

Electric Vehicle Institute: Takoma Park Community Center



Takoma Park, Maryland

Property Profile

Takoma Park is in Montgomery County, Maryland on the border with the District of Columbia. The Takoma station on the Washington Metro Red Line provides service to Silver Spring and Washington D.C. The Takoma Park Community Center is located about three-quarters of a mile from the Takoma Metro station and serves as a charging hub for the community.

There are three 7.2 kW Alternating Current (AC) Level 2 charging stations and one 36 kW Direct Current Fast Charger (DCFC), owned and operated by the Electric Vehicle Institute (EVI). One AC Level 2 charging station is located near the DCFC, and two additional AC Level 2 charging stations are located on the other side of the community basketball court (Figure 1). The AC Level 2 charging is limited to four hours. The AC Level 2 parking spaces are not reserved for electric vehicle (EV) use only, so may be unavailable for charging. The DCFC space is dedicated to EVs.



Figure 1, EVI AC Level 2 charging stations in-use (Source: PlugShare)

The Takoma Park Community Center building also houses the police department and another city office, adjacent to a city library and park. Nearby multi-unit dwellings (MUDs) with residents near the EVI charging stations at the Takoma Park Community Center are: 7610 Maple Apartments, Parkview Tower Apartments, The Deauville, Edinburgh House Apartments, The Takoma Apartments, and Sherwood Condominiums. In total, there are more than 10 large MUD properties representing more than 1,000 units within a half a mile of the station.

Charging Barriers

The City of Takoma Park sought to provide charging that could serve residents and visitors. Although these stations were not intentionally planned as MUD-serving, their central location made them attractive to MUD residents.

Technology Solution Summary

Electric Vehicle Institute (<http://www.ev-institute.com/>) operates a network of public access charging stations (AC Level 2 and DCFC) mostly in the Mid-Atlantic region. The charging stations themselves are standard charging stations. Charging sessions at EVI charging stations are initiated simply by paying with a debit or credit card. No mobile app is needed. EVI uses data collection and analytics to determine when charging station usage is high enough to justify the installation of more charging stations.

EVI's innovative MUD-resident supporting approach is based on partnering with public/commercial properties to install charging infrastructure that supports both the host and nearby MUD residents. For example, the Takoma Park Community Center facility is used during the day for public and city vehicle charging. But in the late afternoon through early morning, it is easily accessible to more than 10 large MUD properties within a half a mile.

Charging Analysis

EVI staff classified the provide charging sessions as MUD or non-MUD based on billing data analysis that indicated a nearby residential address. Out of 515 sessions, 390 were identified as MUD sessions, and 125 as non-MUD, showing usage by nearby residents. MUD residents received a greater amount of energy on the AC Level 2 charging stations than other users, approximately 16 kilowatt-hours (kWh) per session vs. 10 kWh per session (Figure 2). DC fast charging sessions saw similar energy use between MUD and non-MUD users.

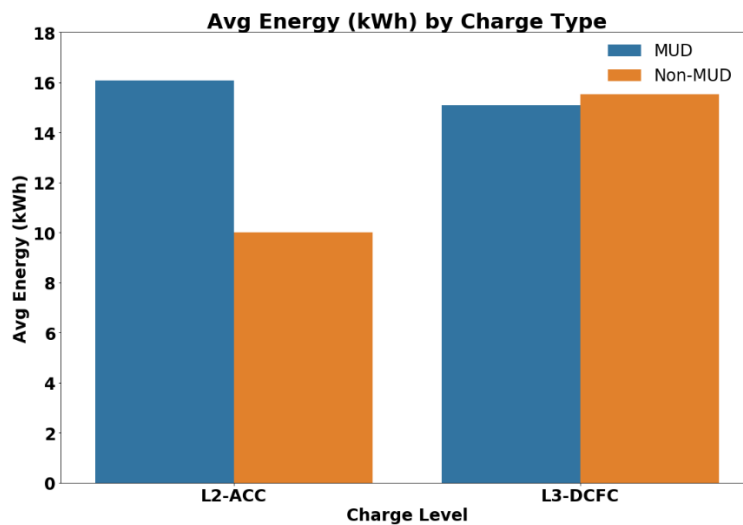


Figure 2: Average energy dispensed during an average charging session by charge level and MUD status

Based on the MUD identifier, the majority of DCFC sessions were MUD residents (Figure 3).

Looking only at MUD users, we can see a wide range of session lengths and energy dispensed. The greatest number of AC Level 2 sessions generally under four (4) hours with about 20 kWh of electricity. DCFC sessions were all under one hour with up to 40 kWh of electricity. Just under 10% of the AC Level 2 charging station sessions were overnight.

Figure 4 and Figure 5 illustrates that shorter sessions occur more frequently among non-MUD users; however, MUD residents are routinely using the station for longer durations. This implies that MUD residents are more likely to use this station, in comparison to non-MUD users, when they need to charge for more than two hours.

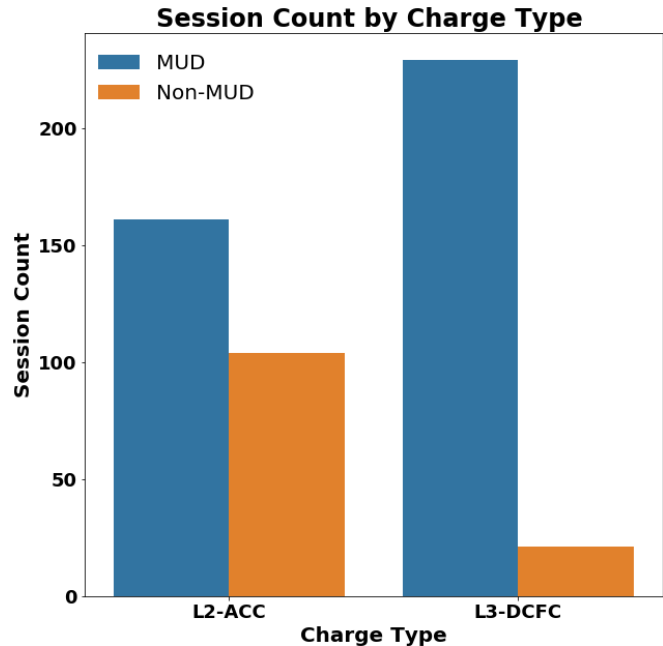


Figure 3. Session count by charge type and MUD status

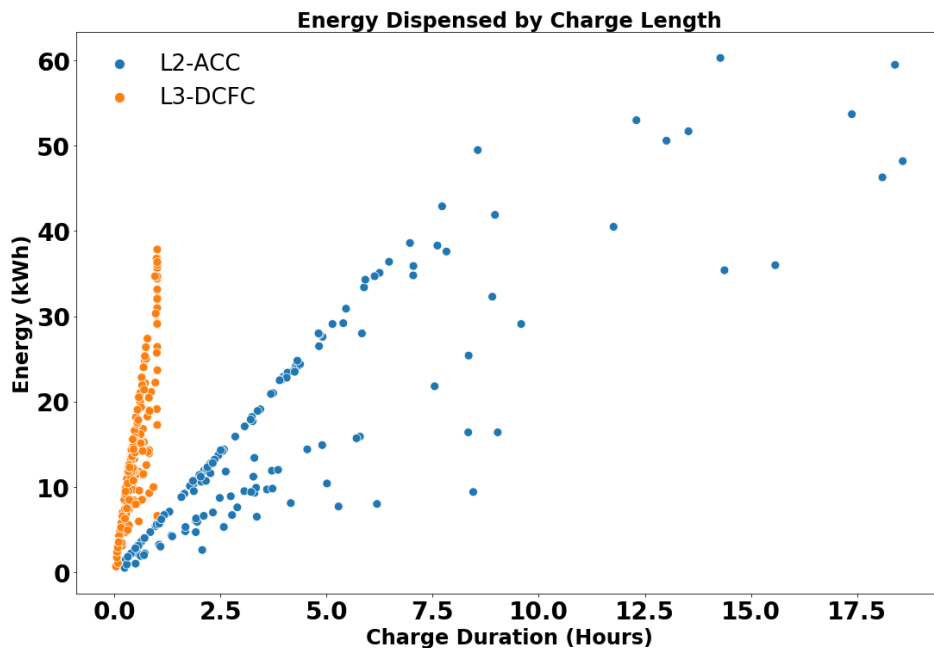


Figure 4. Energy dispensed by charge duration and charging level

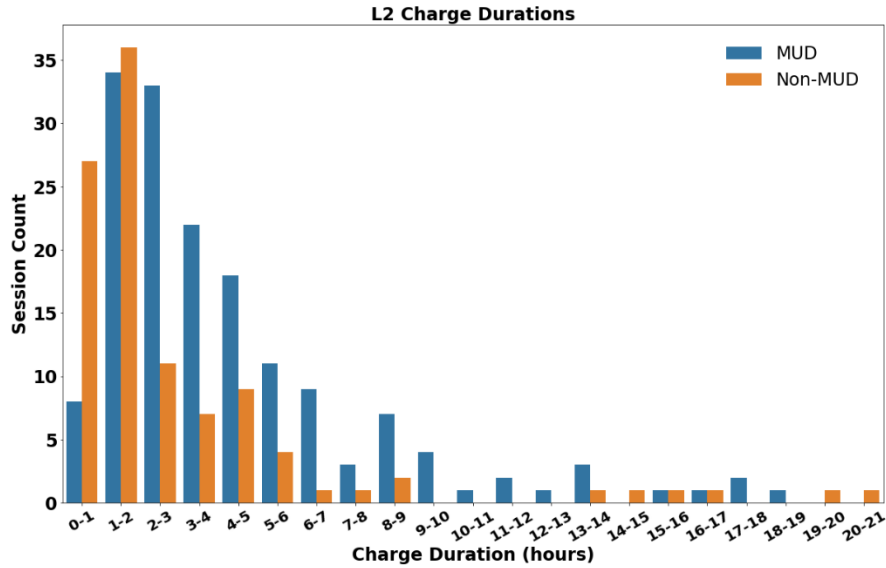


Figure 5: Distribution of AC Level 2 charge durations based on MUD status

Business Case Analysis

As an off-MUD property approach, EVI covers all costs associated with installing and operating the charging stations. There are no cost impacts to nearby MUD properties. Usage fees shown below include both a connection fee and a per-minute fee.

- AC Level 2 – \$1.25 connection fee + \$0.08 per minute
- DCFC – \$2.50 connection fee + \$0.20 per minute