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Local EV Infrastructure Siting: Research from the UCLA

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Some Objectives

- Siting charging stations to
  - maximize utilization
  - Support TNCs
  - Gap analysis by landuse categories
- Serving Disadvantaged Communities
- Future research
  - TNCs support
  - Incorporating utilization data
  - Evaluating impacts of legal settlements, IOU programs and other investment initiative
Recent Work: Overview

- **2016**
  - Factors Affecting Plug-in Electric Sales in California
  - Overcoming Barriers to Electric Vehicle Charging in Multi-unit Dwellings: A Westside Cities Case Study

- **2017**
  - Design and Implementation of the Enhanced Fleet Modernization Plus-Up Pilot Program
  - Siting Analysis for Plug-in Electric Vehicle Charging Stations in the City of Santa Monica

- **Current**
Coming Research:

**Upcoming**
- Understanding Differences in Growth Across the California Electric Vehicle Charging Station Market: 2010-2017
- Estimating Health Benefits, Comparative Cost-Effectiveness and Distributional Equity from California’s Largest Grassroots Transport-Focused Environmental Justice Initiative in the San Joaquin Valley: Tune In & Tune Up

**Future**
- Identifying the Charging Demand of Electric Rideshare Vehicles
Outline: Examples Santa Monica

- Local growth of PEVs
- Targeting:
  - Workplace charging
  - Commercial Retail Charging
  - Curbside Charging
  - Multi-unit Dwellings
Future research

- TNCs support,
- Incorporating utilization data,
- Evaluating impacts of legal settlements, IOU programs and other investment initiative
- Ultra-fast charging: innovation in the MUD space
Local Plug-in Electric Vehicle Growth
Figure 5. Predicted Cumulative PEV Purchases in Santa Monica (Since December 2010)

Source: IHS Auto
Highly spatially resolved analysis
Figure 6. PEV Registrations by TAZ in the City of Santa Monica


PEV Registrations

- < 50
- 51 - 75
- 76 - 100
- > 100
Figure 7. PEV Destinations between 6AM and 9AM by TAZ in the City of Santa Monica
Targeting Workplace Charging
Figure 9. PEV Destinations between 9AM and 3PM by TAZ in the City of Santa Monica

Figure 11. PEV Peak Morning Destinations (6AM – 9AM) and Number of Employees

Datasources: 12/2010 - 9/2016 PEV New Registration (2017 IHS Automotive); Tier 1 TAZs for the 2012-2035 Regional Transportation Plan (2015 SCAG); 2016 SCAG Regional Travel Demand Model (2016 SCAG); INFOUSA (2015); ArcGIS Online (2017 ESRI). Map prepared by Norman Wong, UCLA Lewis Center for Regional Policy Studies.
Figure 12. Top 25 Workplace Sites that do not Currently Host On-site Charging

Datasources: 9/2016 PEV New Registration (2017 IHS Automotive); Tier 1 TAZs for the 2012-2035 Regional Transportation Plan (2015 SCAG); 2016 SCAG Regional Travel Demand Model (2016 SCAG); 2012 SCAG Land Use (2017 SCAG); ArcGIS Online (2017 ESRI); Top sites generated by the Luskin Center. Map prepared by Norman Wong, UCLA Lewis Center for Regional Policy Studies.
Targeting Commercial/Retail Charging
Figure 13. Commercial Land Uses in the City of Santa Monica

Figure 15. Top 25 Commercial Sites that do not Currently Host On-site Charging

Datasources: 9/2016 PEV New Registration (2017 IHS Automotive); Tier 1 TAZs for the 2012-2035 Regional Transportation Plan (2015 SCAG); 2016 SCAG Regional Travel Demand Model (2016 SCAG); 2012 SCAG Land Use (2017 SCAG); ArcGIS Online (2017 ESRI); Public Lots (City of Santa Monica Open Data Portal); Top sites generated by the Urban Center. Map prepared by Norma...
Targeting Curbside Charging
Figure 16. Meter Locations across the City of Santa Monica

Datasources: 12/2010, 9/2016 PEV New Registration (2017 IHS Automotive); Tier 1 TAIs for the 2012-2035 Regional Transportation Plan (2015 SCAG); 2016 SCAG Regional Travel Demand Model (2016 SCAG); Plugshare Database (2017 Plugshare - Downloaded 5/23/2017); City of Santa Monica Curbside Meters (2017 City of Santa Monica); ArcGIS Online (2017 ESRI). Map prepared by Norman Wong, UCLA Lewis Center for Regional Policy Studies.

PEV Mid-Day Destinations
- < 50
- 51 - 75
- 76 - 100

Commercial Destinations
- Regional Shopping Center
- Retail Centers

Meters
- Level 1: 1 - 2
- Level 2: 3 - 7
- DC: 1 - 2
Targeting Multi-unit Dwellings/Multi-famly
Figure 17. Multi-Unit Residential Land Uses across the City of Santa Monica
