Comments of EV Charging Parties on ESDER 3 Stakeholder Comments

Submitted by	Company	Date Submitted
David Schlosberg (david@emotorwerks.com, 415-300-0619) Anthony Harrison Abdellah Cherkaoui Suresh Jayanthi	eMotorWerks ChargePoint Volta Charging Chanje Energy	October 18, 2017

eMotorWerks, ChargePoint, Volta Charging and Chanje Energy appreciate the opportunity to provide feedback on the issues presented in the Energy Storage and Distributed Energy Resources (ESDER) Phase 3 Issue Paper, specifically "6. Recognition of behind the meter EVSE (Electric Vehicle Service Equipment) load curtailment."

1.5 million EVs by 2025: Gigawatt-hours of Energy Storage

California's stated Zero Emission Vehicle target is 1.5 million by 2025; therefore, one million light-duty electric vehicles by 2020 is a reasonable estimate as a backdrop for when changes arising from ESDER 3 can increase market participation by EVs. In energy storage terms, this converts into a potential 2 GW / 2 GWh charging storage resource across California during the day and 3 GW / 9 GWh resource in the early evening and overnight.[1] In addition, depending on the uptake of electrified fleets in logistics and people transportation, multiple gigawatts and gigawatt-hours of sophisticated EV charging operations could be available to the CAISO, but only if these resources can be evaluated in a manner that encourages maximum participation.

Market Barrier Case Example: Public Access Charging

[1] Assumes 40% of passenger EVs utilize daytime charging for average of 1 hour; 60% of passenger EVs utilize L2 evening charging for average of 3 hours (non-mutually exclusive).

Public access charging at retail host facilities is a use case example of the potential barriers to market participation. Charging stations (EVSEs) installed in retail parking lots, but operated by third-party EV service providers, often share electric service with the host facility. In this common case, in order for an EVSE with shared meter service to participate in the CAISO wholesale market, the entire electric usage of the shared meter will be measured for demand reduction under the applicable baseline methodology. The third-party EV service provider may neither have control over other electric uses at the rest of the host's facility, nor the ability to compel the host to participate in demand response. Similar challenges will arise at shipping depots seeking to incorporate electric trucks incrementally into fleets. The business models supporting adoption of electrified medium- and heavy-duty fleets rely on total cost of ownership projections; therefore, clarifying the availability of broad base wholesale market participation for this critical EV infrastructure can accelerate electrification of transportation.

Priority of the State: Electric Vehicles

In the Vehicle-Grid-Integration (VGI) Roadmap – a joint initiative of the CAISO, California Energy Commission, and California Public Utilities Commission - "telemetry and metering" of electric vehicle consumption is a key activity, and a requirement for participation in "State products and programs," which logically includes wholesale market participation.[2] Recognition of submetered EVSE load changes using pre-established baseline methodologies would implement this stated goal of the VGI Roadmap, which has otherwise not been achieved for wholesale market participation.[3]

In the CAISO's recently published "Electricity 2030" draft vision for California, electric vehicles are mentioned in over a dozen separate instances.[4] Specifically, on page 20, the document states "Electric vehicles [in 2030] provide a large volume of widely dispersed and dispatchable storage capacity." The vision goes on to discuss many ways in which EVs will be used as a critical grid resource. Without the enhancement of the PDR model, as contemplated herein, these forecasts and ambitions of the role of EVs in the wholesale market will not fully come to fruition.

Representatives of eMotorWerks, ChargePoint, Volta Charging and Chanje Energy are prepared to actively participate in this ESDER 3 initiative to support the greatest participation of EV charging within the CAISO wholesale market as the State pursues its goals of electrification and vehicle-grid integration.

[2] http://www.caiso.com/documents/vehicle-gridintegrationroadmap.pdf

[3] EVSEs could qualify under the DERP framework; however, this model has severe barriers for behind the meter DERs which only consume electricity.

[4] http://www.caiso.com/Documents/Electricity2030-TrendsandTasksfortheComingYears.pdf

1. Please provide comments on whether your organizations support or oppose the Demand Response proposal item, as well as the reasons why.

   eMotorWerks, ChargePoint, Volta Charging and Chanje Energy strongly support the inclusion of "6. Recognition of behind the meter EVSE load curtailment" (or EVSE submetering) within the scope of ESDER 3. This topic has been raised to the CAISO Board of Governors through a letter submitted by eMotorWerks for the Board Meeting on July 26, 2017.[5] Electrification of transportation is of statewide importance, with vehicle-grid integration as a key pillar of this goal to ensure utilization of existing electrical infrastructure, integration of renewable energy and minimization of electricity costs amid decarbonization.

   Given the presumed role of electric vehicles in the CAISO grid (see "Electricity 2030" vision) and California's greenhouse gas reduction targets (in relation to both transportation and electricity), reducing barriers to participation by electric vehicles is at least of equal or greater priority than other ESDER 3 topics.

   In addition, EVSE submetering can be distinguished from other sources of electric consumption or curtailment given not only by its near-term market size, but also its unique characteristics - highly distributed; high power; precise, flexible load control and embedded, low cost and accurate metering.

   Finally, the rules framework for EVSE submetering already exists within the CAISO Tariff and relevant BPM. Through ESDER 1, the CAISO established the MGOM, or Metering Generator Output Methodology, for *discharging* energy storage systems only.[6] Submetering of EVSE consumption for demand response under the PDR model would call for a corollary methodology for *charging* electric vehicle service equipment (effectively, unidirectional energy storage systems).

   Staff should include this topic within ESDER 3 scope given the statewide importance and scale of electric vehicles and vehicle-grid integration as well as considering it would utilize minimal Staff resources relative to other topics due the parallels to MGOM.

2. Please provide comments on whether your organizations support or oppose the Multiple-Use Applications proposal item, as well as the reasons why.

[5] https://www.caiso.com/Documents/PublicComment-Letter_eMotorWerks_ESDER_2_Initiative-Jul25_2017.pdf

[6] https://www.caiso.com/Documents/Aug16_2016_LetterOrderAcceptingTariffAmendment_EnergyStorage_DistributionEnergyResourceInitiative_ER16-1735.pdf

eMotorWerks, ChargePoint, Volta Charging and Chanje Energy have no comments on the Multiple Use Applications proposal items at this time.

3. Please provide comments on whether your organizations support or oppose the Non-Generator Resource proposal item, as well as the reasons why.

   eMotorWerks, ChargePoint, Volta Charging and Chanje Energy have no comments on the Non-Generator Resource proposal items at this time.

About eMotorWerks

eMotorWerks developed and operates JuiceNet®, the leading electric vehicle (EV) cloud-based smart charging platform, and the company is the manufacturer of best-selling and best-rated residential EV charging station, the JuiceBox Pro, through Amazon.com and its own web store, with over 25,000 charging stations sold worldwide to date. eMotorWerks embeds the JuiceNet platform in its own residential and commercial EV charging stations, as well as third-party electric vehicle supply equipment (EVSE), including models from AeroVironment, Clipper Creek, Volta, Nayax, and a growing list of other manufacturers.

About ChargePoint

ChargePoint is the largest electric vehicle (EV) charging network in the world, with charging solutions for every charging need and all the places EV drivers go: at home, work, around town and on the road. With more than 40,000 independently owned charging spots and more than 7,000 customers (including workplaces, cities, retailers, apartments, hospitals and fleets), ChargePoint is the only charging technology company on the market that designs, develops and manufactures hardware and software solutions across every category. Leading EV hardware makers, automakers and other partners rely on the ChargePoint network to make charging station details available in mobile apps, online and in navigation systems for popular EVs. ChargePoint drivers have completed more than 28 million charging sessions, saving upwards of 27 million gallons of gasoline and driving more than 662 million gas-free miles.

About Volta Charging

San Francisco-based Volta has developed and is scaling up a uniquely innovative approach to Electric Vehicles charging. Partnering with forward-thinking brands who sponsor the infrastructure and the service, Volta deploys networked EV chargers at prominent and convenient venues like shopping centers and civic entertainment districts, and provides free charging to drivers, and installation and maintenance at no cost for life to site owners. The strategic locations of Volta community charging amenities drive both high utilization and high visibility, establishing Volta as an incredibly effective catalyst for EV adoption. After launching in 2010, and validating its model in Hawaii and Arizona, Volta brought and grew its network twentyfold in California in 2 years, and is now replicating its innovative infrastructure and services model in new markets nationwide. To learn more visit www.voltacharging.com.

About Chanje Energy, Inc.

Chanje Energy is a California-based OEM delivering medium duty electric vehicles and turnkey energy infrastructure services for the last mile industry. We're focused on creating sustainable solutions that improve how companies move people and packages from transportation hubs to their final destinations.