterns, utility tariffs, and proximity to other chargers to build complementarity in the network.

[7] https://www.rmi.org/insights/reports/from_gas_to_grid

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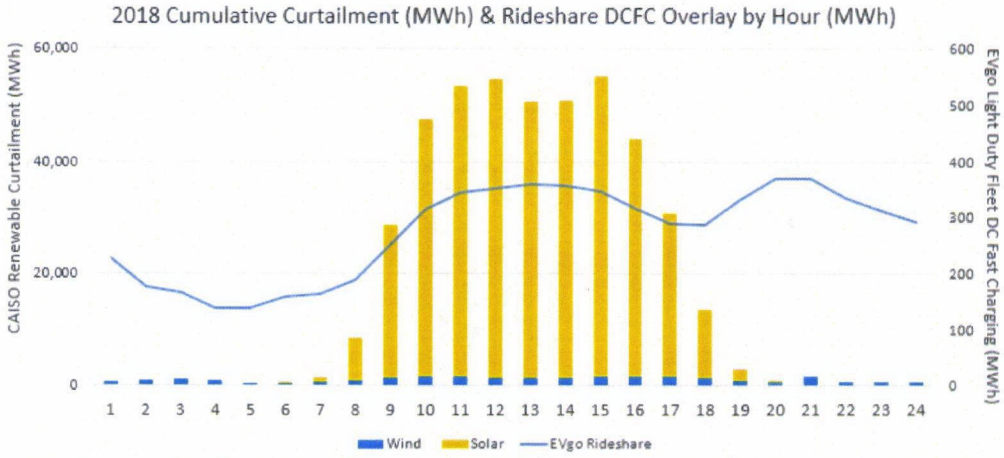
**Describe the observed or anticipated load profiles and impacts of various types of electric vehicle charging stations (e.g., residential Level 1, Level 2, and Level 3 DC Fast charging) and the class of the vehicle charging (i.e., personal, commercial short-haul including fleets and buses, and commercial long-haul electric vehicles).**

As noted above, there are three levels of EV charging: Level 1, Level 2, and Level 3 Charging. The appropriate level of charger to use is dependent on the average dwell time at a given location. For example, Level 1 charging is typically 1 to 2 kW and delivers 3-5 miles of charge per hour of charging, making it suitable for long dwell time parking locations, especially home charging, where an EV driver can plug into a 120-volt wall outlet. Level 2 charging, typically at 7 to 10 kW, can deliver a full charge over 4-9 hours and is suitable for longer dwell time locations, including workplace, home charging, and destination locations like parks and arenas where a driver will be parked for over an hour. According to the Department of Energy, 80% of charging today takes place at home with these slower speeds of charging, but the market is rapidly changing, especially as longer range and lower cost vehicles enable EV adoption for more apartment dwellers.[8] A report from the Smart Electric Power Alliance[9] details opportunities to shift load to more optimal times for the grid for residential customers.

EVgo focuses on Level 3 charging or DC fast charging (DCFC), which generally includes chargers with a capacity of 50 kW and above. DCFC can charge vehicles at much higher speeds and is typically used in shorter dwell time locations in urban retail and commercial areas with much shorter dwell times of an hour or less. Additionally, without reliable access to charging at home or in the workplace, many drivers in multi-unit dwellings rely on public fast charging for the majority of their charging needs[10]. Beyond personal use, DC fast charging has emerged as a preferred charging solution for electrified fleets including carshare and rideshare applications. Even without price signals today, the load profile for EVgo's fast charging network in Texas aligns well with solar energy output. Included below is a sample load profile from EVgo's California network also showing strong alignment between charging and solar energy output.[11] With effective rate designs, there is even strong potential for opportunity to align the attributable load of both fast

[8] https://www.energy.gov/eere/electricvehicles/charging-home
[9] https://sepapower.org/resource/residential-electric-vehicle-time-varying-rates-that-work-attributes-that-increase-enrollment/
[10] https://www.volkswagen-newsroom.com/en/press-releases/volkswagen-significantly-raises-electric-car-production-forecast-for-2025-5696
[11] https://www.greentechmedia.com/articles/read/electric-ridesharing-benefit-the-grid-evgo

charging – as well as Level 1 and Level 2 charging - with renewable energy, which could put downward pressure on rates for all ratepayers.




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

Additionally, electric distribution companies (EDC) in competitive markets across the country have started to implement commercial EV rates that would apply to both DC fast chargers for personal use drivers, as well as commercial fleets such as trucks and buses.[12][13][14] These rates typically have a time of use component to encourage charging at optimal times for the grid while also helping to mitigate demand charges, which can account for up to 80% of a given electricity bill for a DC fast charger. As an owner-operator on EV charging infrastructure, EVgo prioritizes investments given a number of demand-predicting factors, and rate design is one of the highest priority considerations.

## Grid Impacts

**What is the overall anticipated impact of electric vehicle charging in the next ten years in terms of energy and peak demand? What changes, if any, should be made to energy and peak demand forecasts to incorporate this impact?**

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[12]National Grid – Rhode Island offers a commercial EV rate. See Rhode Island Public Utilities Commission, Docket Nos. 4770 and 4780.

[13]Eversource in Connecticut offers the Electric Vehicle Rate Rider Pilot (EVRRP) to commercial EV customers.

[14]Pennsylvania Electric Company ("PECO") received regulatory approval in late 2018 for a new DCFC rider that offers commercial EV charging facilities a credit against the applicable distribution demand charge for up to 36 months.

Today, EV charging adds incremental load to the system, and the impact of charging infrastructure on the grid is quite low. Even for higher power charging, a typical DC fast charger can be installed behind a circuit panel at typical site locations like grocery stores or retail shopping centers, and in many cases simply join the host power. The load is similar to that of a commercial refrigerator.

At this stage in the market and for the next several years, there will minimal grid impact given the relatively low penetration of electric vehicles expected for the next several years. With growing adoption trends nationally, it can be expected that there will be load growth opportunities commensurate to market penetration and future charging deployment. EVgo recommends that the PUCT pay close attention to EV sales numbers in Texas and hold continued conversations with stakeholders in the coming years to follow this trend.

**Please explain any preferred or best practice facilities siting and design standards for commercial electric vehicle charging stations and why such standards are recommended.**

While design and facilities considerations are certainly important to charging accessibility, the necessity for individual states to consider standards for charging stations may prove redundant, and in fact, hinder deployment of charging infrastructure in Texas. There are currently multiple discussions of respective standards and codes regarding EV charging infrastructure, and Texas-specific codes and standards is unnecessary. For example, CharIN is one such group working toward global standards for battery electric vehicle charging.[15] Additionally, there are ongoing rulemakings on weights & measures at the federal level.

Additionally, when properly aligned with the electric distribution companies, competitive EV charging service providers (EVSPs) have developed the tools and are well-equipped for intelligent siting by taking into consideration traffic patterns, existing charger activity, electric vehicle adoption, and increasingly precise factors. While some jurisdictions like California and New Jersey have taken a proactive role in streamlining permitting, for example, this is typically handled by the state's energy office or a related entity and not done through their respective commissions.

[15] https://www.charinev.org/about-us/vision-mission/

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The PUCT can, however, encourage electric distribution companies to streamline internal processes to expedite EV charging siting and energization. Distribution utilities may also publish capacity maps for EV load planning and to encourage intelligent siting by competitive EV charging suppliers. EDC interconnection processes can be the largest unknown factor in the charging station construction process. End-to-end processes should support new power supply delivery within three months where site conditions allow, and distribution utilities should have dedicated staff working to improve internal processes to expedite development. When competitive electric vehicle charging providers have the necessary means to assess EDC service themselves, EDC engineering teams can focus their time accelerating construction and energization.

**Conclusion**

EVgo thanks the PUCT for the opportunity to comment on the current set of project questions and for taking important strides in preparing for an electrified transportation sector. If the PUCT has any questions or requires any further information, EVgo would be happy to be a resource.

Respectfully,

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