

Multi-Unit Dwelling (MUD)  
Electric Vehicle (EV) Charging  
Technology Solutions:

## Community Charging Station Management



### MUD BARRIERS TO INSTALLING EV CHARGING

**Parking Limitation:** Limited number of parking spaces can be allocated for shared EV charging

**Parking Operation:** MUD Property Managers need to maximize shared EV charging usage to minimize the number of shared parking spots. Alternatively, MUD Property Managers need a way to share power among a group of dedicated charging stations at assigned parking spots that minimizes disruption to parking spot logistics.

**Electrical Infrastructure Cost:** Conventional solutions require a dedicated circuit/power for each charging station. MUD properties without sufficient electrical capacity for the desired number of charging stations will require costly electrical infrastructure upgrades.

**Charging Station Cost:** MUD property managers want to use cost-effective charging stations that provide the required functionality

**Operating Cost:** It is challenging for MUD properties to establish a business case for offering EV charging to residents. MUD Property Managers want lower charging network provider fees and strategies to reduce power cost, along with ability to bill for usage.

### HOW COMMUNITY CHARGING STATION MANAGEMENT CAN ADDRESS EV CHARGING BARRIERS

**Parking Limitation:** Can be used in dedicated or shared parking situations. When used to manage a group of charging stations, allows for more cost-effective installation of charging ports at more parking spaces to reduce/eliminate the number of shared parking spaces. When used for shared charging stations, maximizes charging station utilization to minimize the number of needed charging stations.

**Parking Operation:** For properties with charging stations in dedicated resident parking spots, power is managed among a group of charging stations. So when charging session is completed, drivers do not need to move their vehicle immediately. For charging stations in shared parking spots, the systems notify users before the charge session ends and when it ends to incentivize them moving their car for another user.

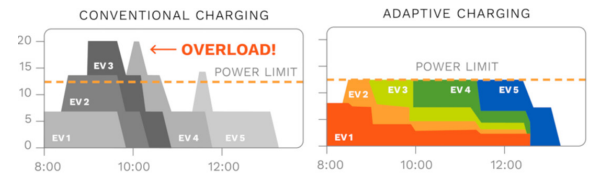
**Electrical Infrastructure Cost:** Systems manage electricity usage at circuit, panel, and/or transformer level to maximize usage of available electrical capacity before infrastructure upgrades are needed

**Charging Station Cost:** Systems use low-cost non-networked EV charging stations as base, and add functionality with software and/or control boards

**Operating Cost:** Low monthly subscription fees. MUD property receives revenue (net after electric and charging network provider fees)

Example VCI-MUD Project Innovative  
Technologies Demonstrations:

### OpConnect, EVmatch, and PowerFlex



Source: PowerFlex

### TECHNOLOGY OVERVIEW

Control of low-cost non-networked charging stations and simple networked charging stations. Some systems manage the power flows among a group of charging stations to allow users to leave on their schedule. Can be used for long-dwelling parking situations (e.g., overnight parking at home) and shorter stays (e.g., short resident charge sessions or visitors). Some systems use a reservation system to schedule charging sessions to maximize charging station utilization/throughput (and incentivize moving vehicles when session ends). Systems have mobile app interface for users to initiate/manage charging sessions. Systems have web-based interface for MUD property manager interface and usage data access.

