Electric Vehicle Institute: RS Automotive

Takoma Park, Maryland

Property Profile

RS Automotive (www.RSAutomotive.com) is a former gas station that was re-envisioned as an electric vehicle (EV) charging hub located in Takoma Park, Maryland, near the District of Columbia border. The station is near the Washington Metro Red Line that provides rail service to Silver Spring and Washington DC.

The location is on a major street used by both local multi-unit dwelling (MUD) residents and other drivers (MUD residents and not) on their daily commute. Rather than upgrade aging gasoline pumps, RS Automotive's owners became the first in the nation to remove the gas pumps and replace them with EV charging stations. The site owners continue to offer vehicle maintenance and repair services at the collocated service garage.

Charging Barriers

The service stations owners sought to provide a traditional service station experience, with Direct Current Fast Chargers (DCFCs) in place of gasoline pumps on a "fuel island" and Alternating Current (AC) Level 2 charging stations in an adjacent parking area. The waiting room/shop was upgraded to provide a comfortable waiting experience while cars are charging, but the intent was to attract drivers from nearby roads, including local EV taxis.

Technology Solution Summary

Electric Vehicle Institute (EVI) (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 stations themselves are standard charging stations. Charging sessions at EVI charging stations are initiated simply by paying with a debit/credit card. No mobile app is needed.

EVI's innovative MUD-resident supporting approach is a based on partnering with public/commercial properties to install charging infrastructure that supports both the host and nearby MUD residents. The RS Automotive location is innovative because it is an EV charging station located at a former gas station - the first gasoline station to EV charging station conversion in the United States. The RS Automotive site has four 50 kW DCFC charging stations and two (2) 7.6 kW Level 2 charging stations (Figure 1). There is an "EV Driver's Lounge" with complimentary coffee, water, and

Figure 1. EVI RS Automotive DCFC (Source: PlugShare)

restrooms, as well as couches, chairs, and televisions. The lounge also has a screen that displays the charging percentages at each station for drivers to monitor their car.

Charging Analysis

Data was provided on nearly 1,200 charging sessions, with about 85% of these sessions by MUD- identified users based on user data analysis done by EVI (Figure 2). DCFC sessions accounted for 80% of the total session counts in the provided data.

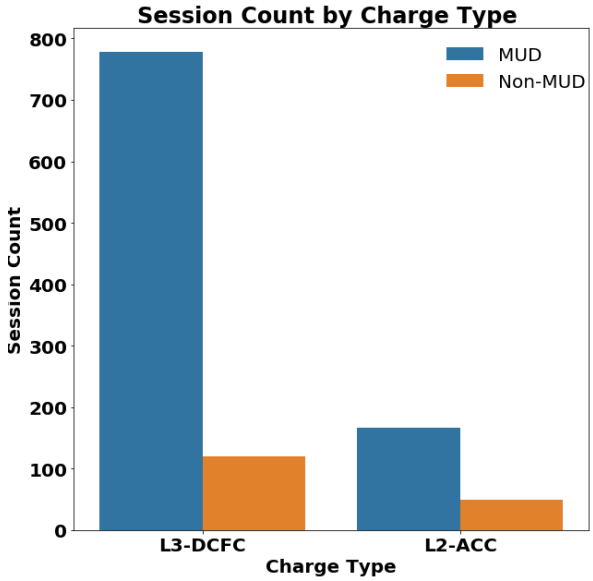

Figure 2: RS Automotive charging session count by charging station type

DCFC sessions were typically under one hour with most lasting 10-20 minutes (Figure 3). However, there were a surprising number of sessions that lasted to 1.5 hours. This represents drivers of longer range EVs receiving a near empty to 100% charge on the 50 kW DCFC.

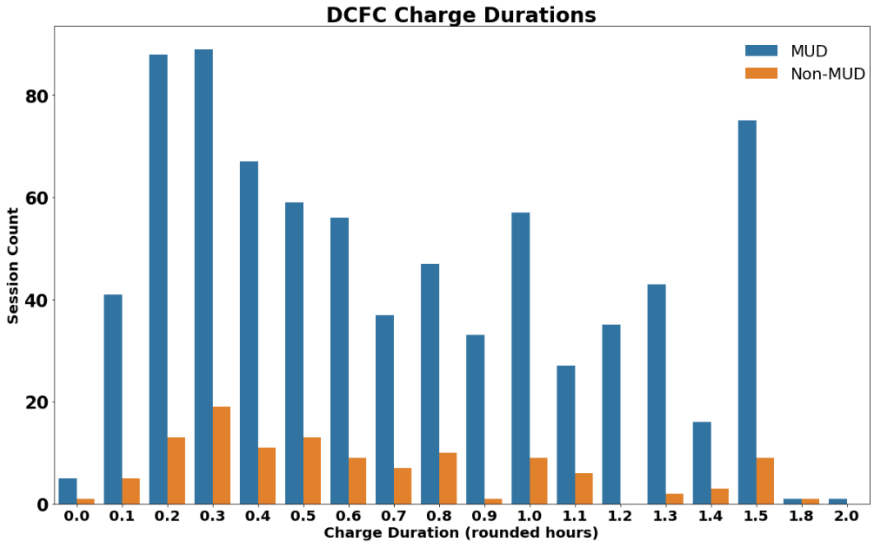

Figure 3: Distribution of DCFC charge durations based on users' MUD designation

The average energy delivery per charge was slightly higher for MUD residents for both DCFC and AC Level 2 sessions (Figure 4).

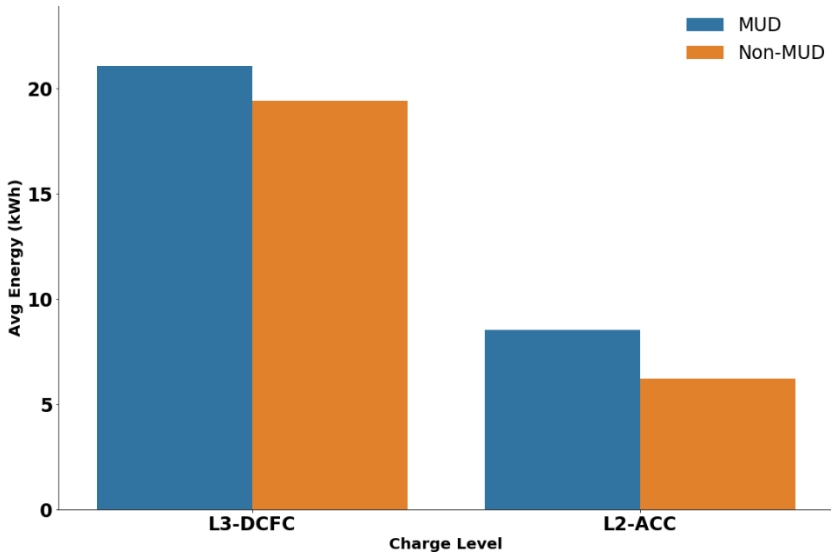

Figure 4: Average energy provided during a session based on users' MUD designation and charge level

Compared to the EVI Takoma Park Community Center site, there were fewer charging session over five hours, however there were 10 overnight charging sessions.

The driver's lounge waiting area is open during normal business hours (7:30 a.m. to 5:00 p.m.), but the charging stations are always available for use.

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 include both a connection fee and a per-minute fee (shown below).

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

RS Automotive generates additional revenue from the goods and automotive maintenance and repair services offered at the station.