

**DOCKETED**

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## **EV Charging Infrastructure for MUD**

*Additional submitted attachment is included below.*

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SUBJECT: EV Infrastructure for Multi-Unit Dwelling Property Owners and Tenants  
Submitted by: GoPowerEV Inc

**Dear California Energy Commission staff,**

GoPowerEV was founded in 2019 specifically to address the problem of EV charging in multi-unit dwelling properties. We conducted primary research to discover the obstacles, and we developed a solution which will be coming to market in the fall of 2021. We already have properties with LOIs for trials, and we anticipate applying for the subsidy program once it is introduced.

Based on interviews with property owners, property managers, and tenants, we offer a few observations below, and then provide some conclusions and recommendations.

**Observations**

- The average round trip commute is 38 miles. The average number of miles driven per day is ~33 miles (12000 per year). If a tenant leaves their EV plugged in every evening, most will only need level 1. If they plug in every 3 days, they need about 100-120 miles over night.
- 81% of charging happens at home. Home charging is different than public charging, because many people are plugging in when they return home in the evening after work. Charging tends to be longer duration—if the tenant plugs in at 8pm and the EV was fully charged at 1am, they are not going to get up to move their car.
- MUD properties often do not have a lot of excess power from the utility service, and upgrades to main panels or to the utility feeder can be very expensive and disruptive. Many properties lack any outlets in the parking area—they have only lighting.
- Faster chargers require more power, thicker gauge wire, and thicker conduit, which drives up the cost per unit, which in-turn reduces the quantity of units that can be affordably installed.
- In many cases, spaces are assigned to apartments (close to the appropriate unit entry door). There are often “visitor” or public spaces near the street. However, these visitor spaces are usually quite far from the utility panel, and are more likely to need trenching under concrete or asphalt. They may also require bollards. All this further increases the cost per unit.

- Property owners do not want to resolve disputes between their tenants. If they are only able to put in a few shared chargers (because they are so expensive) in the visitor/public area, then the first tenant who arrives home from work will plug in and may not move their EV promptly when it is charged. Tenants who get home later will be unhappy and complain. Complaints earn the property a bad reputation.
- Property owners desire high-occupancy, and hence want to attract loyal and reliable tenants. Waiting lists or complaints about sharing do not fulfill this goal.
- Chargers with J1772 connectors and 20-25' cords break often and require maintenance, especially when the tenant does not own it. Some will drop the connectors on the pavement, or leave the cord on the ground (not coiled and hung up) after use, which means vehicles may drive over the cords.
- Level 1 plug-in chargers come with all vehicles, and a Level 2 (240v) 16A plug-in charger costs \$180-\$220 (e.g. <https://www.amazon.com/Morec-Portable-220V-240V-Electric-Compatible/dp/B07HH4LJD2/>). For certain plug-in chargers that come with vehicles (e.g. Tesla, Audi), the tenant may only have to purchase a “dongle” for their Level1 plug-in charger to become Level2.
- Faster charging, and especially DC Fast Charging is burdensome for the electrical grid, because of the high spikes in demand. It drives the need for extra utility transformers.
- Approximately 50% of home charging uses Level 1 outlets with a plug-in charger. This makes sense, given the prior note about round-trip commute distances.
- Property owners do not want solutions that are only good for the next 2 years. A shared model where one charger is shared across dozens of tenants is only briefly viable while adoption rates are low. But making changes to building infrastructure is disruptive and time consuming.

## Conclusions and Recommendations

- Based on the observations, ubiquity is preferred over shared, for at-home infrastructure. ***Projects should require a minimum percentage of parking spaces.***
- Since Level1 plug-in chargers are included with vehicles and 16A Level2 plug-in chargers are cost-effective, ***remove the requirement that Level1 and Level2 chargers must be equipped with J1772 connectors.***
- For “charger technology”, add level 1 or level 2 receptacles as an option.

- **Remove DCFC as an option for multi-family charging.** This is appropriate for the 19% of charging that is away from home, and there is already significant money and investment going towards extending DCFC networks.
- **Do not allow installation of power to “onsite unassigned parking spaces shared across multiple units”.** This will waste money—higher cost to get to these spaces—while leaving property owners and tenants increasingly unhappy as more and more tenants obtain EVs and sharing becomes less tenable over time. Shared spaces will end up as second-class citizens.
- **Restrict the portion of duplexes.** Duplexes (2 tenant units) or homes that have been divided are considered to be MUDs. However, many such duplexes already have garages with outlets that are accessible to both tenants. Eligible projects should limit the portion that are duplexes to e.g. no more than 10% of the total units, because it is not a problem that needs a subsidized solution.
- **Consider adjusting the minimum portion for underserved communities (currently proposed at 50%).** Outside of a handful of elite class A MUD properties, most class B or C workforce housing lacks any EV charging infrastructure. Recognizing that 40% of Californians live in MUDs, this problem creates a barrier to EV adoption for middle-class MUD tenants. The split between middle-income and low-income should be commensurate with need.
  - Ideally at least one or two tenants on each property, whether it is 5 units or 25 units, will purchase or lease an EV within 18 months after the installation of the charging infrastructure. If this does not occur, then the project would be viewed as a waste of government investment.
- **For Project Components, change “chargers” to “charging infrastructure”**
- **Reword the project objective “Successful outreach, installation, and use of low-cost charging infrastructure”**
- **The evaluation criteria should include lowest cost per parking space for Level1 and for (low power) Level2**

**Respectfully submitted by GoPowerEV Inc.**