



**CASE STUDY**

# Low-Power EV Charging

375 & 395 Richmond Drive, Millbrae, CA 94030

### THE CHALLENGE

375 Richmond Drive and 395 Richmond Drive are adjacent two-story multifamily residential buildings built in 1969, with 18 dingbat-style parking spaces. A 2018 load study found that these buildings were each served by an old 60A, 3-phase house panel with enough power to support one Level 2 EV charging station, but the panels were out of breaker spaces. There was available capacity to upgrade each to a 100A panel, which would allow space for a second Level 2 charger. However, further upgrades were not found to be cost-effective due to the location of the panels and the hardscape around the electric rooms which would require at least 100 feet of underground concrete trenching. The existing infrastructure allowed for 9 outlets for Level 1 EV charging. Installing an equivalent number of Level 2 chargers would have required new electrical service from the utility. Between trenching, the installation of new panels, electrical equipment, and Level 2 EV chargers, utility fees, and labor, the cost to make the site ready for Level 2 chargers was estimated to be \$179,500, or \$19,944 per port.

### THE SOLUTION

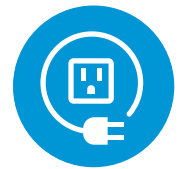
Traditional Level 2 charging was not cost-effective for 375/395 Richmond, therefore the team explored other options and decided on a low-power Level 1 solution to provide the most EV charging ports at the lowest cost. Level 1 charging provides 40-50 miles of range per 10-hour overnight charge, more than enough to meet the 25-30 miles of average daily driving for San Mateo residents, with prevalent public stations nearby to supplement any longer trips. To deliver Level 1 charging in a way that works for tenants and building managers, the project team looked to smart outlets that can be installed on regular 120V circuits. The selected technology was Plugzio, a smart outlet product for EV charging that lets tenants use the Level 1 travel cords that come with their vehicle. Digital user accounts allow property managers to easily control access, set pricing, and automatically collect payment for usage.

### THE IMPACT

In October 2020 electrical contractor Atlas Pellizzari installed two new 100A panels and a total of 9 new Plugzio outlets for EV charging at 375 & 395 Richmond. The total project cost was \$40,341 for installing 9 outlets, or \$4,482 per outlet, over 4X cheaper than installing Level 2 chargers. Peninsula Clean Energy covered the cost of installation and two years of software fees. Installing Level 1 smart outlets instead of Level 2 chargers at capacity-constrained 375 & 395 Richmond saved approximately \$139,000 while still providing residents with enough charge to support their daily commutes.



**\$179,500**  
estimated cost of  
Level 2 charging  
installation



**\$40,341**  
total low-power  
Level 1 project cost



**\$139,000**  
in savings from  
low-power Level 1  
installation