

DOCKETED

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FreeWire Technologies Comments on EPIC 4 Solicitation Concepts

Additional submitted attachment is included below.



June 13, 2023

California Energy Commission
715 P Street
Sacramento, CA 95814

**Re: Docket 20-EPIC-01 - The Electric Program Investment Charge Proposed 2021–2025
Investment Plan: EPIC 4 Investment Plan**

FreeWire Technologies, Inc. (FreeWire) is grateful for the opportunity to comment on the California Energy Commission's (CEC's) solicitations discussed during the EPIC 4 Transportation Electrification Scoping Workshop held on May 31, 2023. FreeWire appreciates the CEC's continued leadership in support of the buildout of electric vehicle (EV) charging infrastructure across California. The Commission's efforts to spur the advancement of this industry are commendable and we are particularly excited to see research developed that will advance clean transportation goals.

FreeWire is encouraged by the opportunity the EPIC program provides to explore more efficient and reliable charging options, and we are especially supportive of proposed Concept 3 focused on grid-supportive electrification of emerging transportation segments. Our comments focus specifically on Concepts 1 and 3, and we offer this feedback with respect to each:

Concept 1

- Avoid bidirectional requirements for charging solutions

Concept 3

- Broaden focus beyond MDHD on-road and off-road
- Include perspective that bidirectionality value can be achieved with DER

FreeWire Technology Overview

FreeWire is a California-based manufacturer of battery-integrated EV charging infrastructure. FreeWire's innovative design integrates a 160kWh lithium-ion battery pack to provide high power Level 3 charging (DCFC) utilizing low input power levels from the grid. Specifically, FreeWire's charging hardware pulls no more than 27kW from the grid and is capable of charging EVs at a rate of up to 200kW. This design enables a 10- to 15-minute charging session for most vehicles, while drawing power from a standard, low-power grid connection comparable to levels that are required to support Level 2 charging hardware. In many instances, FreeWire's solution can be deployed at parking lots, workplaces, commercial facilities, and various other target locations without the need for timely or costly grid and electrical infrastructure typically required for ultrafast charging.

FreeWire's innovation and others like it (i.e., hardware and software load management technologies) have a number of advantages to site hosts, the grid, and ratepayers alike. These

include helping customers reduce their demand charges, avoiding distribution infrastructure upgrades, and the ability to fast-charge EVs during peak demand hours without adding to peak demand on the grid.

Concept 1

Avoid bidirectional requirements for charging solutions

Rather than requiring bidirectional capabilities, we believe that Concept 1 would elicit more innovative and early development solutions if charging solutions were encouraged, rather than required, to include it. We recommend that this program encourage research in pursuit of various use-cases to assess when and how bidirectionality is best utilized.

Although bidirectional technology has the potential to offer several grid benefits, there remain numerous technical, regulatory, and economic issues to resolve in order to make these solutions cost-effective and commercially available. The research opportunity offered through EPIC 4 can play a critical role in assessing solutions to these challenges without a bidirectional requirement. Further, given the various levels of incremental cost, evolving specifications, and use cases for bidirectionality in the EV charging ecosystem, keeping this as optional for Concept 1 will elicit a much broader spectrum of project ideas.

Concept 3

Broaden focus beyond MDHD on-road and off-road

FreeWire believes several challenges for EV charger infrastructure – increasing charger utilization, reducing the total cost and time of deployment, and grid upgrade requirements to meet power demands – represent fundamental challenges in need of innovative solutions. Hardware and software load management technologies for EV charging equipment will be critical as EV adoption continues to rise, and we appreciate that the goals of Concept 3 and possible project focus areas are centered around this need. Managed charging enabled by technologies is an essential strategy to reduce grid impacts and costs while speeding up deployment. Similarly, DER solutions, including stand-alone storage and battery-integrated charging equipment, offer an important alternative to distribution grid upgrades.

We are encouraged that Concept 3 is focused on emerging transportation segments such as drayage, delivery, and work trucks as well as off-road vehicles and equipment. However, the issues that are implicated in the goals of Concept 3 remain prevalent in all electrified transportation segments. Prior rounds of the EPIC program have clearly appreciated this, and we therefore encourage CEC to continue to maintain a broad aperture for eliciting research and demonstration concepts and projects across all transportation segments.

For example, deploying a public light-duty charging network that is situated in rural and grid constrained locations will be necessary to meet the timeline set forth in national and statewide

programs. In the National Electric Vehicle Infrastructure Formula Program (NEVI), the designated alternative fuel corridors branch through rural and urban areas with the intention of reducing range anxiety by funding charging stations in areas where gaps exist. These rural and often grid constrained locations, although necessary to support the growth of EV adoption, will benefit from charging technologies that require few grid upgrades and accelerate their time to deployment. Similarly, several federal, state, and utility programs mention specific interest in charging technologies that offer quick builds and installations in order to support areas with high utilization, as well as areas with charging gaps. For these reasons, FreeWire recommends that Concept 3 include transportation segments beyond emerging ones.

Include perspective that bidirectionality value can be achieved with DER

The value associated with bidirectionality is frequently attributed to vehicle-to-grid capabilities and bidirectional EV chargers. Given FreeWire's experience with battery-integrated charging solutions, we are intimately familiar with the various benefits that storage can offer to the EV charging ecosystem. This includes not only being configured to optimize grid infrastructure to provide charging, but to also provide a variety of other site-specific energy services and grid value.

As noted in the possible project focus areas for Concept 3, modifying charging infrastructure to enable VGI use cases with hardware that can support various aspects of bidirectionality is a potential focus area. We appreciate this recognition and encourage the CEC to ensure that various DER configurations are included within this idea.

FreeWire appreciates the opportunity to comment on the CEC's EPIC 4 concepts and hopes that our comments will help shape future programs and policies to accelerate deployment and lower overall costs of transitioning to electrified transportation.

Sincerely,

Sarah King

Sarah King
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FreeWire Technologies