DOCKETED	
Docket Number:	24-FDAS-04
Project Title:	Flexible Demand Appliance Standards for Electric Vehicle Supply Equipment
TN #:	260747
Document Title:	Heidi Sickler Comments - bp Pulse Response to CEC RFI Docket 24-FDAS-04 Flexible Demand and Load Shifting in California Electric Vehicle and Supply Equip
Description:	N/A
Filer:	System
Organization:	Heidi Sickler
Submitter Role:	Public
Submission Date:	12/19/2024 6:59:46 PM
Docketed Date:	12/20/2024

Comment Received From: Heidi Sickler
Submitted On: 12/19/2024
Docket Number: 24-FDAS-04

bp Pulse Response to CEC RFI Docket 24-FDAS-04 Flexible Demand and Load Shifting in California Electric Vehicle and Supply Equip

Additional submitted attachment is included below.

bp pulse's response to:

California Energy Commission's

RFI Docket #24-FDAS-04

Flexible Demand and Load Shifting in California for Electric Vehicle Support Equipment

To: California Energy Commission

Docket Unit

Re: Docket 24-FDAS-04

715 P Street

Sacramento, CA 95814

RFI Response due December 20, 2024

30 S Wacker Drive, Suite 9N
Chicago, IL 60606, USA

This CEC RFI seeks feedback on the following questions. It is not required to respond specifically to these guiding questions if there are other topics that merit consideration or if some of the subjects are not relevant for a particular commenter.

Introduction: bp has a larger economic footprint in the US than anywhere else in the world. In 2023, the US accounted for nearly half of bp's global investment. Today, we employ more than 30,000 people and support more than 300,000 jobs.

We are proud to be a trusted partner for secure, safe, affordable and reliable energy. As bp transitions from an international oil company to an integrated energy company, we are producing and investing in more of the energy the world needs today and wants for tomorrow. Bp pulse, bp's electric vehicle (EV) charging business, is working to simplify electrification by providing fast, reliable charging solutions for both consumers and commercial fleets across America.

bp pulse launched in 2018 with the acquisition of Chargemaster Ltd in the United Kingdom (UK). With the backing of bp's expertise in the energy sector as an integrated energy company, as well as our strong brand presence and extensive resources, bp pulse has already become a global leader in EV charging solutions. Today, bp pulse is the largest public EV charging network in the UK and continues to expand across Europe, China, Australia, and the US. Over the last 6 years, bp pulse has continued to evolve our offer and has built a global network of more than 29,000 publicly available charge points around the world, which includes hundreds of public charging locations across the globe designed to give drivers a convenient, safe, and reliable charging experience.

bp pulse entered the US market in 2021 after the acquisition of Amply Power. Today we have over 150 operational public charge points in California, Oregon, Washington, Texas, New York, and New Jersey and are developing additional public EV charging networks in other states across the US. Our legacy is rooted in developing, operating, and maintaining customer-centric solutions through our network of more than 8,000 retail fuel locations in the US. bp retail fuel locations span several brands, including: bp, Amoco, ampm, Thorntons, and TravelCenters of America (TA). bp recently completed our purchase of TravelCenters of America (TA), which adds more than 300 strategically located travel centers along US highway systems to our portfolio of brands.

3. Please comment on the various EVs or EVSE consumer charging preferences such as charge immediately or "charge by departure", where the EV is charged to a specified percentage with a set time to be ready. e. What percentage of battery capacity is typically charged per session?

Our public charging sessions average between 28-40% State of Charge (SoC) replenishment, we have found that customers tend to stay an average of 30 minutes regardless of SoC. For our Fleet customers, many of them do minimize their charging power to enable a "charge by departure" mode so that they can reduce charging costs. For example, they may use our charge management software to reduce the power of a 100kW charger to 10kW, so that they avoid unnecessary electricity costs while still preparing their vehicles for a scheduled departure.

4. When will DC (Direct Current) charging equipment be available for residential installation? What are the expected use cases, penetration, price range and power level of DC equipment used in the residential sector? Would certain DC chargers installed at private residences require a Battery Energy Storage System to manage peak load?

We are unaware of any Electric Vehicle Supply Equipment (EVSE) Original Equipment Manufacturer with plans to offer residential DC options. This could be because most residential homes do not have the infrastructure to support a DC charger of any significant output (>12kW). In addition, significant upgrades to the home electrical system or installation of a battery buffered Direct Current Fast Charging (DCFC) solution would be capital intensive and may be unattractive to consumers who typically charge overnight for long periods of time. We believe a robust public DCFC network is the best solution to meeting consumer needs for a quick charge at minimal cost for consumers.

5. What software and hardware capabilities could enable public EVSEs to relieve/eliminate grid congestion at the Distribution (referring to Transmission and Distribution, T&D, for the grid) level? What control strategies are available to the grid operator and/or load aggregator to shift and/or curtail demand from EVSEs at the Distribution level to maintain grid reliability?

Solutions might include:

- Incentive programs for CPO (Charge Point Operators) to reduce the demand at specific hours where the grid is congested.
- Demand response or other equivalent programs where the grid operator sends an automated signal to CPOs that the grid is congested at a certain point in the network.
- CPOs curtail EV charging at the applicable locations.
- CPOs receive a monetary incentive proportional to how much load they curtailed.

9. How can medium-duty and heavy-duty (MDHD) EVs and their EVSE fit into the CEC's goal of load shifting to avoid GHG emissions?

Medium-duty and heavy-duty EVs are typically bound by their operational schedule. In other words, they can only charge during times that are opportunistic to their driving schedule. Time of Use and Demand Charges can incentivize drivers to shift their charging behavior, but they may be limited by the needs of their fleet. Thus, access to an abundant quantity of ultrafast DCFC chargers with competitive prices during low-GHG emissions hours (i.e. daylight hours in California Independent System Operator territory) could enable vehicles to "top-off" during the lowest emissions hours. Making it as easy as possible for a medium-duty or heavy-duty vehicle to find a charger and use it during opportune times without impacting their operational schedule is key to shifting to low GHG emissions charging hours.

12. What are the charging practices for commercial fleets? Bus fleets? Overnight depot level charging? What power levels? How is the charging of the fleet managed? Manually rotated? Management software?

In general, there isn't a big difference between commercial fleets and bus fleets. The biggest differences come from the size of the batteries and the operational schedule of the vehicles. The size of the battery impacts how much time it will take to charge, as well as the size of the EVSE necessary to enable the fleet. An electric bus may have vehicles with batteries that are several hundred kWh of storage, while medium-duty fleets might only be 100 kWh.

As EV fleets increase in size, charge management software becomes increasingly important. From a financial perspective, it is important to control charging power to avoid Time of Use or Demand costs, which can most easily be done with charge management software that is aligned to the fleet's operational schedule.

It is also important to consider whether fleets have access to depot charging or if they are reliant on public chargers. With depot charging, fleets have more control over costs and charging schedule. Fleets that rely primarily on public charging are subject to costs outside of their control.

13. Which communication protocols or components of existing communication protocols are used to enable load shifting capabilities for EVs and EVSE? What is the implementation status of these communication protocols? Are industry-wide standard communications and control protocols currently in use or planned? Are there remaining gaps to enabling load shifting capabilities?

We use Open Charge Point Protocol (OCPP) 1.6J to communicate with chargers. This has been fully implemented for years. We are planning to migrate to OCPP 2.0.1. OCPP 1.6 has been sufficient for load shifting.

15. Can a load shift program work with EVSEs/EVs responding to generic signals, or must signals be tailored for each EVSE/EV?

For fleets specifically, it is much better to receive depot-level signals and then allow the customer to allocate power to vehicles based on their preferences. Utilities and other entities don't have insights into fleet priorities like a fleet manager would.

For example, if a depot received a signal to reduce power to 100kW, some depots might want to allocate that 100kW equally among their vehicles. Other depots might want to use as much of that power as possible on one vehicle, so that it can charge and return to driving as soon as possible.

Giving fleet managers that power is incredibly useful.

16. What data or information is needed from the EV and/or EVSE to enable load shift while ensuring driver mobility and range needs are not compromised (for example, kWh needed by the vehicle)? How could this data or information be communicated across all vehicle and supply equipment models, regardless of the manufacturers' involvement?

The key information is to know when the EV needs to be fully charged by.

17. What is the energy consumption impact from adding flexible demand capability to existing EVSE?

EVSE are less efficient when charging at low power rates, but the impact is negligible.