



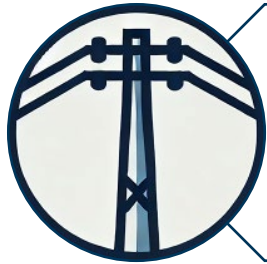
Using Telematics Data to Support Heavy-Duty Fleet Electrification

October 30, 2024

Combining Grid and Transportation Data



Port of L.A. – Telematics
Analysis



Predicting Grid Capacity



Creating Grid Strategies

Overview

- **Case Study: Port of Los Angeles**
 - Using telematics data to identify HD electrification potential
 - Where to place chargers across a geographic area
- **Case Study: Utility Study**
 - Predicting power loads from chargers
- **Ongoing Work**
 - Unlocking grid connection opportunities for charging depots



Port of Los Angeles

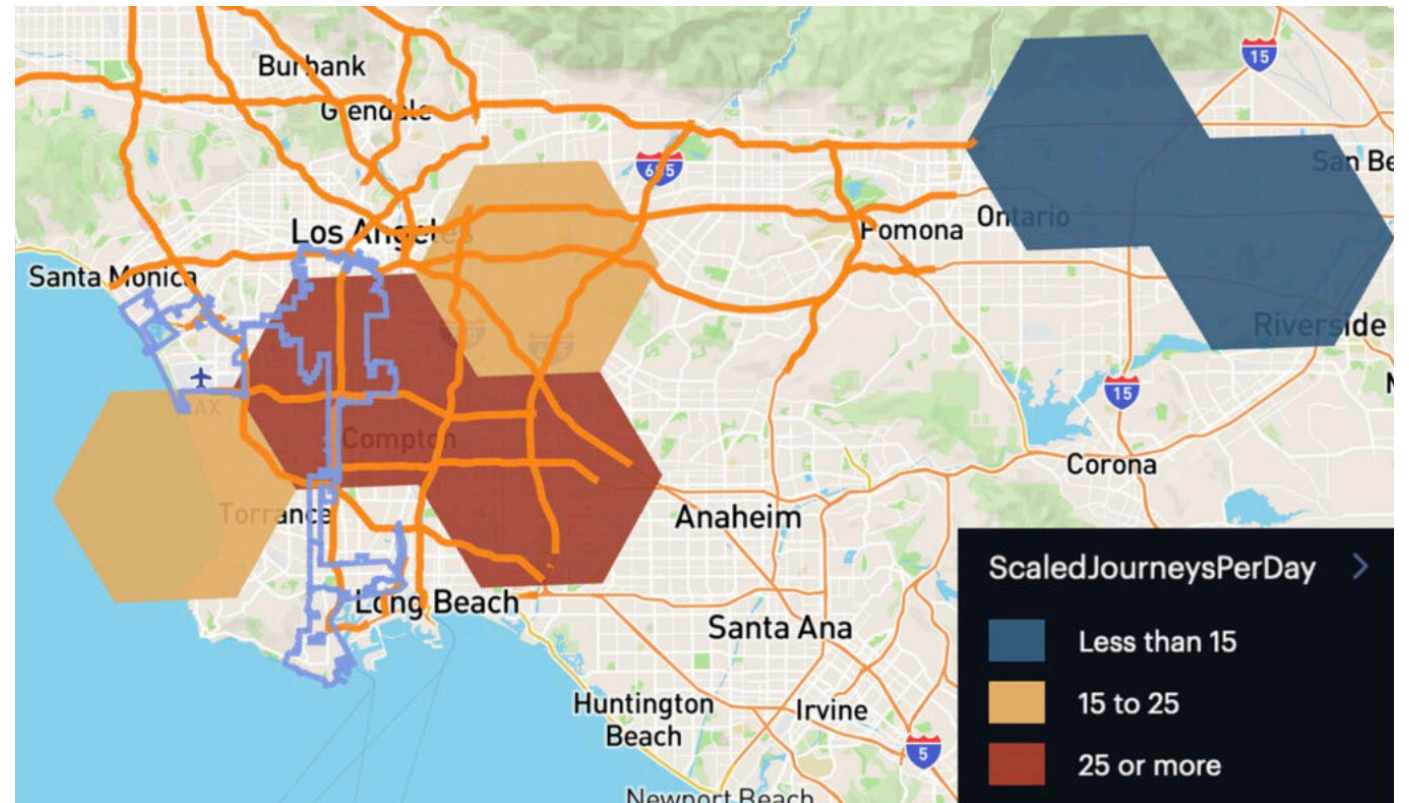
Port is an Epicenter of Pollution & Policy

- Los Angeles County is home to the country's two busiest ports (LA and Long Beach) and consistently ranks as one of the nation's most polluted areas
- Advanced Clean Fleets (ACF) Regulation
 - Once enforced, new drayage registrations must be zero-emission
 - All drayage trucks must be zero-emission by 2035
- Lack of charging availability is a key barrier to implementation



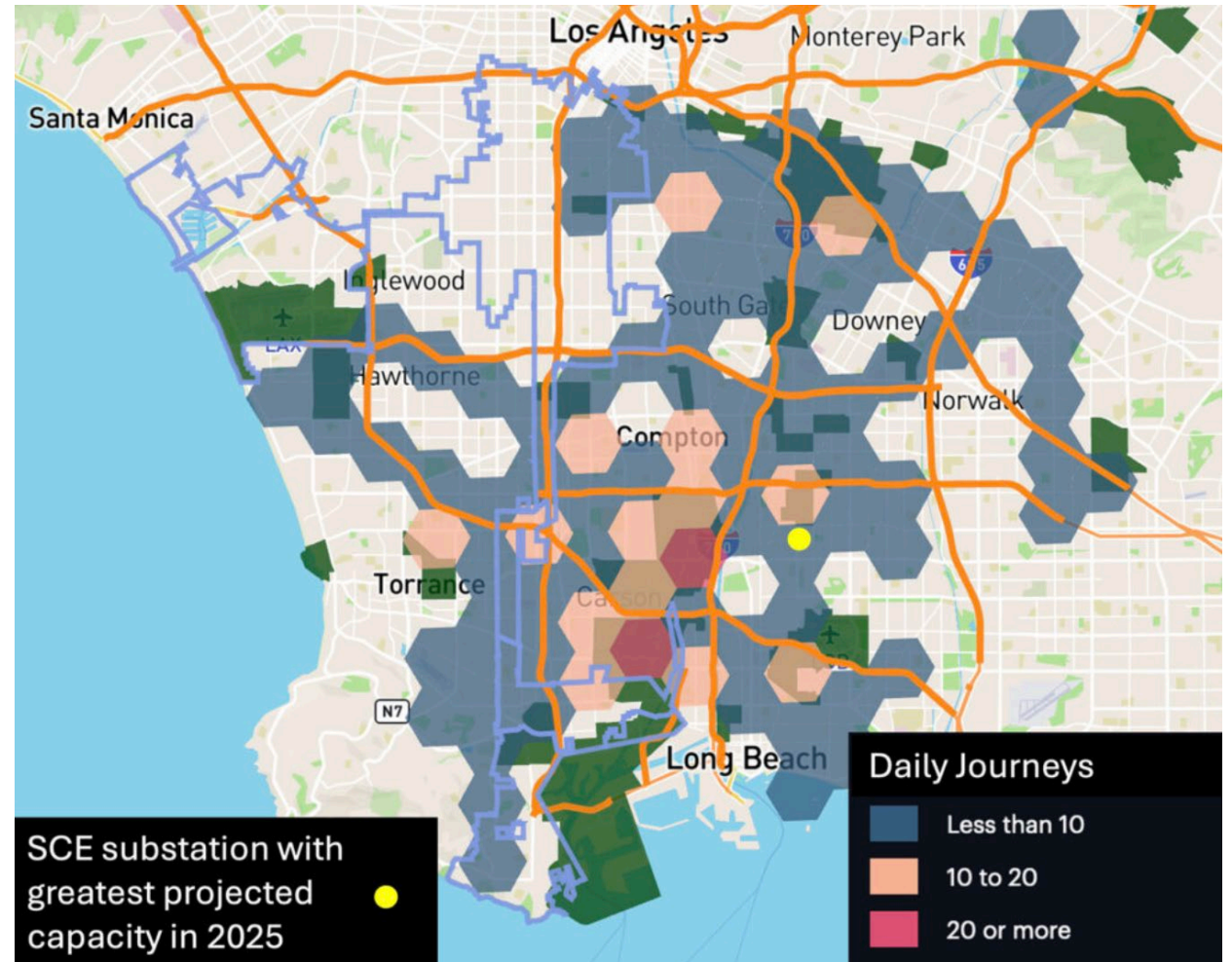
Many drayage destinations are within 25 miles of the Port

- Telematics data from Geotab provides a robust platform for analyzing truck travel
- Current EV models can already run these routes; we just need more charging
- By making chargers publicly available, fleets can help accelerate the electrification of other transportation modes while also saving money



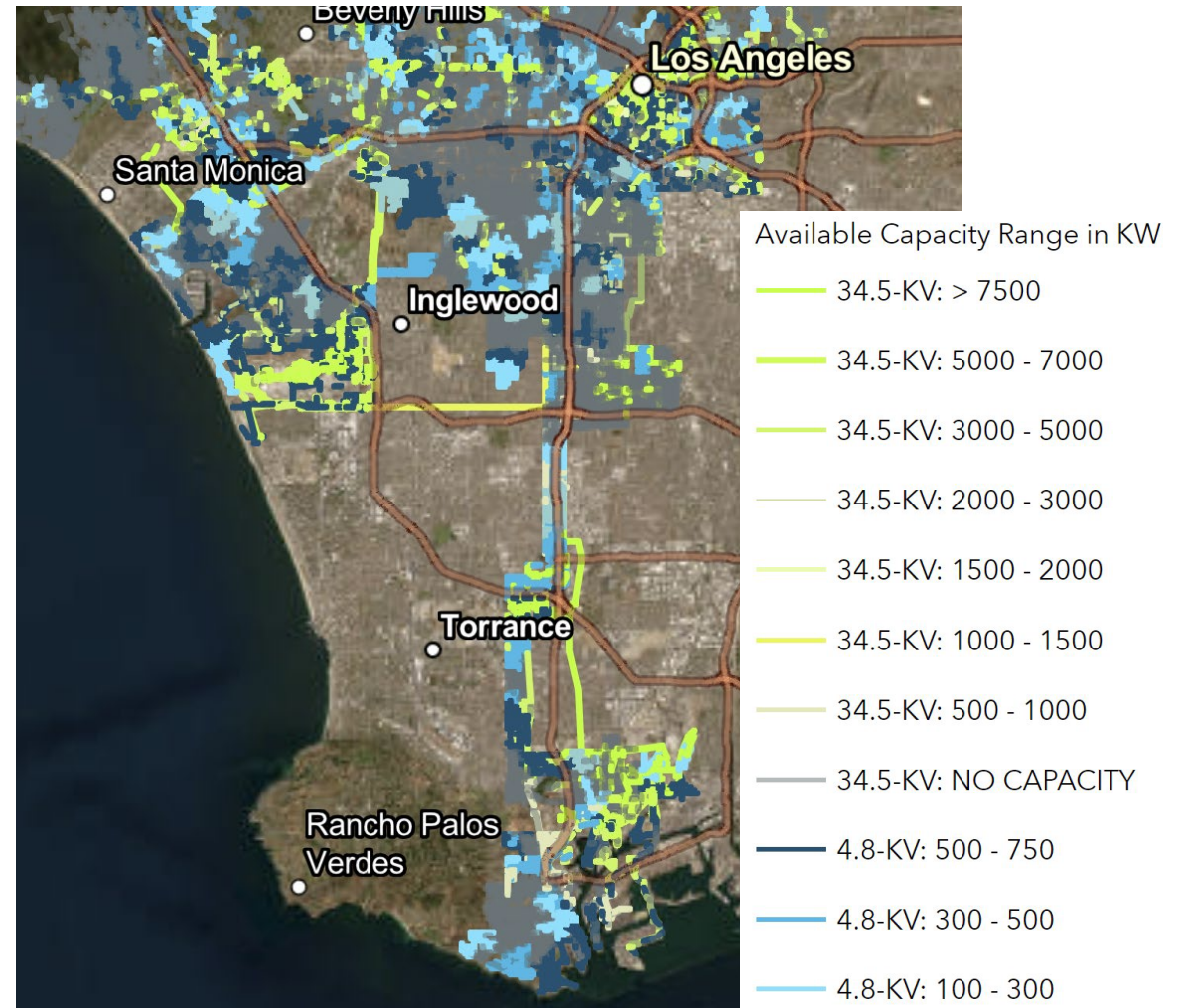
Distributing charger deployment improves fleet electrification opportunities

- Stakeholders can help relieve grid constraints by distributing chargers over a larger area and further away from ports
- Industrial zoning areas (indicated in green) may have more charging capacity than commercial and residential areas
- Industrial zoning may expedite permitting



Utility data can be valuable in selecting sites

- Some utilities, such as LADWP, have publicly available maps on existing grid capacity
- Considering zoning, grid capacity, and truck travel patterns together can be beneficial





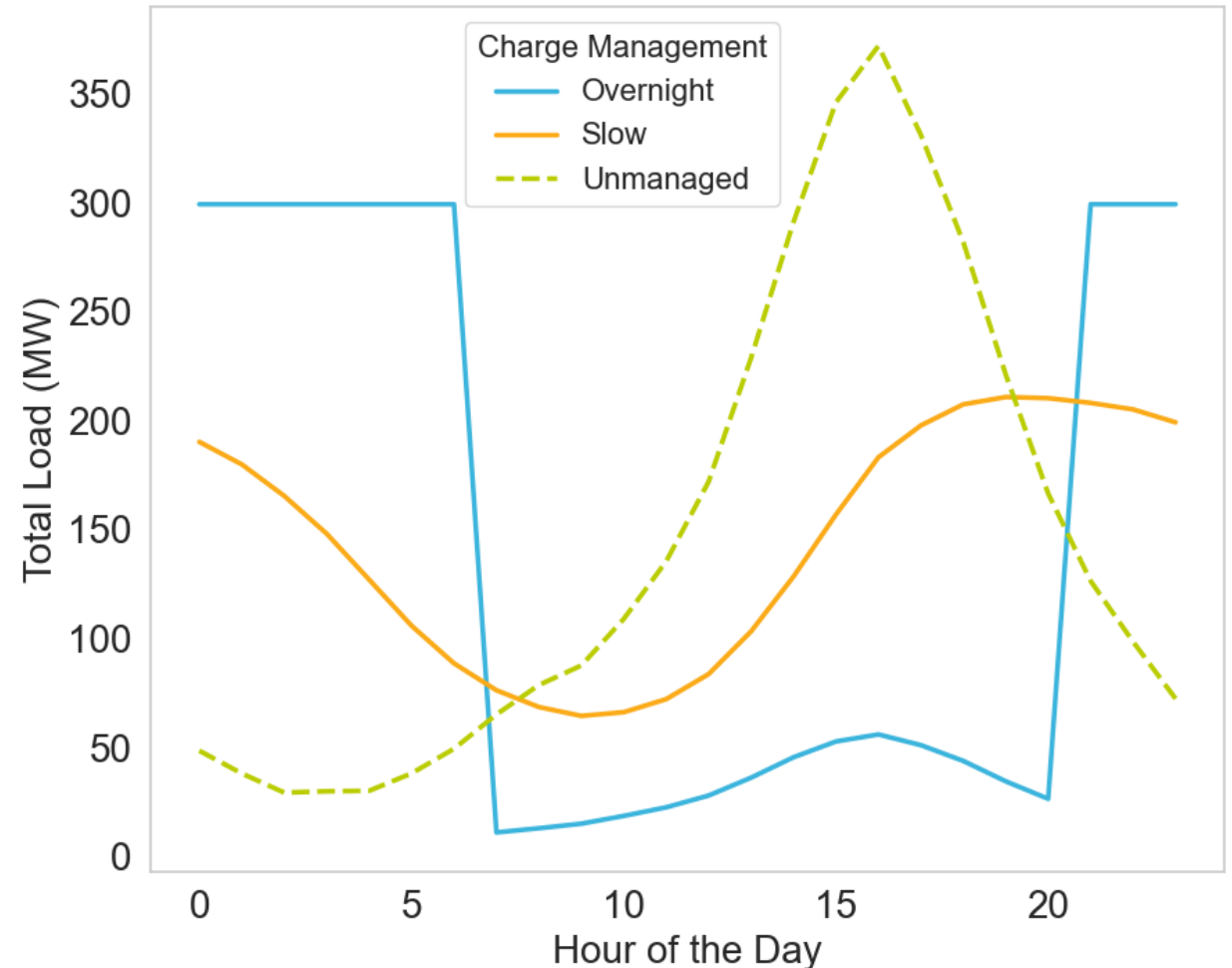
Utility Study

Background

- **Goal: Determine annual power needs for fleet vehicles through 2050**
- **Methodology**
 - Calculate per-vehicle energy and domiciling behavior in each geographic region
 - Forecast the number of EVs across the service territory
 - Combine the two datasets to predict load growth

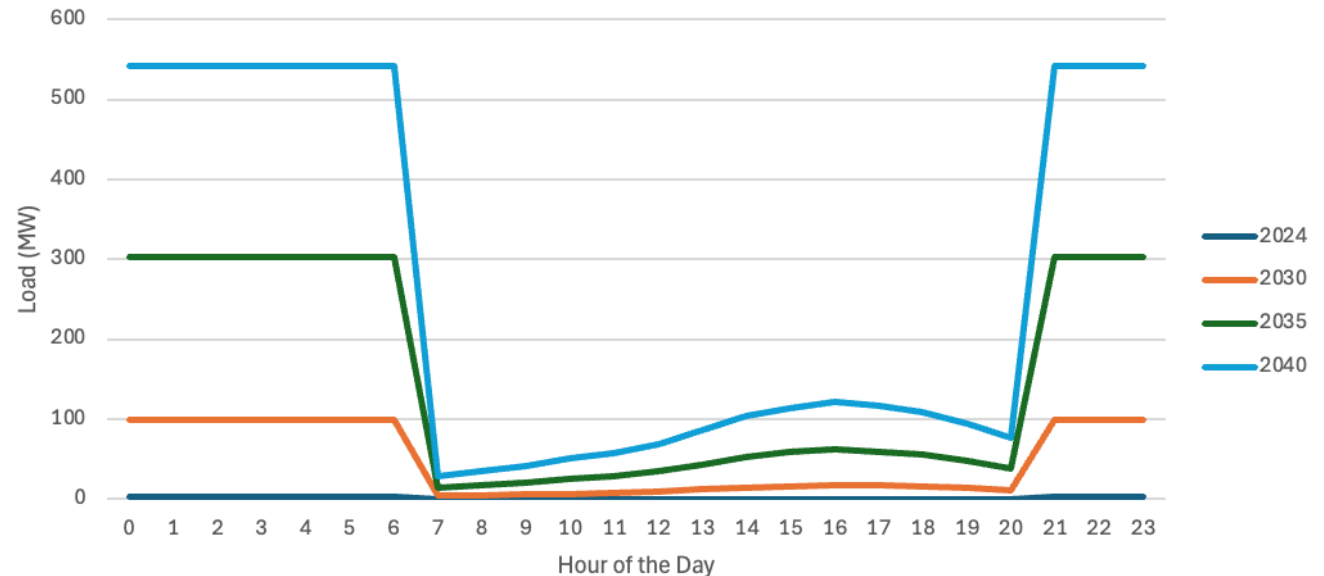
Charge management strategies can be quantified

- Geotab telematics analyzes when vehicles are typically domiciling
- Charge management strategies can be considered in analyzing this data
 - Unmanaged
 - Slow: Minimizes site-wide load
 - Overnight: 80% of demand is shifted to off-peak hours
- Understanding the range of possible behaviors helps determine optimal site planning



Telematics can help predict annual load growth

- If there are expectations surrounding EV adoption, per-vehicle power loads can help forecast future demand
- This type of approach can be applied to sites, zip codes, counties, etc., depending on needs





Unlocking grid connection opportunities for charging depots

Opportunities for Expediting Station Deployment

- **Onsite DERs and Battery Storage Systems**
- **Traditional Managed Charging Strategies**
- **Permitting Reform**
 - Understanding where bottlenecks occur
 - Evaluating AHJ ability to work with new requests
- **Flexible Interconnection Requests**
 - Can utilities speed up requests if on-peak demand is capped at a certain level?

Conclusions

- **Telematics data can be a powerful tool for understanding fleet electrification needs**
 - Where to place chargers
 - How much power those chargers will eventually use
- **Charge management strategies have a significant impact on overall peak power demand**
- **Depot deployment timelines are long, so talk to utilities early**



Thank you!