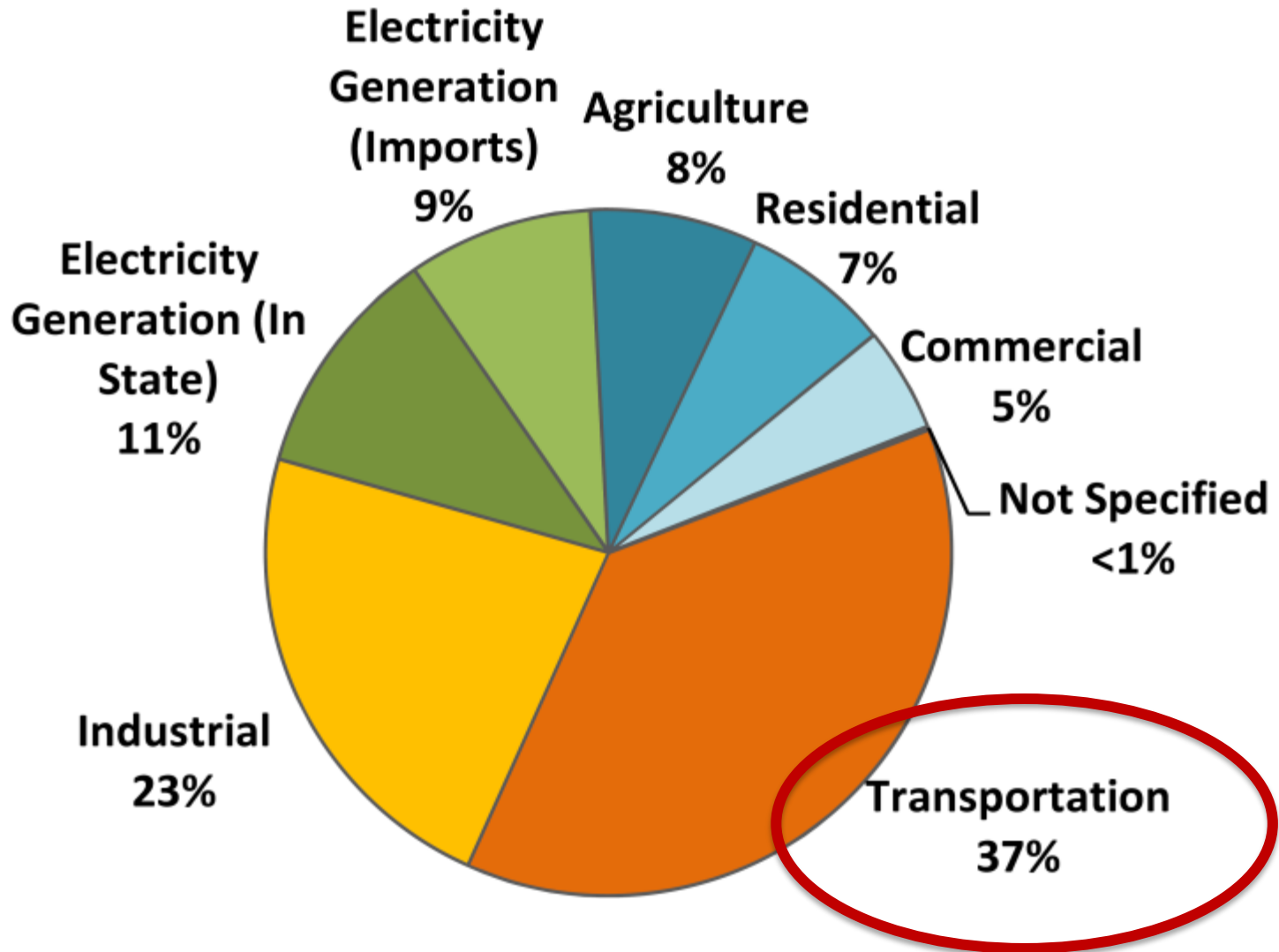


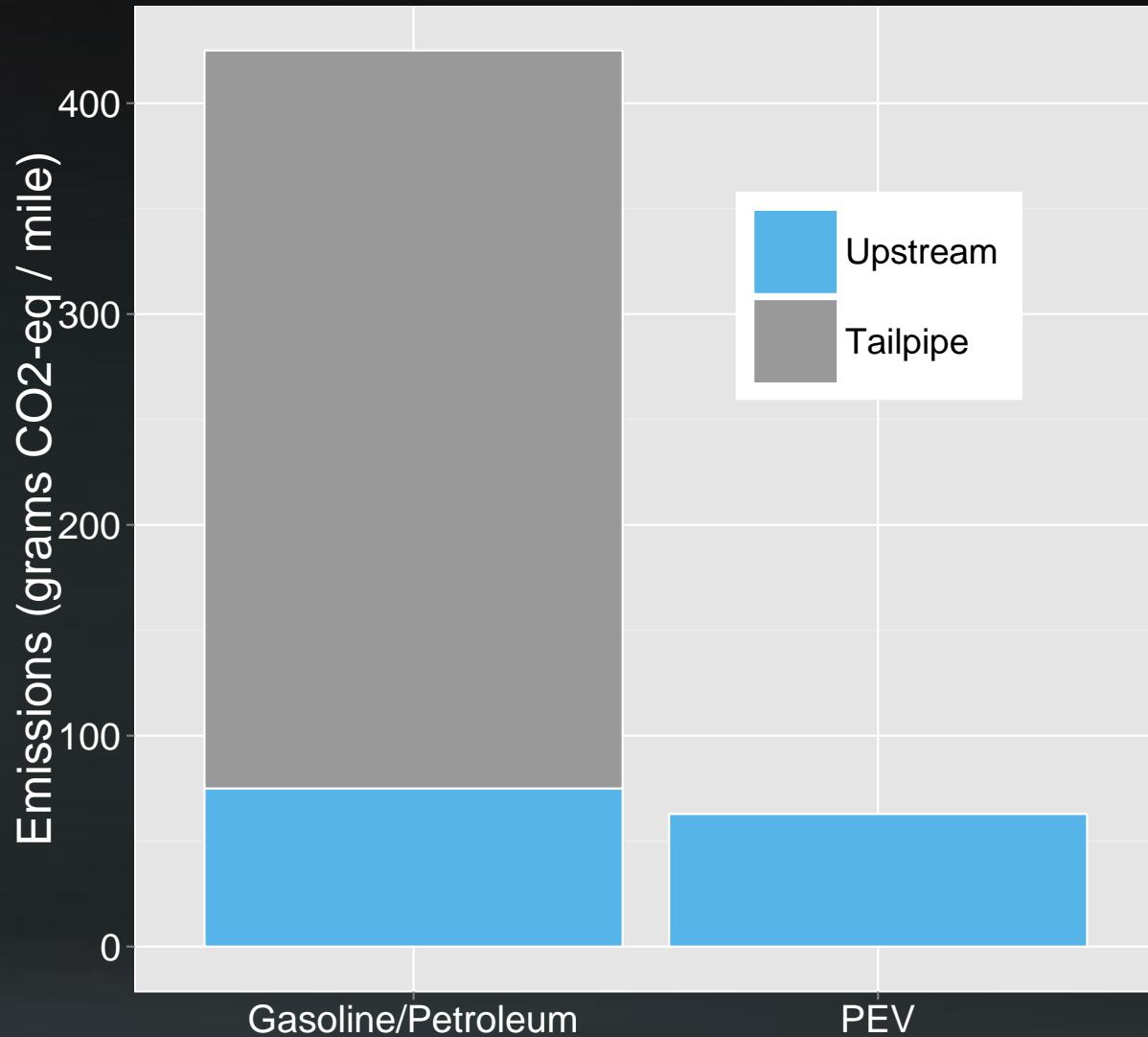
Energy Efficiency and Demand Management in Planning Electric Vehicle Technologies



California's GHG Emissions



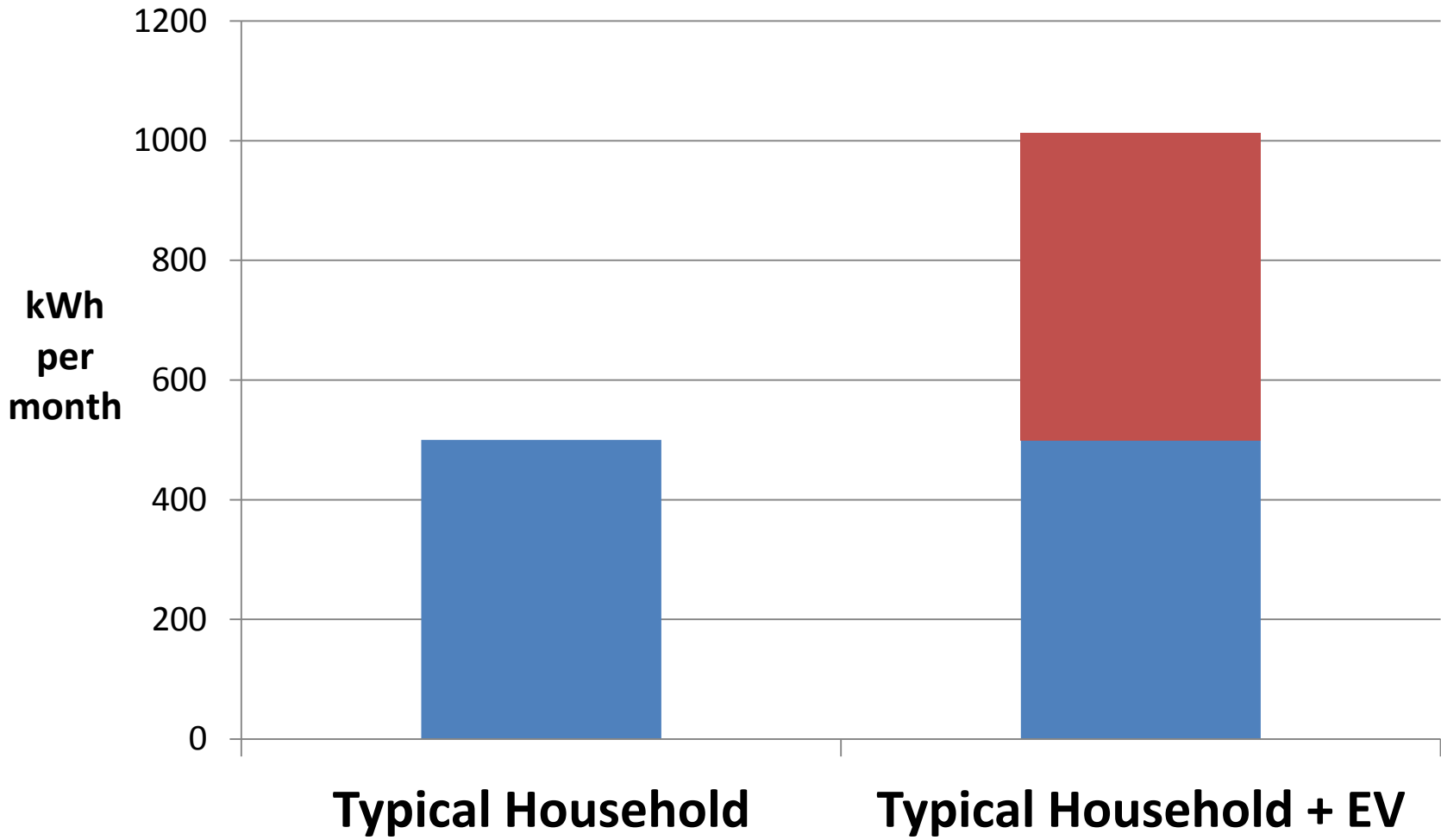
GHG Emissions from Conventional Light Duty Vehicles vs PEVs



**Cars are now
residential &
commercial
plug loads**



Charging a 2015 Volt at home:



- **Joseph Oldam, CALSTART (12 min)**
 - Central Valley Energy Tune-Up Program
- **Raef Porter, SACOG (12 min)**
 - DC Fast Charge Installation Pilot
- **Matthew Marshall, RCEA (12 min)**
 - Regional infrastructure planning and deployment
- **Rick Teebay, LA County ISD (12 min)**
 - Low-carbon Fuel Standard Credits, ADA guidelines
- **Q&A / Panel Discussion (29 min)**



Rural, Regional Public Infrastructure Deployment



REDWOOD COAST
Energy Authority



- **Regional planning**
- **Challenges**
- **Strategies**

Charging Infrastructure Plan

- Created agent-based simulation model
- Sited chargers to minimize delay of simulated drivers



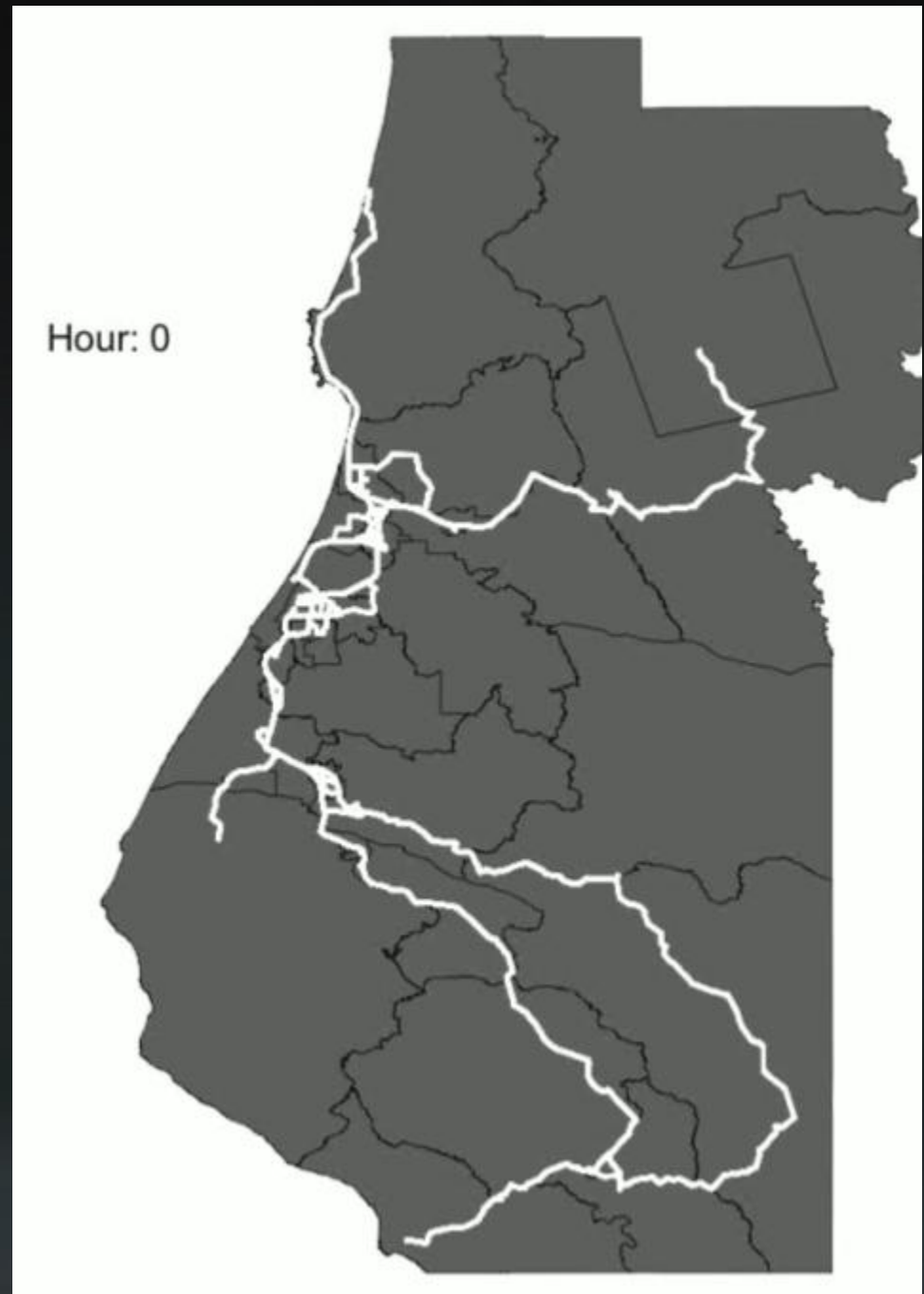
Public Charging Event



Private Charging Event



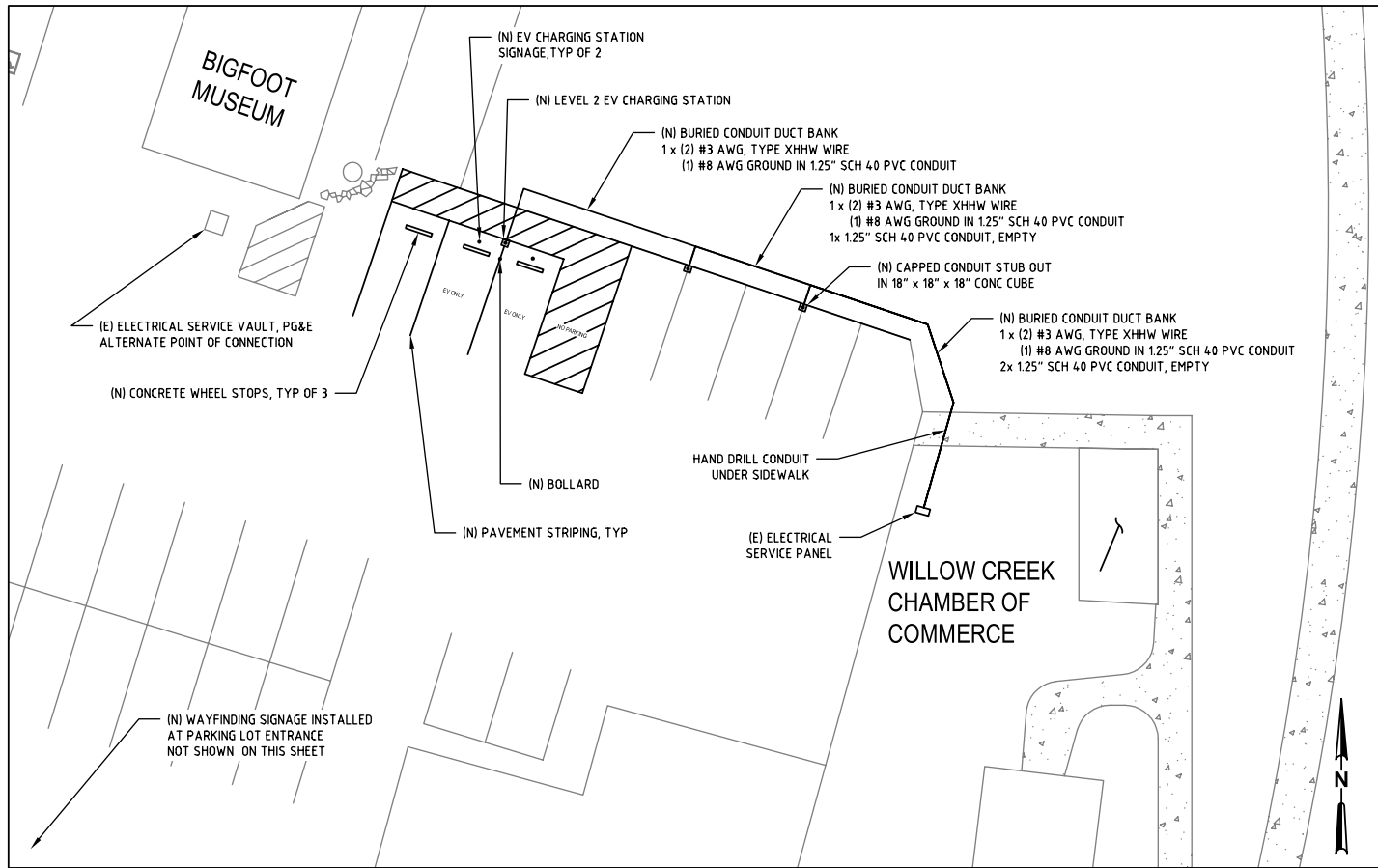
Driver Delay Due to Unavailable Charger



Micro-siting Analysis



Preliminary plans for high-priority sites



WILLOW CREEK
BIGFOOT MUSEUM

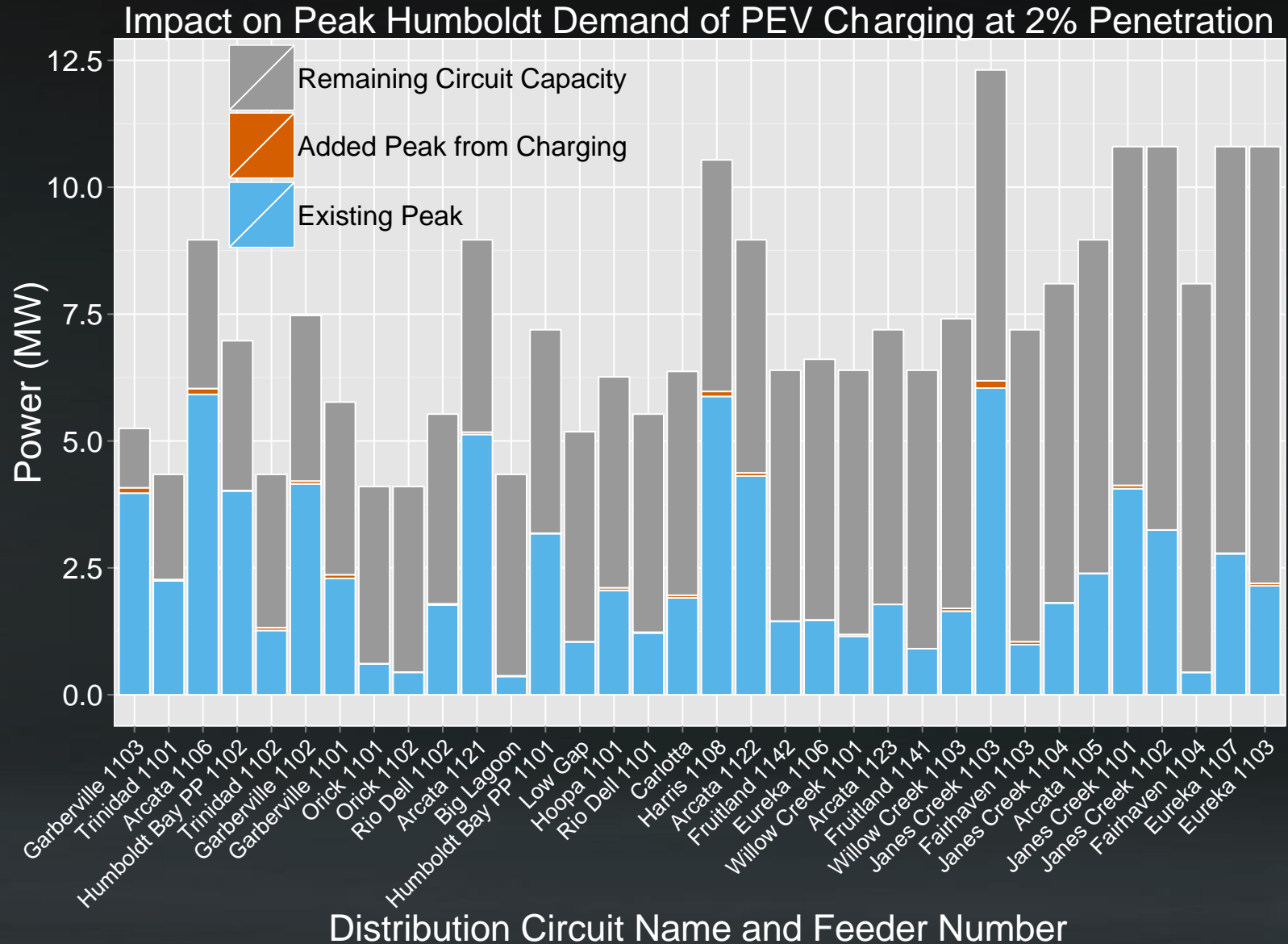
NORTH COAST PEV CHARGING NETWORK
PHASE 1



Job Number
Revision 1
Date 01/28/2014

Figure 4

Distribution infrastructure assessment



Regional Infrastructure Needs

- Around 60 public sites needed to support ~3,000 vehicles (2% penetration)
- Strategic corridor locations for fast charging can be tricky



Rural Infrastructure Challenges

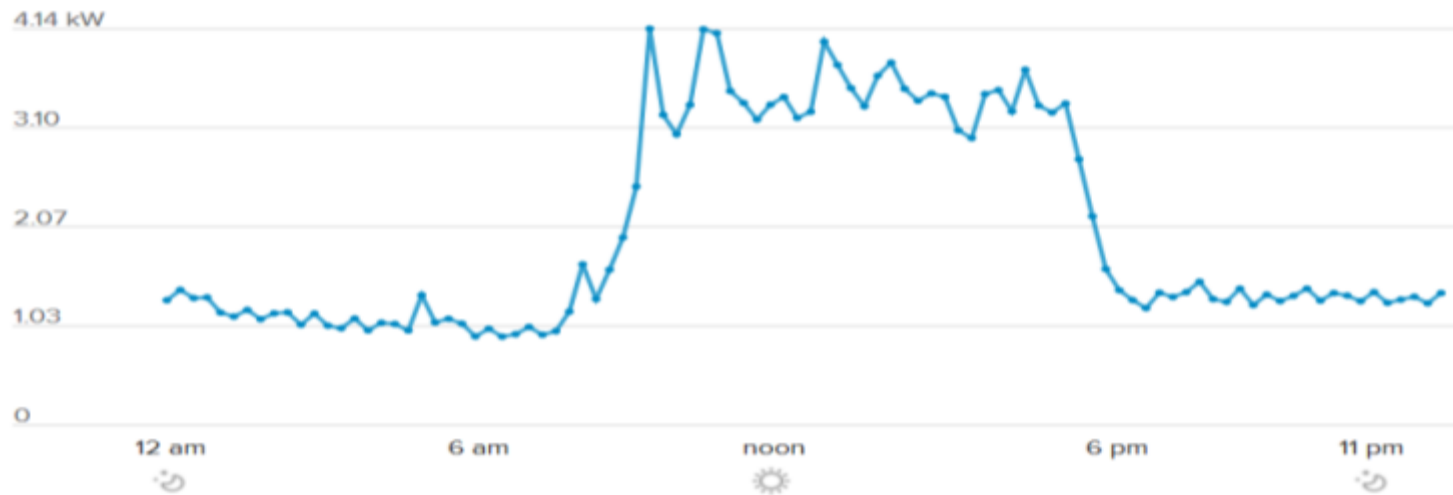
- ADA
- Copper theft
- Cellular network coverage
- Panel capacity on older structures



Usage impacts on site load



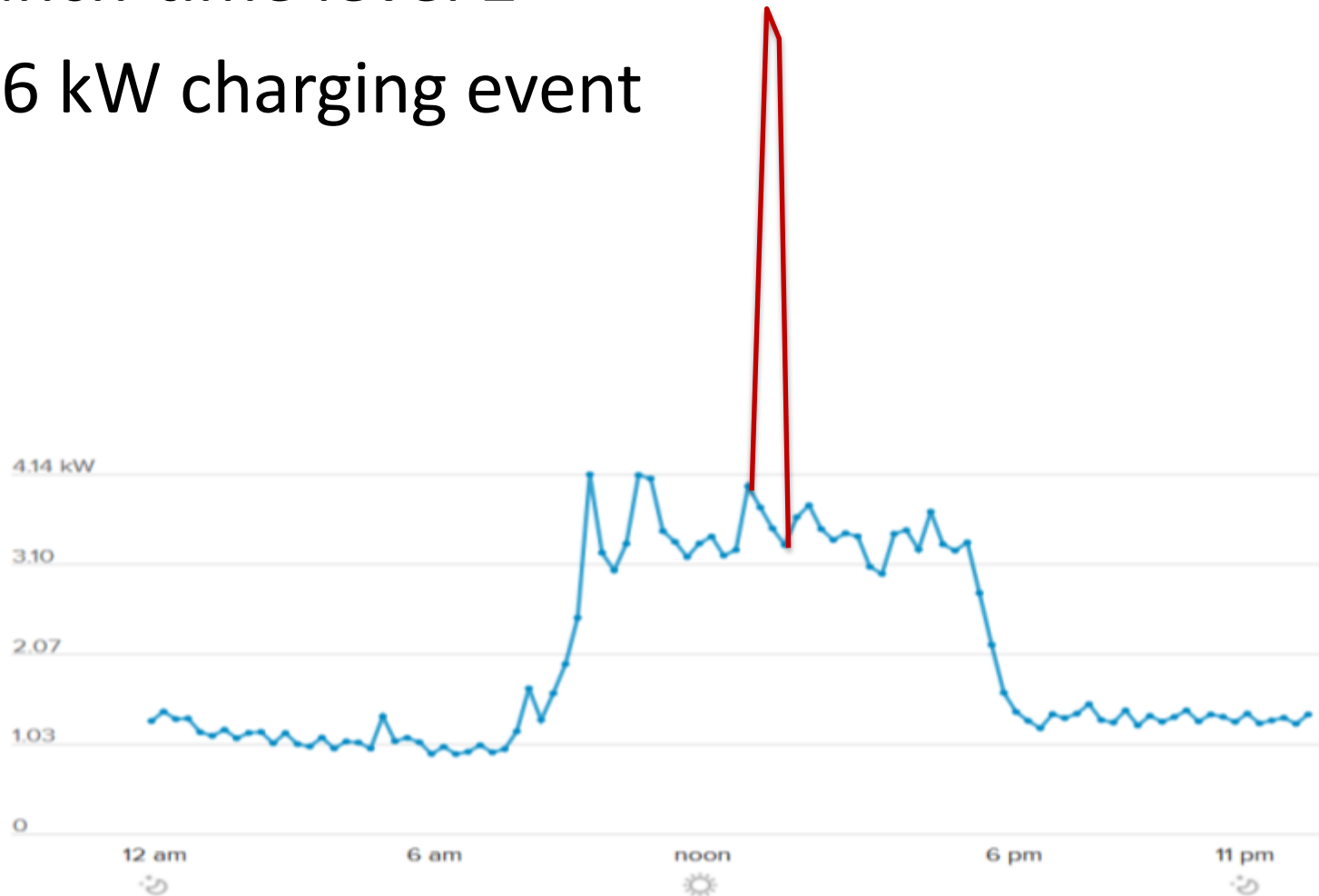
Last Thursday at RCEA



Last Thursday at RCEA

Lunch-time level 2

6.6 kW charging event



Last Thursday at RCEA

Lunch-time DCFC

50 kW charging event*

*For illustration purposes;
DCFC not actually feasible at site



Publicly-owned Charging Network Business Model

- RCEA owns and operate the charging network
- MOUs with carefully-chosen site hosts
- Chargers sited to reduce range anxiety, not just generate revenues
- Economy of scale for operation, maintenance, and administrative costs
- **Separate meters when possible**

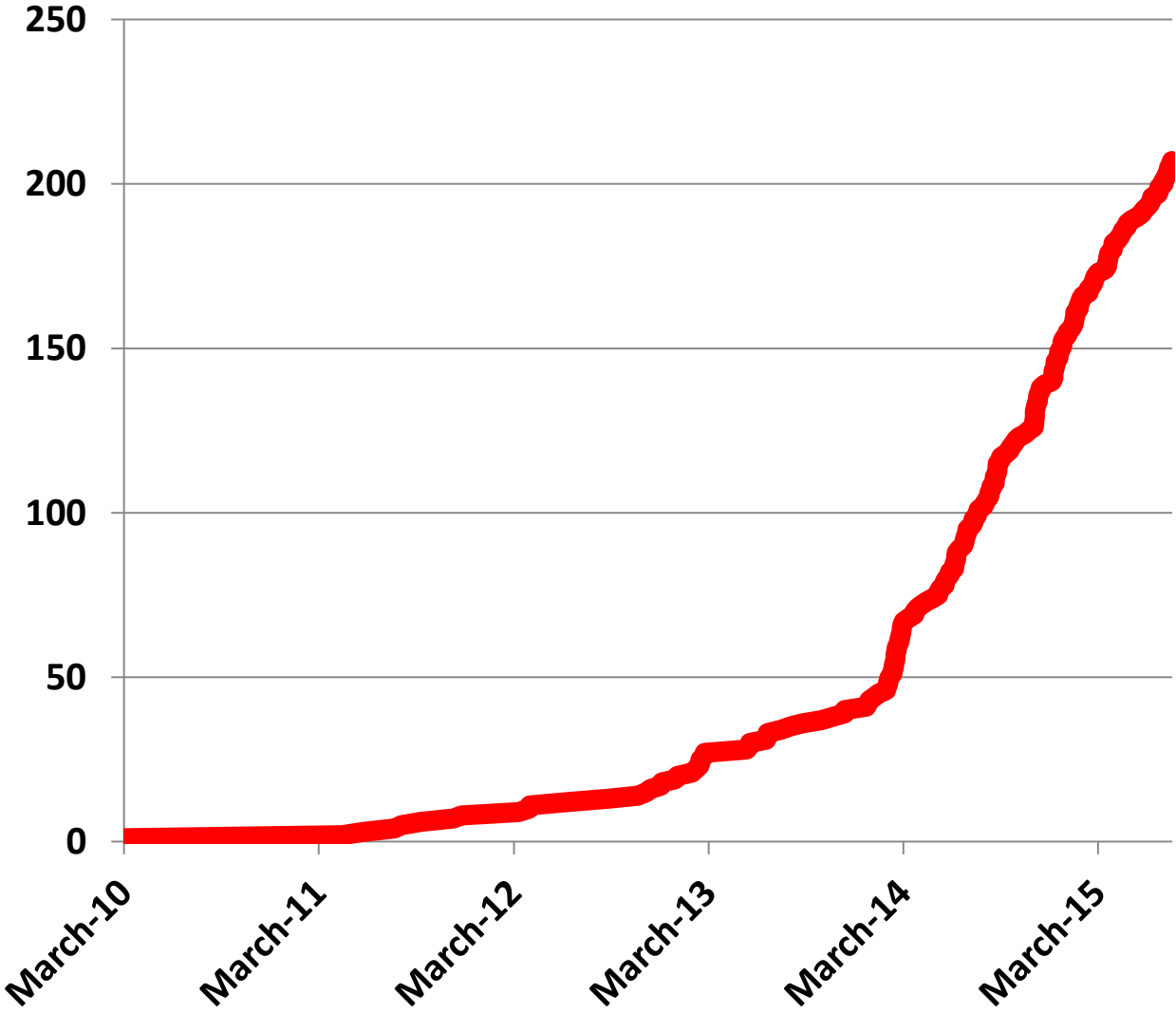


**High costs and lower usage
= early-stage business case is shaky**

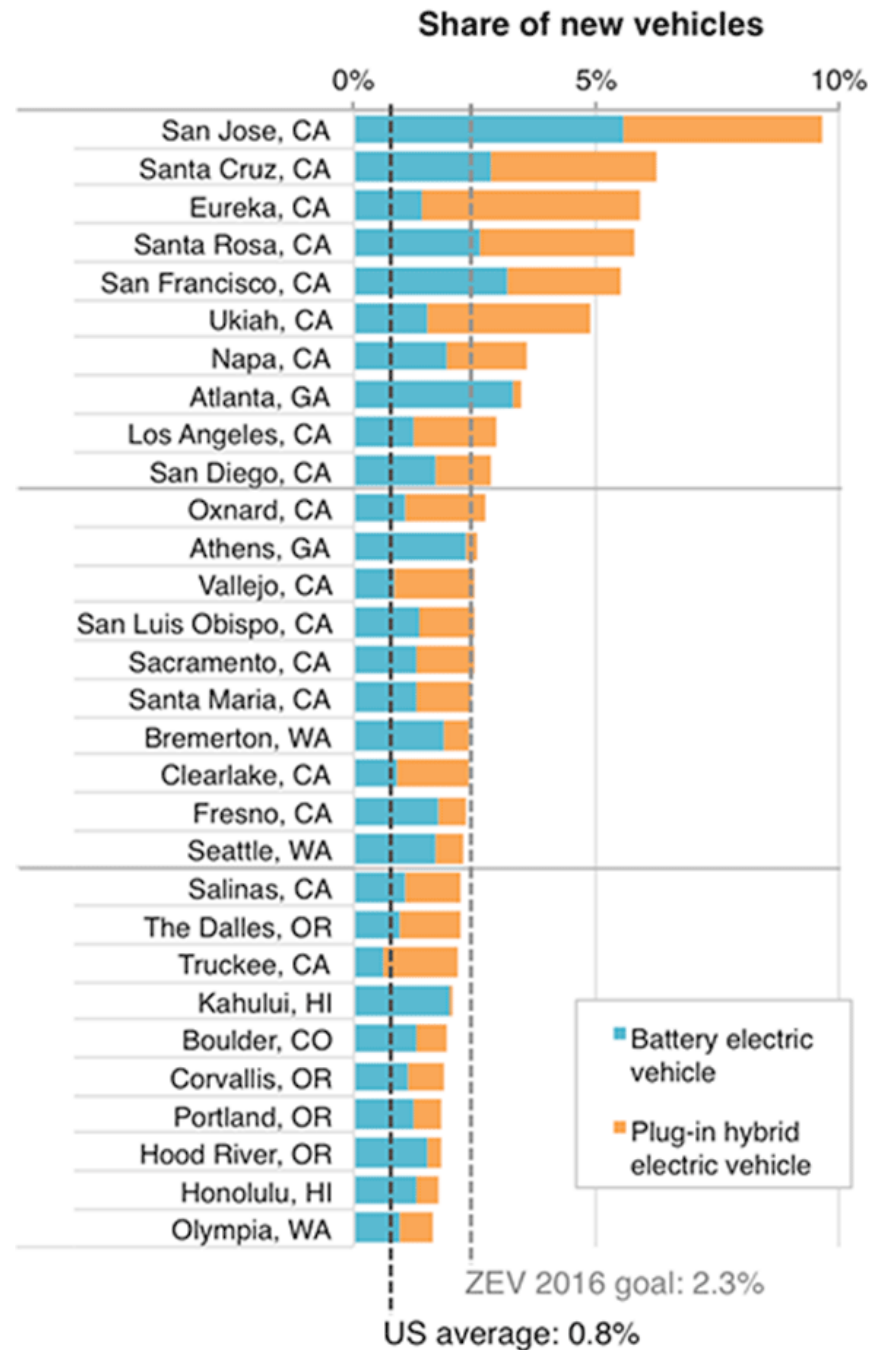
**Need careful planning
and strategic
use of resources**



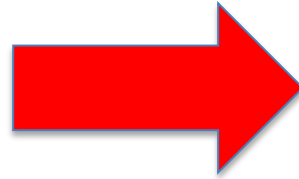
Humboldt County electric vehicle sales



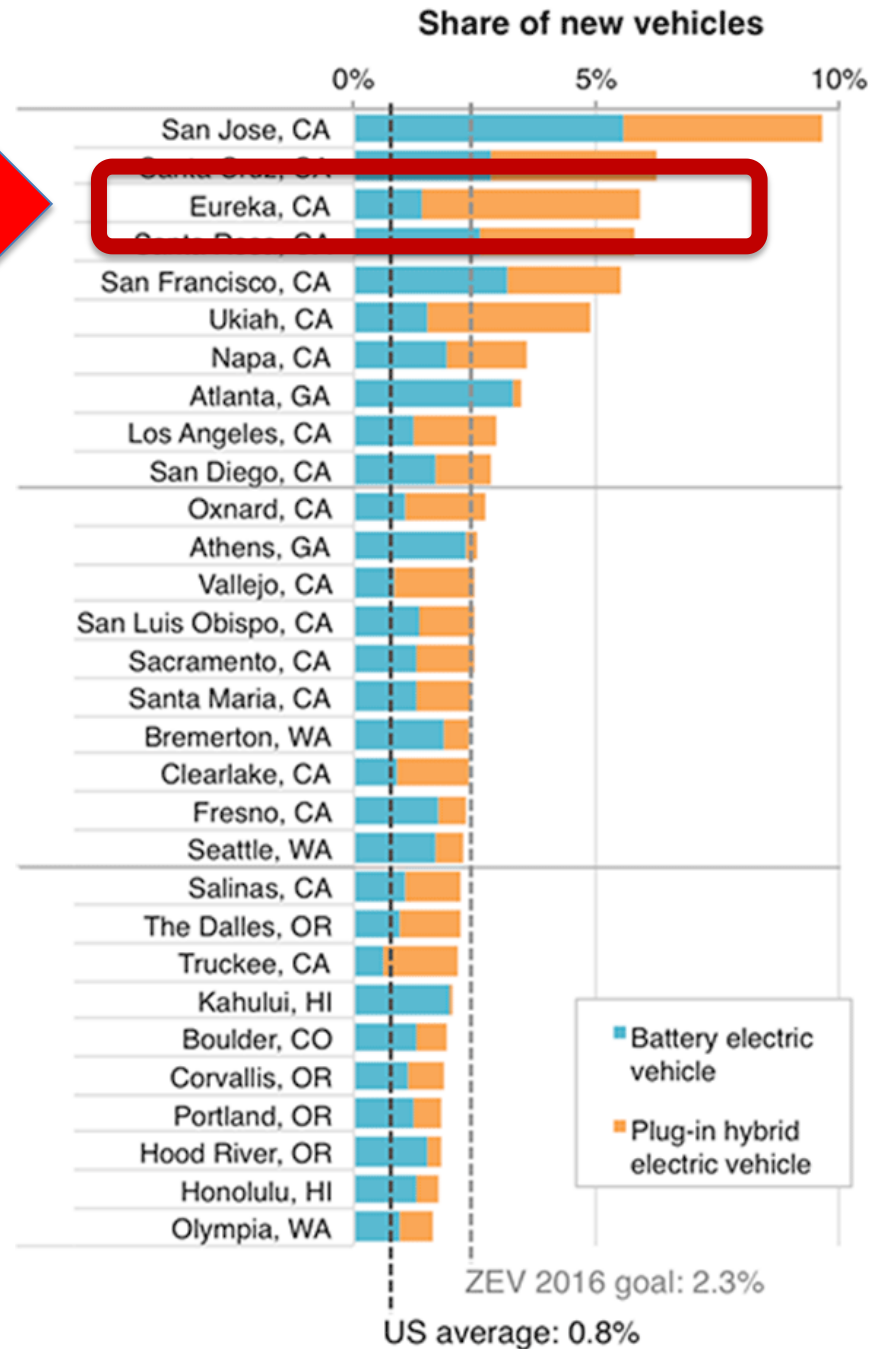
Share of new vehicle sales



Humboldt is #3 in the United States



Share of new vehicle sales



Thank You

