September 27, 2021

**Re: Proposed CALGreen 2022 for EV Infrastructure**

PowerFlex is a leading installer and operator of electric vehicle supply equipment (EVSE) and Automated Load Management Systems (ALMS) in California. We have installed and operate more than 6,000 level 2 EVSE in California, each equipped with and providing ALMS, giving us unique insight into the benefits, challenges, and opportunities of ALMS. Accordingly, PowerFlex comments on the following proposed changes:

- Automatic Load Management System (ALMS) Definition
- Level 2 Electric Vehicle Supply Equipment (EVSE) Definition
- Use of ALMS

**ALMS Definition**:
PowerFlex supports the BSC and HCD's proposed definition of ALMS as written. PowerFlex believes the definition is broad enough to not favor any one type of approach or technology while capturing the main point of dynamically managing load across EVSE.

**Definition of Level 2 EVSE**:
PowerFlex proposes expanding the definition of Level 2 EVSE to include branch circuits up to 60 amps. We have had several Level 2 EVSE installations with 60-amp branch circuits, so broadening the definition would cover these types of installations. Accordingly, PowerFlex proposes the following definition (added language underlined and italicized):

> The 208/240 Volt 40*-60* ampere branch circuit, and the electric vehicle charging connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

**Use of ALMS**
In Sections 4 4.106.4.2.2 (HCD) and 5.106.5.3.3 (BSC), the HCD and BSC propose variations on how ALMS can be used to reduce load. The HCD says that "(t)he electrical system and any on-site distribution transformers *shall have sufficient capacity to deliver at least 3.3 kW* simultaneously to each EV charging station (EVCS) served by the ALMS," while the BSC says that "(e)ach EVSE controlled by an ALMS shall deliver a minimum 30 amperes to an EV when charging one vehicle and *shall deliver a minimum 3.3 kW* while simultaneously charging multiple EVs." (Italics included for emphasis). It is unclear if the proposals would require that there be enough transformer capacity to serve at least 3.3 kW to each EVSE or if power delivered could not go below 3.3 kW. Consequently, PowerFlex offers the following suggestions to ensure that ALMS systems have enough flexibility meeting customer charging needs while managing load within onsite constraints:

- Up to 200% of spaces that are required per the CalGreen code should have transformer capacity to deliver at least 3.3 kW simultaneously to each EVSE served by ALMS
- Spaces in addition to 200% of the CalGreen code requirement should be allowed to go down to 1.6 kW of transformer capacity space
- In operation, EVSE spaces should be able to deliver less than 3.3 kW to each EVSE served by ALMS. Allowing EVSE aggregators flexibility in managing load across a fleet

of EVSE will provide for the greatest value to EV drivers, building tenants/owners, and ultimately the distribution grid.

Therefore, PowerFlex proposes that HCD and BSC both adopt the same language to ensure that the codes are not conflicting and that they are clear to EVSE installers/operators (added language italicized and underlined):

> When Level 2 EVSE is installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS *up to 200% of the required spaces. Beyond 200% of the required spaces, on-site distribution transformers shall have sufficient capacity to deliver at least 1.6 kW simultaneously to each EVCS*. The branch circuit shall have a minimum capacity of 40 amperes and installed EVSE shall have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical capacity to the required EV capable spaces. Each EVSE controlled by an ALMS shall deliver a minimum 30 amperes to an EV when charging one vehicle and *may* deliver *less than* 3.3 kW while simultaneously charging multiple EVs.

Thank you again for your continued efforts to align California's building codes with ever changing market needs and conditions. PowerFlex supports your efforts and is available to offer additional clarifications as needed. Please do not hesitate to reach out for further assistance.

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