

Optimizing Placement for Electric Vehicle Charging Stations

To support EV adoption, a Silicon Valley area city needed to evaluate where to locate public charging stations. Building and populating a custom data dashboard made key metrics easy to find and use.

EXECUTIVE SUMMARY

- Silicon Valley city wanted to install public chargers to promote EV adoption.
- Custom dashboard incorporated both trip and traveler demographic information, to support equity goals.
- Metrics helped planners quickly prioritize top locations, then confirm potential for EV mode shift.

Mission: Promote EV Adoption

As part of its Climate Action Plan, this city aimed to support California's environmental goal to have five million EVs on the road by 2030. Planners asked the Siemens ITS Digital Lab and StreetLight Data to help them analyze the EV requirements for zones within city jurisdiction.

This EV data team supported city goals by targeting not simply areas with high traffic density, but other human-centered metrics such as commuter traffic, journey lengths, population income, and multi-family environments.

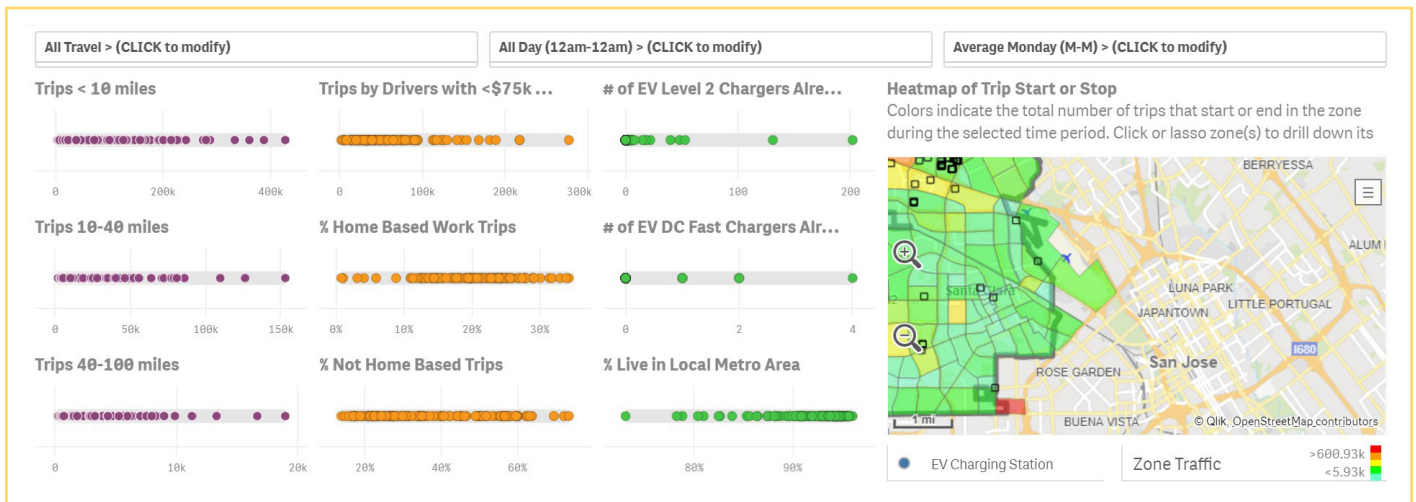
The goal was to fuse this anonymized data, and provide key metrics to help planners identify and prioritize suitable zones for public charging stations that would encourage and support public EV adoption.

"This partnership helps communities develop initiatives to support EV adoption and prioritize EV infrastructure deployment."

LAURA SANCHEZ

SIEMENS





A custom dashboard with slider inputs for each metric allowed planners to prioritize EV charging station locations.

Analysis: Combine and Evaluate Data

The team first identified metrics for evaluating zones for new EV infrastructure. These included personal trip information and traveler demographics, trip length, trip purpose, locations of existing charging stations, and more.

Then, Siemens and StreetLight built a custom dashboard equipped with slider inputs for each metric. Adjusting the sliders to reflect data for different zones, planners were able to identify and prioritize locations for placing new charging stations.

In addition, the analysis identified and removed trips being made by external commuters, so the metrics could be populated by data based only on the city's residents.

Journey

Trip Type Trip Duration

Trip Length Number of Trips

Infrastructure

Charger Location Charger Type

Demographics

Income Education

Family Status

Traveler

Travel Purpose Residency

Temporal

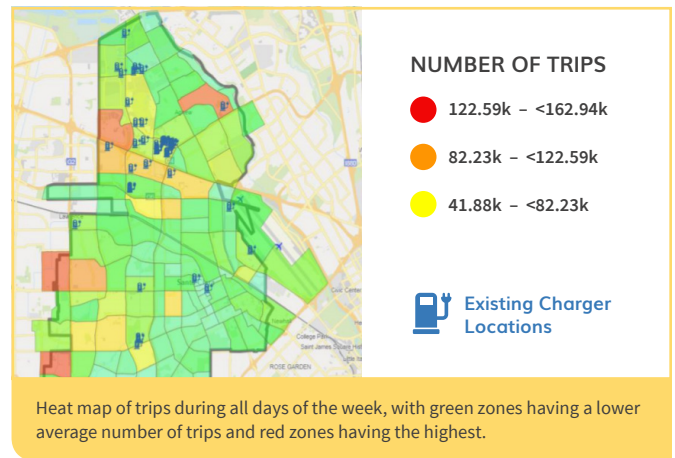
Day of Week Time of Day

Analyzing a variety of anonymized data provided human-centered metrics.

Results: City Prioritizes EV Sites

Once planners identified the top five zones, they dug deeper into the metrics and discovered that most personal vehicle trips within those areas were less than 30 miles.

Analysis also showed that most commercial trips within the city were completed in less than 20 minutes, were shorter than 10 miles, and involved an average speed of under 20 miles per hour.



Heat map of trips during all days of the week, with green zones having a lower average number of trips and red zones having the highest.

This predominance of relatively short-distance trips indicated potential to shift both personal and commercial traffic to EVs. For example, a commercial electric vehicle could complete several short trips on one charge, significantly reducing emissions.

Some zones with a high number of trips already had private EV charging stations in use, further reinforcing potential demand for public access in these areas.