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FREEWIRE

Comments of FreeWire Technologies on the Demand Side Grid Support and Distributed Electricity Backup Assets Program Workshop

FreeWire Technologies ("FreeWire") appreciates the opportunity to comment on the Demand Side Grid Support ("DSGS") and Distributed Electricity Backup Assets ("DEBA") program Workshop on January 27, 2023. FreeWire commends the California Energy Commission ("CEC") for its leadership on using distributed energy resources ("DERs") to advance the clean energy transition and enhance the reliability of the State's electric grid.

I. Introduction

FreeWire is a leading provider of hardware and software-based Vehicle Grid Integration ("VGI") technologies that are helping to strengthen the electric grid while accelerating transportation electrification. FreeWire's battery-integrated direct current fast chargers ("DCFC") effectively allow for the permanent reduction of electric vehicle ("EV") load while their software enables further load shifting capabilities and energy services. FreeWire's unique battery-integrated DCFC have already been deployed at scale, namely at small commercial and retail locations like convenience stores and gas stations and at fleet charging stations across the globe, including in California.

FreeWire's technology uses a low-power input from the grid (drawing a maximum of 27 kW) to charge its internal battery energy storage system ("BESS") which then can charge EVs with a high-power output (up to 200 kW). For context, FreeWire's 200 kW DCFC is equivalent to a permanent load reduction of 87% compared to a traditional DCFC[1] with the same output power[2]. FreeWire's solution promotes equitable access to ultrafast EV charging in grid constrained rural and urban areas by using ubiquitous low and medium voltage or even single-phase power unlike most traditional DCFC that require three-phase power at 480v. This minimizes or even avoids the need for time-consuming and costly infrastructure upgrades on both sides of the meter that are often required to support traditional DCFC with a comparable output power.

[1] Traditional DCFC refers to a DCFC that neither contains an integrated BESS nor is co-located with a stationary BESS.

[2] When replacing an existing 200 kW traditional DCFC. For a new install, FreeWire's 200 kW DCFC still offers the same benefit of permanent load reduction in that it requires 87% less input power to achieve the same output.

In addition to using the DCFC's integrated BESS as a buffer to the grid, as described above, certain configurations of FreeWire's technology can export energy stored in the BESS to provide a range of energy services to the site host or to the grid. For example, a site host could utilize stored energy to provide their site with backup power during an emergency and with peak load reduction for utility bill management or they could choose to export it to the grid through a Virtual Power Plant program like Emergency Load Response Program ("ELRP") or DSGS. In short, FreeWire's battery-integrated DCFC is exactly the type of fully-capable, highly-flexible, and quickly deployable DER that the CEC is seeking to incentivize through DEBA and DSGS.

II. Context and Recommendations

Assembly Bill ("AB") 205 has tasked the CEC with developing the DEBA and DSGS programs to "incentivize the construction of cleaner and more efficient distributed energy assets that would serve as on-call emergency supply or load reduction for the state's electrical grid during extreme events."[3]

FreeWire urges the CEC to ensure that the DEBA program recognizes the full value of battery-integrated and battery co-located electric vehicles supply equipment ("EVSE") which includes their ability to serve as dispatchable resources during emergency events and their ability to increase the reliability of California's electric system by reducing aggregate system load and managing new EV load. This technology is uniquely capable of furthering three of the State's overarching energy goals: (1) supporting grid reliability, (2) increasing the overall amount of clean energy on the grid, and (3) accelerating transportation electrification.

Battery-integrated and battery co-located EVSE (herein collectively referred to as "battery-backed EVSE"), like FreeWire's and those of several other major EVSE companies[4] and smaller start-ups, are commercially available today, can achieve similar benefits as V2X without compromising driver experience, and can offer additional benefits that V2X cannot (such as the ability to charge EVs while the grid is down and defer or avoid distribution system upgrades). FreeWire recommends that the CEC use the DEBA and DSGS programs to fill gaps in existing policy and funding support to accelerate the adoption of DERs that can enhance the reliability of California's electric grid as follows:

[3] AB 205 Energy. Article 2, Section 25791(a).
[4] For example, see Electrify America has now deployed Tesla Powerpacks at over 140 charging stations | Electrek

- DEBA and DSGS eligibility should explicitly include battery-backed EVSE
- DEBA program design should include a $/kW adder for energy efficiency and load management technologies that reduce the aggregate grid impact of a given load below its nameplate capacity, *regardless of whether the load reduction is on a temporary or permanent basis* as both will enhance overall reliability of the electric grid.
    - Given that the CEC wants to deploy DERs by this summer, it is important to recognize the benefits of energy efficiency and load management devices on grid reliability and the fact that these solutions can often be deployed significantly more quickly than an exporting system.
    - This could be calculated based on the delta between the nameplate capacity of the load and the input power.
- DEBA program design should include a one-time upfront adder for EVSE that can charge EVs when the grid is down so as to increase the reliability of electric vehicles during grid outages.
    - This could be calculated based on the kWh of an EVSE's integrated or co-located BESS that can be available during grid emergencies to charge EVs.

III. Incentives for Battery-Integrated EVSE and Inclusion in DEBA and DSGS

Despite the many benefits that battery-backed EVSE offer, this type of VGI solution is not widely promoted nor incentivized through any CEC or utility programs making this unique configuration largely underrepresented in California. On the contrary, utility "make ready" programs and commercial EV tariffs that provide demand charge relief distort the competitive market for EVSE by unfairly socializing the cost of utility- and certain customer-side of the meter grid upgrade costs among all ratepayers. The result is that "make ready" programs and demand charge relief tariffs do not properly allocate the true costs and impacts that traditional EVSE have on the grid. Ultimately, this means that customers have no incentive to choose battery-backed EVSE despite their ability to reduce total system costs while managing EV load thereby improving overall grid efficiency and reliability. FreeWire recommends that DEBA be used to correct this market failure by providing an appropriate incentive such as those discussed in the previous section.

At a high-level, there are estimated to be over 6,000 public DCFC ports in California[5]. If the nameplate capacity of each DCFC port averages 100 kW that would equate to a theoretical peak demand of 600 MW for all of the public DCFC ports in California. If these were all replaced with FreeWire's battery-integrated DCFC with a maximum 27kW input and 200kW output, that would result in a permanent load reduction of approximately 73% while doubling the output of the DCFC. Additionally, if each of those 6,000 chargers were replaced with FreeWire's battery-integrated DCFC containing a 160 kWh BESS that would bring nearly 960,000 kWh of dispatchable storage onto the California electric grid. The potential load reduction and amount of dispatchable storage will increase by approximately 67% if California is successful in its goal of building 10,000 public DCFC ports by 2025[6].

Given the significant potential benefits that battery-backed EVSE can provide to all stakeholders, including the grid, EVSE site hosts, EV drivers/fleet operators, and utility ratepayers in general, FreeWire believes that the CEC should explicitly include battery-backed EVSE as eligible technologies in both DEBA and DSGS and incentivize their deployment as discussed above.

Sincerely,

C. Silverman

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[5] Electric Vehicle Chargers in California
[6] California readies $1.4B push to help reach electric vehicle charging, hydrogen refueling goals | Utility Dive.