



Electric Vehicle Charging Station Pricing Analysis

Mountain View Whisman School District

March 2022

Summary and Recommendations

- Sage was contracted by District in January 2022 to recommend a pricing structure for the EV Charging Stations.
- Engie is installing 12 EVBox BusinessLine Charging Stations across 10 District sites, with each Station containing two ports (total 24 ports).
- The District intends to offer EV charging free of cost to employees while charging public users a fee on a \$/kWh basis.
- The \$/kWh fee for public users was determined with the following question in mind - if all the users of the charging stations were required to pay, what fee would be required to achieve cost neutrality in operating the stations? Sage determined this cost-neutral fee to be \$0.41/kWh. By comparison, other public charging stations in Mountain View charge an average fee of \$0.30/kWh (based on a sample of 12 paid charging stations).
- The cost-neutral fee is highly dependent on the actual usage of the charging stations and electricity rates. Therefore, it should be revisited and adjusted annually based on actual usage of the station and current electricity rates.
- The pricing analysis was evaluated with Low-Carbon Fuel Standard (LCFS) credits that the District is generating by enabling the displacement of fossil fuel consumption with clean electricity charging. The LCFS program is aimed at reducing carbon emissions in the transportation sector by increasing the use of low-carbon transportation fuels and reducing the use of fossil-based fuels. This is achieved by awarding cash incentives for units of fossil fuel replaced by a low-carbon fuel. The magnitude of the cash incentives depends on the selected low-carbon fuel and fossil fuel being replaced.
- These LCFS credits are available to the District regardless of the chargers being used by employees or the public. The LCFS credit value modeled in the analysis is inclusive of fees for the District to contract a third-party manager to help manage and monetize the LCFS credits.
- Given that the charging is being offered free of cost to employees, the District can expect to incur annual costs to operate these stations with the net cost incurred being dependent on fees paid by public users and LCFS credits (generated and monetized).
- Based on several case studies of employee EV charging, it is common practice to provide free or low-cost charging to employees for the first 1-2 years while charger usage is being established.

Cost-Neutral Fee Estimation

Year-1 Revenue to District		
Charger Energy Fees	$\$0.41/\text{kWh} \times 20,700 \text{ kWh} =$	\$8,500
LCFS Credits	$\$0.12/\text{kWh} \times 20,700 \text{ kWh} =$	\$2,500
<i>Gross Revenue</i>		<i>\$11,000</i>
Year-1 Cost to District		
Charging Electricity Cost	$\$0.16/\text{kWh} \times 20,700 \text{ kWh} =$	\$3,300
EVConnect Cost	$10 \text{ Sites} \times \$745/\text{Site} =$	\$7,500
Credit Card Fee	$3\% \times \text{Charger Energy Fees} =$	\$200
<i>Total Cost</i>		<i>\$11,000</i>
Net Cost to District		\$0

Notes

1. Estimated Energy Use is based on real-world utilization factors for paid chargers located at Municipal venues from the EVWatts project. The actual energy use will likely vary depending on the number of electric vehicles using the charging stations and their battery capacities.
2. Low Carbon Fuel Standard (LCFS) credits are based on current credit pricing and inclusive of fees to contract a third-party manager to manage and monetize credits.
3. Electricity Cost is based on the A10/B10 tariffs for Silicon Valley Clean Energy.
4. EVConnect is the Charge Management System (CMS) that allows for fleet recognition, charging fee management and load management.

Comparable EV Charging Fees in Mountain View

Provider	Address	Cost, \$/kWh
ChargePoint	750 Moffett Boulevard, Mountain View, CA, 94043	\$0.25
ChargePoint	1245 Terra Bella Avenue, Mountain View, CA, 94043	\$0.30
ChargePoint	111 North Rengstorff Avenue, Mountain View, CA, 94043	\$0.37
Blink	203 Ravendale Road, Mountain View, CA, 94043	\$0.59
ChargePoint	101-199 Stierlin Road, Mountain View, CA, 94043	\$0.38
GreenLots	500 West Middlefield Road, Mountain View, CA 94043	\$0.22
ChargePoint	1328 West El Camino Real, Mountain View, CA, 94040	\$0.25
ChargePoint	1245 Terra Bella Avenue, Mountain View, CA, 94043	\$0.30
ChargePoint	2270 El Camino Real, Mountain View, CA, 94040	\$0.21
ChargePoint	3700 Middlefield Road, Palo Alto, CA, 94303	\$0.23
City of Mountain View	Civic Center Garage, Community Center, California & Bryant Garage	\$0.20

Notes

1. Average EV Charging Fees at other sample Charging Stations in Mountain View = \$0.30/kWh

Reference Slides

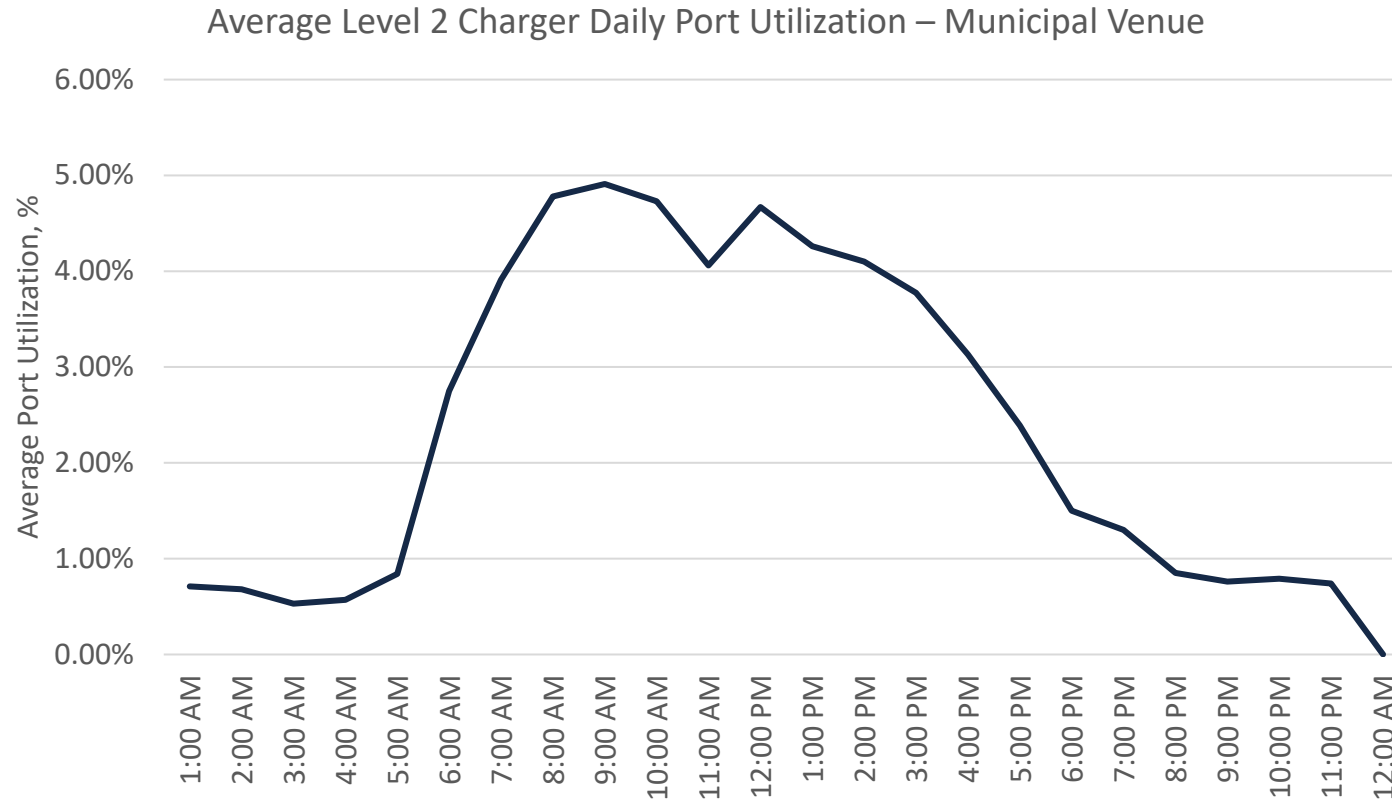
Analysis Assumptions

Assumption	Value
Silicon Valley Clean Energy (SVCE) Tariff	A10/B10
Current Avg. Electricity Rate	\$0.16/kWh
Annual Charge Management System (CMS) Fees	\$745/Site
Total No. of Ports at 10 Sites	24
EV Charger Power Output/Port (32A, 208V)	6.7 kW
Year-1 Total Annual EV Charging Consumption	20,700 kWh
Credit Card Transaction Fee	3%
Business Day Usage, Port Utilization	EVWatts Data
Weekend/Holiday Usage, Port Utilization	0%
LCFS Credit Value	\$142/credit
LCFS Management Cost	25% of LCFS Revenue

LCFS Modeling

1. Sage assumed that the project would utilize the Zero-CI Electricity pathway from the LCFS pathway options. This pathway is available when replacing fossil fuel with electricity from zero-emission sources such as solar PV and wind. This pathway has a higher LCFS value (~20%) compared to if the EV's were charged from the grid instead.
2. This pathway allows the use of Renewable Energy Certificates (RECs) generated from an onsite PV system or purchased from the market to meet the Zero-CI pathway requirements with the condition that the RECs be first registered with WREGIS (Western Renewable Energy Generation Information System); and that the RECs must be retired in WREGIS on behalf of the LCFS program on a quarterly basis. The number of RECs that are retired would need to offset the electricity consumed by the EV Trucks. The LCFS analysis assumes RECs from District's solar projects are applied to boost the LCFS Value.

EV Charger Use Estimation Methodology



Methodology

- Sage utilized real-world hourly port utilization data from EVWatts to represent faculty and staff charging behavior.
- Sage then used these hourly port utilization factors with power output per port to establish hourly demand.
- Hourly demand was then extrapolated over the year, accounting for weekends and school holidays when the campuses may be closed, according to the 2022-2023 academic calendar.

Notes

1. This is based on data published by EVWatts. EVWatts is a consortium of public agencies and private organizations organizing and maintain databases of real-world EV charger usage and infrastructure performance.
2. The other filters used to extract the data include Pacific region, Metro Area, Municipal Venue, and Level 2 Charger, and Paid Stations.
3. The above data was used to create daily and annual charge profiles used to estimate total energy use and cost for EV charging. The assumed usage is conservative and does not include weekend or holiday charging.