

EV Charging Retrofit at Condos Avoids Upgrades by Wiring Chargers to Unit Meters



Cascadian Court Condominiums - Portland, OR



Property Details:

- 87 units | Midrise | 9 stories
- Underground garage under building
- 14 total parking spaces
- Deeded parking
- Located in Portland's Lloyd District
- Building was completed in 2010
- Home Owners Association (HOA)



Cascadian Court Parking Garage

Background:

Several condominium owners with deeded parking spaces wanted to install electric vehicle (EV) chargers. However, parking was limited, and the existing electrical infrastructure could not support multiple communal Level 2 (L2) chargers. While electric meters were conveniently located in an electrical room adjacent to the garage, the electrical panels (70 or 100 amp panels, depending on the unit) for each unit were situated within the condos themselves, as many as nine floors above the garage. The property needed an innovative method for solving its various capacity limitations.

EV Charging Project Details:

This was an independent project scope, without other upgrades to the building. The General Contractor (Conserve Energy, LLC.) created a list of EV charging options with technical details and budgetary costs for the HOA to consider and review with their members. Once they decided on a solution, the HOA polled members with parking spaces to determine who might be interested in adding an EV charger. Bids were provided to all interested members.

Pre-existing EV Charging Set Up:

This was the first EV charging project for the property. Condo owners had not considered purchasing EVs due to the lack of home charging at the property.

Tech Solution: RVE Electric Vehicle Energy Management Systems (EVEMS)

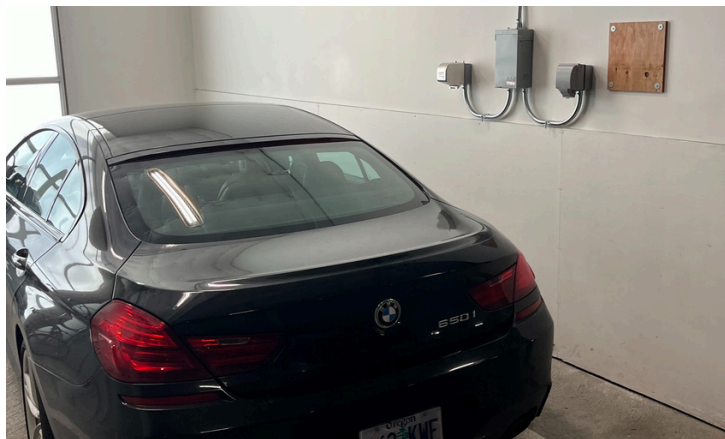
- An EVEMS was installed in the electrical room for unit owners with a parking space willing to pay the install cost. The EVEMS connected into the wiring that runs between a condo unit's electric meter and the in-unit electrical panel, allowing all charging to be billed on the unit owner's utility bill.



The EVEMS system in Cascadian Court's electrical room

Tech Solution Continued: RVE Electric Vehicle Energy Management Systems (EVEMS)

- The EVEMS measures real-time power consumption of the condominium's electrical panel, so when the power demand is high, the EVEMS turns off power to the charging circuit to avoid a circuit breaker tripping.
- Level 2 (L2) non-networked outlets with option to hard-wire. Conserve Energy, LLC. provided infrastructure allowing condo owners to select preferred charger.
- Condo owners preferred 240V plugs with locking covers to prevent EV charging equipment from being unplugged or removed.
- This solution allowed condominium owners to install chargers without ongoing HOA involvement.



240V and 120V outlets ready to support up to L2 chargers



Unit electric meters in Cascadian Court electrical room

Project Financials:

- A new transformer and house panel was considered, but the expense was prohibitive. This would have required added metering, the HOA would have to pay for electricity upfront and bill individual users for power used to charge their vehicles.
- Residents with chargers qualify for Home EV charger incentives from [Pacific Power](#).
- Condo owners paid for their individual portion of the project costs.
- Condo owners can expect ROI through reduced charging cost compared to commercial EV chargers, and increased resale value of their unit.

Installation Process:

Conserve Energy ensured futureproofing, leaving room to add more circuits if and when additional chargers were needed. The total installation took 2 weeks.

Project Permitting and Compliance:

- The City of Portland electrical inspector was unfamiliar with the EVEMS units. The General Contractor provided documentation showing the specifications and UL/CSA listing.
- Charger mounting height was based on ADA guidelines.

Takeaways:

- Electric Vehicle Energy Management Systems (EVEMS) can help with rightsizing a project and lowering costs for residents.
- The EVEMS can allow for a project to avoid costly upgrades on electrical panels.
- Load management with direct wiring to the unit meter simplifies tracking energy usage while allowing MFH residents a close to single family home experience.

