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EVgo Strategies to Attract Private Investment

Additional submitted attachment is included below.



June 1, 2020

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

RE: Docket Number 20-FINANCE-01: Strategies to Attract Private Investment in Zero Emission Vehicle Charging Infrastructure and Other Clean Transportation Projects

Commissioner Monahan,

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 EVgo continues to develop a robust public fast charging network across California.

Headquartered in California, EVgo owns and operates the largest public fast charging network in the U.S., with over 800 station locations across the United States. In California, where more than half of the EVs in the U.S. are currently located, EVgo's network of DC fast chargers (DCFC) grew by 40 percent in 2019. EVgo manages more than 300 fast charging locations and 750 fast chargers across the state, connecting more than 80% of Californians to an EVgo fast charger within a 15-minute drive. In 2019, EVgo also became the first North American charging market to be powered by 100% renewable energy. EVgo has been developing, building, owning, and operating public charging infrastructure for nearly a decade, and as a result we have a first mover and first learner understanding of how the ZEV market has and continues to evolve

EVgo thanks the Energy Commission for the opportunity to comment on the request for information (RFI) on strategies to attract private investment in charging infrastructure. While the charging industry has made great strides over the last decade, additional public-private partnerships are needed now more than ever to bring the scale necessary to meet California's goals for five million ZEVs by 2030 and 10,000 DCFC by 2025. Below, EVgo details the cost stack for DCFC and submits the following suggestions for how the Energy Commission can continue to play a critical role in helping drive forward the private investment needed to meet California's state goals for transportation electrification and greenhouse gas reductions.

Sincerely,

A handwritten signature in black ink, appearing to read "Sara Rafalson".

Sara Rafalson
Senior Director, Market Development
sara.rafalson@evgo.com

1. The cost stack of public charging infrastructure necessitates public-private partnerships during the transitional period from ICE to EV.

The COVID-19 crisis has heightened the urgency of transitioning to a fully electrified transportation sector as one of the keys to unlocking a more sustainable future for all. Replacing gas-guzzling cars with ZEVs will not only help California meet its ambitious goals for greenhouse gas reductions, but will also be key to protecting human health and spurring additional economic activity. And, during the transition from internal combustion engine (ICE) vehicles to a full electric future, public-private partnerships will still be needed, though programs must evolve with time.

The ZEV market is at an inflection point as costs are poised to decline thanks to continued innovation and scaling. To achieve full electrification, there are three primary elements that are each distinctly important and interrelated: (1) reduced battery cost, (2) enhanced battery performance, and (3) ubiquitous charging infrastructure.

While many EV drivers will do a combination of charging at home, work, and on the go, fast charging infrastructure will be critical to reaching the state's increasing population of EV drivers and is especially crucial to enabling 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 and rideshare applications which will be encouraged to electrify due in large part to SB 1014.² Even though most EVs can currently only take 50-80kW, the push for 100kW, 150kW, and even higher power chargers drives much higher costs as charging providers look to serve current and future EV drivers, especially at this point in the technology adoption curve, which will necessitate public-private partnerships during the transition from ICE to EV.

The EV charging sector is comprised of companies whose purposes and business models vary, but fundamentally there are vendors and operators. Vendors are the equipment manufacturers and information technology providers who design, produce, and sell hardware and software to enable EVs to charge. The operators are the infrastructure businesses that typically build, own, and manage charger networks. At this nascent stage of market development, some companies focus on a single slice of that value chain—provision of network management software, for example—while others cover multiple pieces (e.g. hardware sales and network management services).

EVgo is an integrated charging company that develops, owns, and operates a charging network, provides network management services to others who own charging assets, works with hardware vendors to specify equipment, and develops bespoke software to meet its network needs. One key advantage of the owner/operator model is sustained alignment with driver interests in maximizing reliability and convenience of charging. In this way, the owner-operator model is well aligned with the customer, as owner-operators are incentivized to locate EV chargers in places where there is the highest consumer demand. The complexity in maintaining such a network, combined with complex electricity rates, is the reason that approximately 80% of DCFC connectors installed in the U.S. has been through the owner-operator model.³ Owner-operators install at a variety of site locations, including national grocery store

¹ https://theicct.org/sites/default/files/publications/US_charging_Gap_20190124.pdf

² Assem. Bill 2127, 2017-2018 Reg. Sess., ch. 365, 2018 Cal. Stat.
https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB2127

³ U.S. Department of Energy, Feb. 2020,
afdc.energy.gov/stations/#/analyze?country=US&fuel=ELEC&ev_levels=dc_fast.

chains, small businesses, town centers, and other locations that are convenient to where EV drivers live, shop, and run their essential errands.

The cost components of DCFC stations fall into three major categories summarized in Table 1 below: equipment, development, and operations. Equipment comprises not just the machinery of the charger itself but includes the related equipment to make the charger both functional and safe for public use. The development costs are primarily the labor hours required by a plethora of professionals to get a site from concept to commissioning, spanning identification of candidate sites, to negotiations with site hosts, utilities, local authorities, and contractors. After construction and commissioning, the costs to operate the site include ongoing work to ensure the charger remains ready to do its job fast-charging EVs: dispensing electricity, performing maintenance, paying rent, servicing customer calls, paying local taxes, and billing drivers.

Table 1: Illustrative List of Public Fast Charging Cost Components by Category

Equipment Costs	Developmental Costs	Operation Costs
Charger Hardware	Network Design	Electricity / RECs
Utility Interconnect (e.g. switchgear, conduit)	Site Development	Rent*
Software	Legal Contracts	Warranties
Credit Card Reader	Site Surveys	Maintenance
Communications Hardware	Engineering	Charger Communications
Wheel Stops	Utility Review	Customer Care/Call Center
Signage	Permitting	Network Operations / Billing
Security	Construction (e.g. boring, trenching)	Taxes & Business Licenses
Additional Technology Tools	Bollards, Pads & ADA	Insurance
Utility Service Upgrade*	Project Management	Web/App/Digital Services
		Reporting

*situation-specific: required sometimes but not always

The pie charts below illustrate the approximate breakdown of the major cost items for a typical station with 2 x 150kW fast chargers. On equipment, charger hardware is the vast majority (84%) with the associated interconnection switchgear and conduit comprising an additional 12% of costs. With respect to development (i.e., labor required for building a station), just over 80% is usually the construction itself, with the remainder associated with planning and design in advance of the actual ‘build’ activities. Around 50% of the costs of operating a fast charger are utility bills comprised fixed, variable, and demand charges).⁴ EVgo’s network data shows that costs are relatively evenly distributed between other elements critical to ensuring high performance of this sophisticated infrastructure: maintenance, warranties, network communications, and customer service among them. The same categories of costs are reflected in DCFC deployment for 50kW, 100kW, 150kW, and other charging configurations as well.

⁴Utility costs and rate structures vary widely. 50% represents a network-wide average electricity cost weighting.

DCFC MAJOR COST CATEGORIES

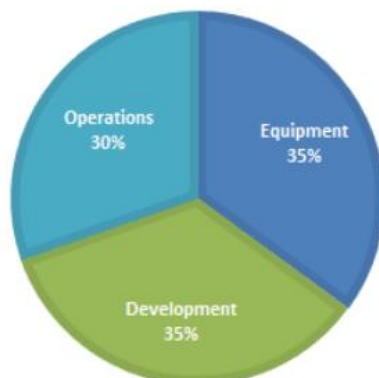


Figure 1. Visual summary of DCFC costs using EVgo internal data

EQUIPMENT COSTS

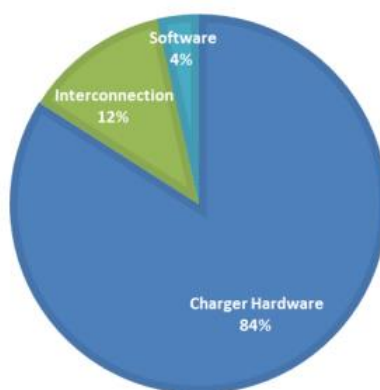


Figure 2. Visual summary of equipment costs.

The fast charging equipment supplier market is comprised of several companies with specific expertise in high-power electronics. As the ability of EVs to charge more quickly improves, the charger vendors are developing equipment that can better meet (or exceed) those needs. Vendors are innovating charger and station designs and configurations, from power sharing / power routing for improved asset utilization to incorporating micro-grid capabilities such as stationary storage and energy management to better mitigate grid impacts and improve siting opportunities. Increased power needs sometimes necessitate enhancements that increase equipment costs.

Furthermore, evolving standards for equipment have increased, and will continue to increase, costs. These include new metering and accuracy requirements set to go into effect per the California Division of Measurement Standards⁵, EMV chip credit card reader requirements established by the California Air Resources Board⁶, and proposals for the Energy Commission to tie new technology standards to future public funding for programs like CALeVIP. Together, these equipment standards may delay future cost reductions.

⁵<https://www.cdfa.ca.gov/dms/programs/zevfuels/>

⁶<https://ww2.arb.ca.gov/our-work/programs/electric-vehicle-charging-stations-open-access-senate-bill-454>

Aside from equipment costs, development costs typically depend on how long a project takes because labor equals time. Current practice requires charging companies to secure permits, reviews, and approvals from utilities, local authorities, and state governments. This often takes multiple cycles of back-and-forth between developers and utilities, authority having jurisdictions ('AHJ's), and other entities. Delays—whether from outdated processes involving in-person delivery of planning drawings to lack of clarity around specific location requirements or disagreements around local interpretation of regulations—can add significant costs to project development.

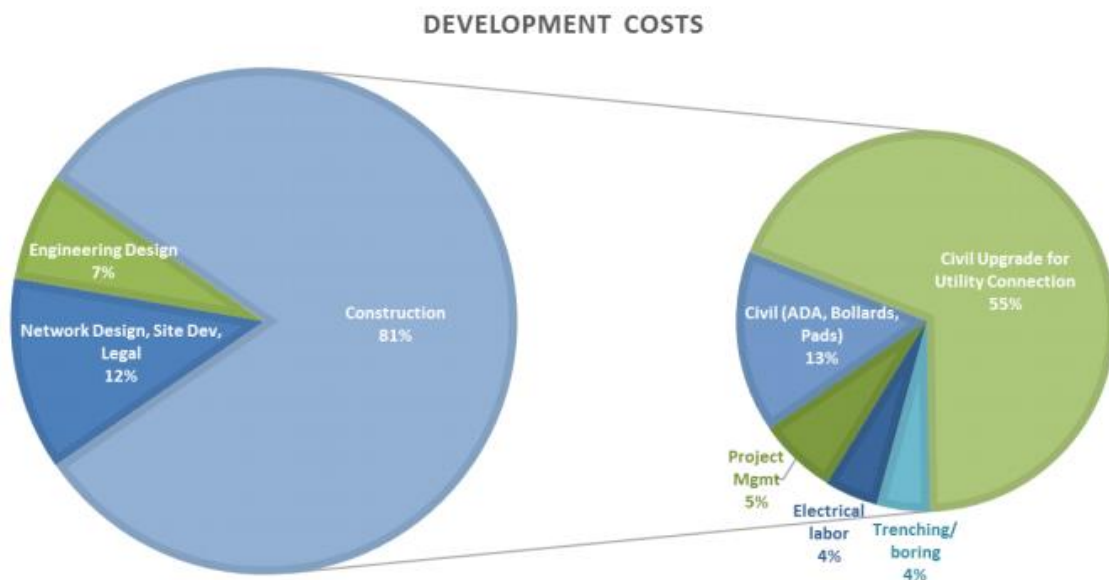


Figure 3 Development costs for DCFC

Recently, EVgo has seen on average approximately ~4 weeks to go through permitting, though select problematic sites may take much longer, and some efficient jurisdictions may allow permitting in one day. EVgo would like to see that average time divided in half. On the other hand, EVgo has seen improvements in utility timelines, but is seeking further process improvements as part of the DRIVE OIR⁷ that would allow electric vehicle service providers (EVSPs) to more expeditiously scale development, including through tools that EVSPs can use to work independently without consulting the utility.

2. Long-term rate design solutions will lower operating costs for DCFC and support private sector investment.

As noted above, the single biggest ongoing operating cost⁸ for fast charging is procurement of power. Yet even recognizing how important electricity is, consumers and other stakeholders vastly underestimate both the nameplate electricity rates for commercial EV charging and the “effective” kWh

⁷See California Public Utilities, Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification, Rulemaking 18-12-006

⁸Electricity is far from the only operational cost incurred by charging infrastructure companies. Vigilant management of energy, modems and other communications services, preventative and corrective maintenance, replacement parts, along with ongoing rent, insurance and tax payments are needed to maintain uptime. For more information on the cost stack of DCFC, visit EVgo’s whitepaper on this topic at <https://www.evgo.com/whitepapers>.

price based on the real fees levied to a charging station by the utility. The effective price of electricity can vary greatly by utility territory, station location, and utilization. Commercial electric rates are usually comprised of a variety of fixed, volumetric, and peak demand-based rate components which may vary by season, day of the week, and time of day. Because fast charging equipment can draw peak demand for portions of an hour, for lower utilization chargers especially, demand charges can significantly skew the nominal rate to an exorbitant effective rate. For example, in LADWP territory, where despite an “energy charge” of 13 cents per kWh, the effective price to EVgo can range from 27 cents/kWh on the low end, to as high as \$5/kWh.

California investor-owned utilities have made great strides in the advancement of commercial EV rates that will encourage transportation electrification. However, additional work is needed on the part of publicly owned utilities if EV penetration is to grow in their territories. Further, even if a utility has a commercial EV rate, they are often time-limited and the benefits of such rates will not be seen throughout the useful life of a charger. Higher utilization stations will always see lower demand charges, but higher utilization often comes at the expense of consumer experience if customers must “queue” to wait their turn to charge. This may discourage EV adoption. Therefore, as commercial EV rates are revisited, longer term solutions may need to be discussed given the inherently unique load profiles of EV chargers, especially DCFC.

3. The California Energy Commission has been a strong partner in driving infrastructure build-out at scale for the light duty sector, and further partnership is needed.

Given the complex cost stack and ongoing technology developments described above, it is premature to discuss moving away from incentives for EVSE, especially DCFC, when California is still in the early stages of ZEV penetration. Private sector innovation accompanied by public sector investment, legislative or regulatory mandates, and streamlined processes will significantly accelerate market maturation. If state agencies like the Energy Commission can help mitigate the cost of equipment in advance of widespread EV adoption, the private sector will continue to develop and deploy advanced technologies; charging equipment manufacturers will also need to help drive down their costs as the market scales.

Of the three major cost categories above – operations, equipment, and development - the Energy Commission has been an important partner for encouraging private sector investment by subsidizing the costs of the latter two categories. Notably, CALeVIP, launched in late 2018, has been the state’s first widespread DCFC program. While program design improvements will be needed to ensure the efficient and expeditious deployment of charging infrastructure under CALeVIP, EVgo strongly supports the CALeVIP program and is grateful for the Energy Commission’s partnership in working to meet the 10,000 DCFC needed in the state by 2025.

4. A truly statewide, “always open” program would further expedite charging deployments.

As mentioned above, CALeVIP, launched fewer than two years ago, has been the first widespread program for DCFC, as the Energy Commission rotates regions throughout the state through several solicitation windows per year, encouraging wide distribution of chargers throughout the state.

EVgo has appreciated staff’s willingness to listen to constructive ways to improve the current iteration of CALeVIP and looks forward to continued engagement in the coming years as the program evolves. As such, EVgo believes it should be the first priority to improve current programs before discussing a transition to future programs. As it stands today, the current structure of CALeVIP has a number of

opportunities for improvement to leverage private investment in order to meet the state's electrification goals.

First, given challenges with managing the queue of projects under CALeVIP, coupled with low barriers to entry for an application and a generous incentive amount, each solicitation has been fully subscribed within hours, and the queue is often clogged with largely speculative bids⁹. These issues create much uncertainty for private investment, as it is unclear when submitting an application if the site will receive an award.

Second, narrowly defined regional targeting as currently designed encourages temporary overbuilds of charging infrastructure in some regions, while other regions face shortfalls. It also can create bottlenecks at local utilities and permitting agencies that have to simultaneously accommodate a large one-time wave in applications.

Third, lack of flexibility in siting criteria unnecessarily limit eligibility to specific use cases and areas (e.g. excluding house of worship even in commercial districts, or prohibiting night gates, which can impede construction in downtown locations where stand-alone parking garages and night gates for security are more common and fast charging demand is highest).

To further maximize private investment under CALeVIP, a truly statewide, "always open" program would encourage a more gradual charger build out, attract more private investment, and over time result in a better network for all Californians.

To discourage oversubscription on day one in a statewide program and work toward lower costs, EVgo encourages the Energy Commission to consider an "always open" declining block strategy where the incentive level declines as a certain level of capacity of chargers is met based on projected state needs. Best practices from the California Solar Initiative can be used to better manage the queue of projects, as well as provide "gating" items to weed out speculative bids on day one of the solicitation. A declining block would balance the need for fast growth with the need to reduce the public funding per charger over time.

To encourage early investment in areas that have yet to see an increase in EV adoption, the program could incorporate a formula-based bonus (e.g. formula could provide a "bonus" for chargers in areas with a lower density of battery electric vehicles and/or DACs, for example) but avoid specific regional allocations.

In summary, EVgo believes that an ongoing and streamlined statewide program with a declining capex reimbursement would accomplish the state goals of accelerating the build out of charging infrastructure while leveraging private capital and accelerating the market.

⁹As of June 1st 2020, only 20-35% of funds have been paid out in the oldest DCFC program, the Southern California Incentive Project (SCIP) which launched at the end of 2018. This should be much higher, as winning applicants under the program were subject to a 12-month installation window, and the regions it represented have one of the largest shortfalls of DCFC infrastructure.

5. The timely implementation of SB 1014, the Clean Miles Standard, will support business case for more DCFC.

Ubiquitous EV adoption requires both charging infrastructure and sufficient levels of demand to support the economics of deploying said charging infrastructure. High mileage vehicles, such as those driven for rideshare and delivery, present an opportunity to accelerate and electrified transportation ecosystem that provides environmental and economic benefits alike.

SB 1014, authored by California State Senator Nancy Skinner, was signed by Governor Brown in September 2018 and encourages fleet electrification for transportation networking companies (TNCs). Commensurate fast charging capacity will be required to enable this transformation in transportation. As battery electric vehicle prices decline, especially for longer range EVs in the secondary market, compliance with SB 1014 becomes much easier. Historically, light duty fleets such as rideshare have made up as much as 1/3 of the usage on the EVgo network. Such utilization provides a helpful baseline that helps to support the business case for more DCFC. As such, further policy support – including holdback credits from the Low Carbon Fuel Standard to support vehicles – could help California come into compliance with SB 1014 much faster, to the benefit of California’s air pollution reduction goals.

Conclusion

EVgo thanks the Energy Commission for its leadership role in accelerating charging infrastructure investments throughout California and looks forward to further collaboration as we work collectively to advance clean transportation.