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**AMPLE Inc Comments on California Energy Commission EVSE
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Additional submitted attachment is included below.



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-VIA EMAIL FILING-

CALIFORNIA ENERGY COMMISSION
1516 Ninth Street Sacramento, California 95814
E-mail: docket@energy.ca.gov
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Electric Vehicle Infrastructure Project Funding -- Docket No. 20-TRAN-04

***Staff Workshop on Funding Allocations for Future Electric Vehicle Infrastructure
Projects***

AMPLE, Inc. appreciates the opportunity to provide comments to the California Energy Commission (CEC) regarding the Staff Workshop on Funding Allocations for Future Electric Vehicle Infrastructure Projects (Docket # 20-TRAN-04) that took place on December 17, 2020. The December workshop focused on the challenges of EV charging for multi-unit dwellings (MUDs), TNC fleets and rural customers. We submit that under the current EV infrastructure paradigm, reconciling the needs of speed, affordability and cost is impossible. That is because today's EV system rests on two pillars: slow charging (either L1 or L2) at home or work, and DC fast charging in public locations. Unfortunately, charging cannot replace the convenience and affordability of gasoline or diesel in many applications. As such, we urge the California Energy Commission to stabilize the EV revolution by adding a third pillar to support it: battery swap. This third pillar can help California achieve stated goals for EV deployment and allow the world to decarbonize mobility in line with the Paris Agreement and a 1.5 degree global warming target.

Ample, is a San Francisco-based company that has pioneered modular battery swap and solved the challenge of how to deliver energy to electric vehicles in under 10-minutes without straining the grid, while accounting for renewable energy intermittency and reducing the cumulative need for massive carbon-intensive EV batteries. AMPLE's modular battery swap system is economically self-sustaining,

flexible and has already been integrated into eight distinct vehicle models from five different OEMs. Not only is AMPLE's refueling fast and affordable, installation of swap stations is too.

This last point is critically important. For the world to limit climate change to no more than 1.5C, emergency measures must be taken to reduce carbon emissions. In America, transportation is the largest contributor to energy-related GHG emissions, and globally sectoral emissions must fall by roughly 50% within a decade. Over the same period demand for mobility will grow by ~70% thanks to economic expansion in countries like China, India and regions like sub-saharan Africa. The world needs technologies and business models that serve customers far beyond suburban American two-car garages. Electrification must reach into cities with high-rise apartment buildings and densely packed street parking, rural communities, corridors for interstate travel and commerce, and mobility fleets, which will account for a disproportionate share of vehicle miles traveled. AMPLE's solution fills this gap.

It is instructive to revisit why the two pillars of slow and fast charging are not a stable foundation for universal electrification. According to research from Carnegie Mellon University only 22% of Americans have access to a dedicated parking spot with overnight charging available (this includes both standard 110 volt outlets and 240 volt level 2 charging). The International Council on Clean Transportation (ICCT) estimates fewer than half of Americans have access to a dedicated parking spot with overnight charging. Extending overnight charging to the rest of Americans is prohibitively expensive and unrealistic.

On the other hand, DC fast chargers are expensive to install (between 54k and 205k per plug) and operate. Because their economics are unfavorable, DC fast chargers will require prolonged government subsidies. An example of why can be found in Norway in 2017 -- which represented the peak ratio of EVs to DC fast chargers in Europe. In 2017, the average fast charger in Norway only dispensed [9kwh of electricity per day](#) -- significantly less than one Nissan Leaf battery. A survey of 40 DC fast chargers by Florida Power and Light (Florida is America's 4th largest EV market) shows half of their DC fast chargers with utilization [under 6%](#) and none higher than 22%.

Because of the logistics and economics of fast charging as well as the heavy toll they place on the grid, they are not an adequate solution for MUDs, fleets, or TNCs. Eight years ago when I was working for the Obama administration the Energy Department was convinced by EVSE companies to invest heavily in the buildout of L2 public charging infrastructure. It was a mistake. The numbers didn't work then for L2, and they won't work now for fast chargers. Today's DCFC is no competition for gasoline. With EVs approaching cost parity our charging solutions must serve communities beyond privileged early adopters and suburbs.

Again, we propose adding a third pillar to support the EV system that is economical, self-sustaining, massively scalable and ready today: battery swap. AMPLE has already conducted multiple pilots in the Bay Area. This month, it will begin another large scale deployment with a global TNC. We intend to expand these offerings to other large fleets, TNCs, MUD-dwellers and rural communities soon. AMPLE's system allows electric vehicles to refuel in minutes and pay for energy on a per-mile basis -- just like gasoline. The system also bridges the gap between sustainability and convenience by absorbing renewable energy when it is available, storing it and refueling electric vehicles within minutes.

Prior battery swap efforts were unrealistic and uneconomical. But this time the market is larger, technology advanced, economics are favorable and the time is right.

Today's pace of electrification is not fast enough to achieve critically important climate goals before us. The 0-carbon EV revolution cannot be supported by slow and fast charging alone. As AMPLE deploys its

modular battery swapping system at scale in 2021, we urge you to find ways to support this effort. We need a new generation of battery swap, because the critical work of decarbonizing mobility needs to go faster.