

Electricity Generation and Load Profiles for EV Charging, and related impacts

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Center for
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GHG Emissions by Sector, US (2018)

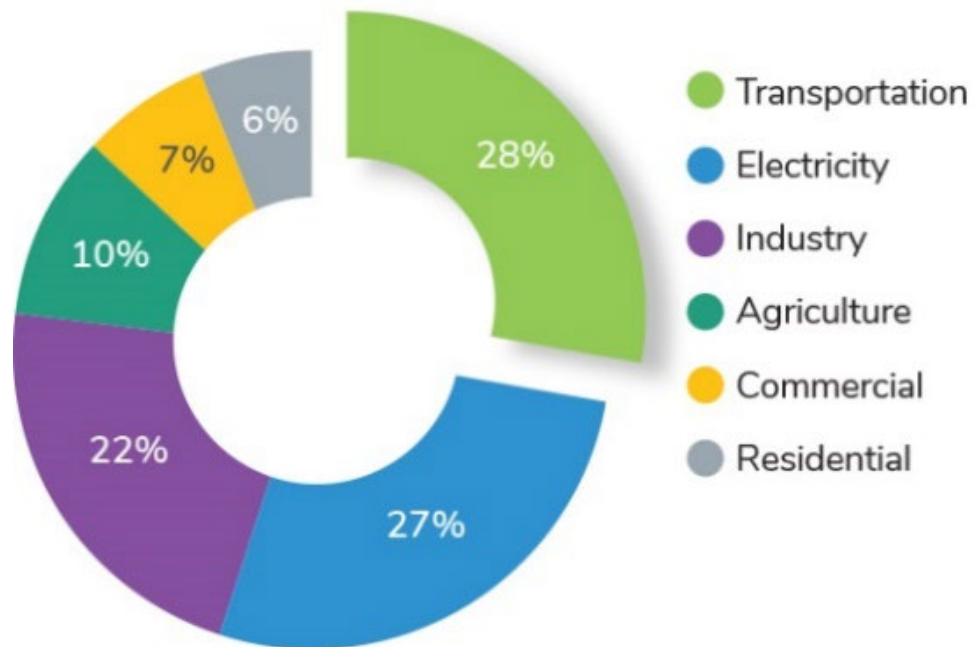


Figure 1. U.S. GHG emissions by sector in 2018.
EPA

Transportation GHG Emissions by Source, US (2018)

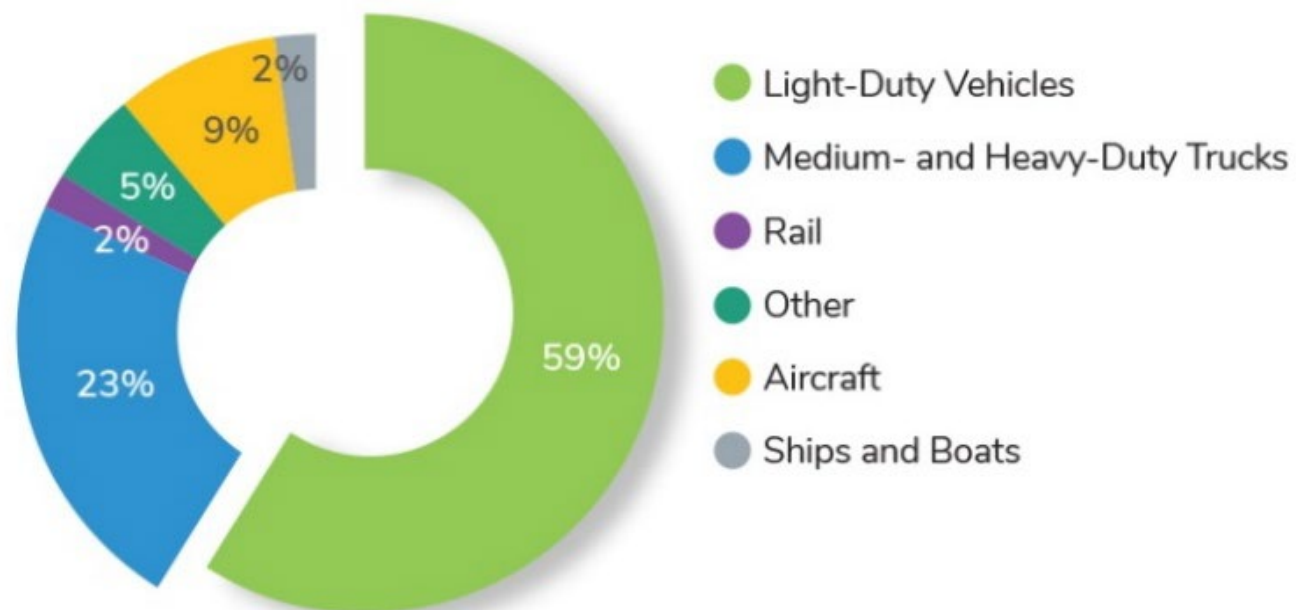
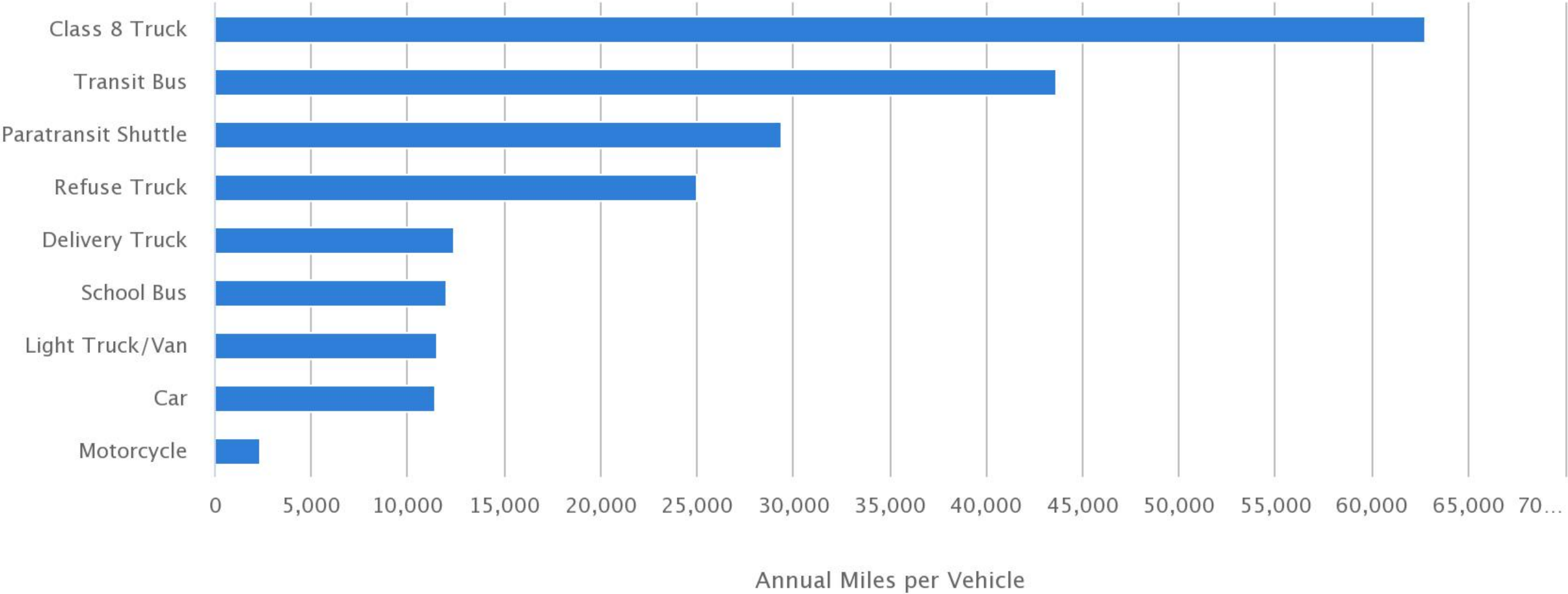


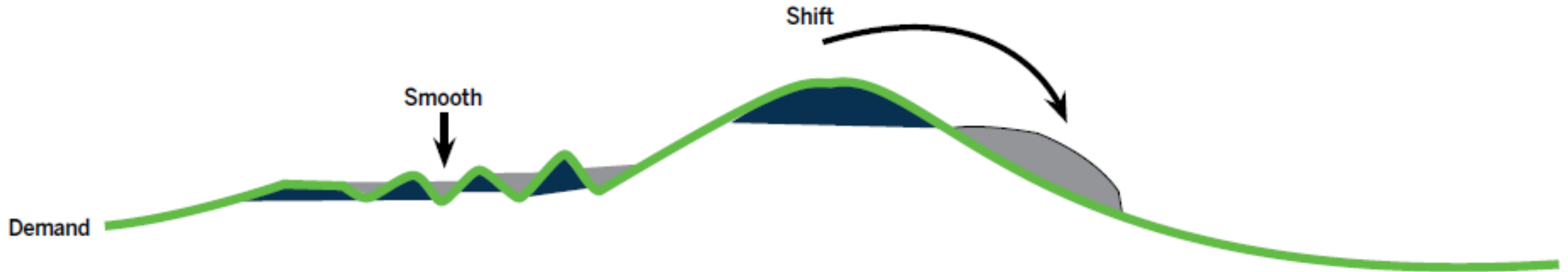
Figure 2. U.S. transportation sector GHG emissions by source in 2018.
EPA

Average Annual Vehicle Miles Traveled by Major Vehicle Category



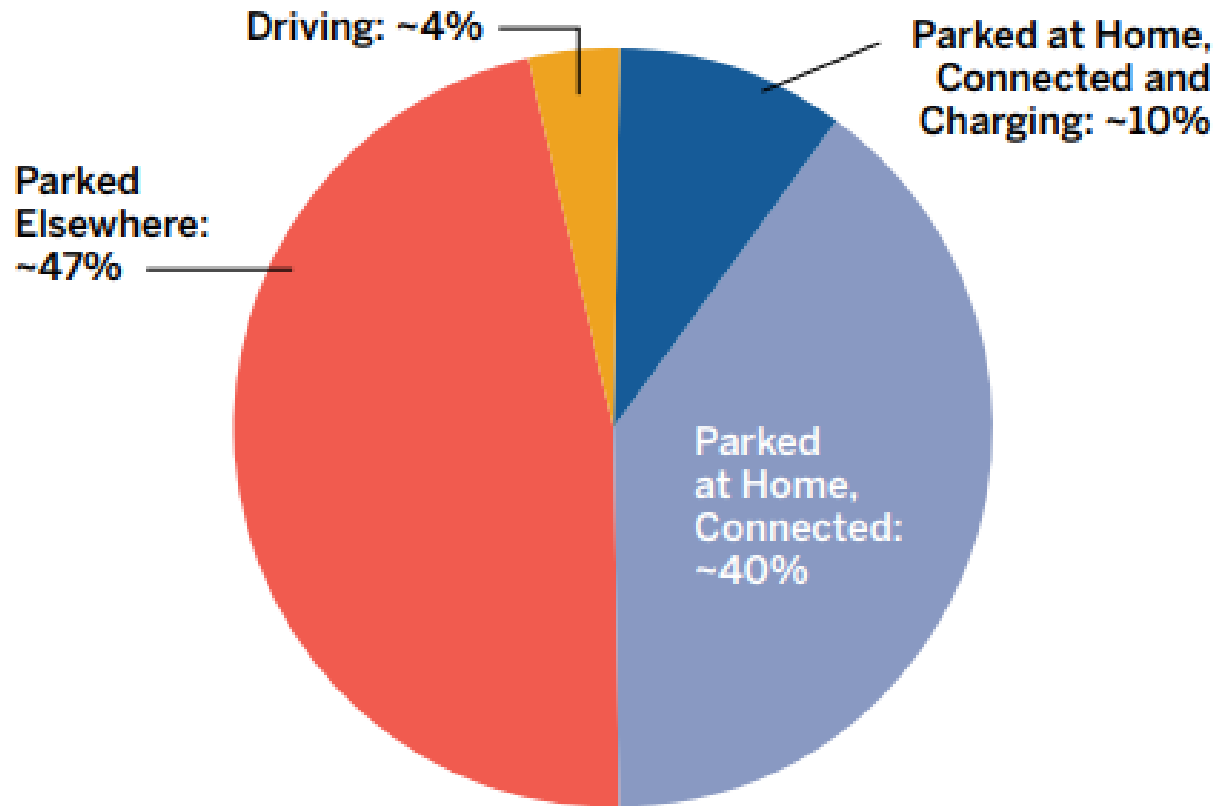
Load Management – Key to Efficient EV Adoption

- 254 million light-duty vehicles in US (BTS, 2019)
- 1 EV ~ 4,600 kWh a year



Source: © E Source, adapted from Integral Analytics Inc.

Maximizing Vehicle Down Time



Controls:

Direct: Controlled Charging

Indirect: Time of Use Rates



EVs - More Than Wheels

- Built in digital controls and communication
- Quickly respond to utility signal
- Low utilization
- Shift charge time
- Change charge rate (ramp up/ramp down)
- Serve as useful tool and asset for grid managers

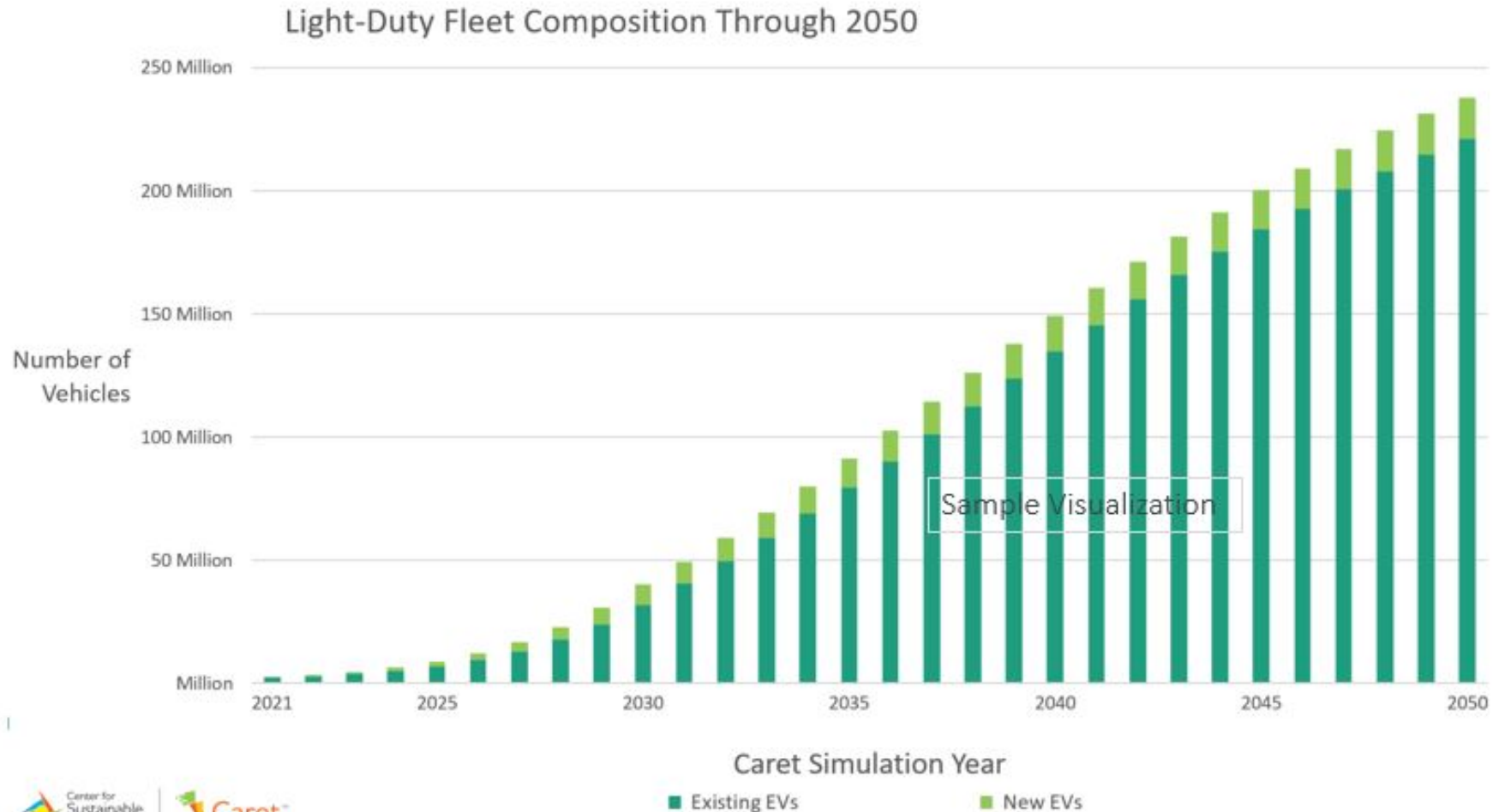


EVs as Revenue Stream

Vehicles	Power Level (kW)	Number of EVs Needed for 1 mW
Tesla models Y, S and X	11.5 kW	88
Chevy, VW, Nissan, Hyundai	6.6 kW	152
Avg. Vehicles registered 1/1/2021 - 8/1/2021	9.66 kW	104

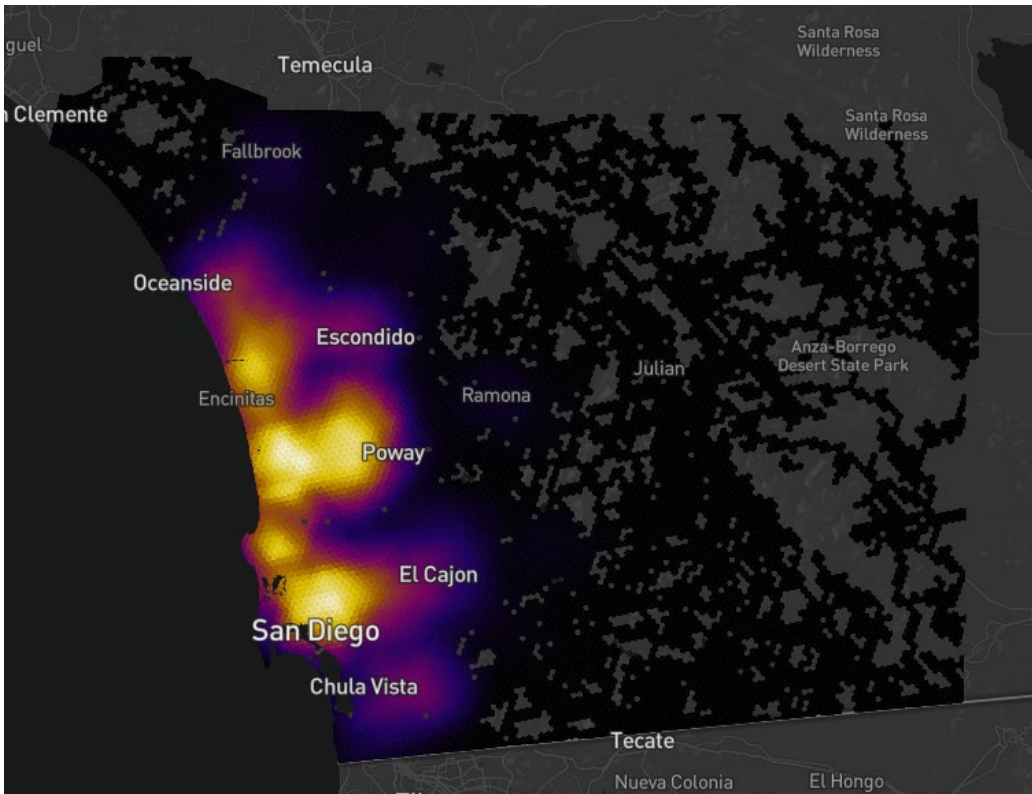


Potential Adoption Scenario



Location Matters

Number of Registered PEV within 4 miles



- Features
 - Dynamic, interactive, multi-layered map-based visualizations at city/county/state scales
 - Assesses current EVI characteristics/status based on available data
 - Location
 - Utilization and traffic patterns
 - Charging capability
 - Population/commercial demographics
 - Learns as new data become available
 - Linked to Caret-EV for projections of future need
 - Recommends EVI amount and siting
 - Feature-driven
 - Machine learning-enhanced



3 Keys

- When
- Where
- How Much



Contact Us

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