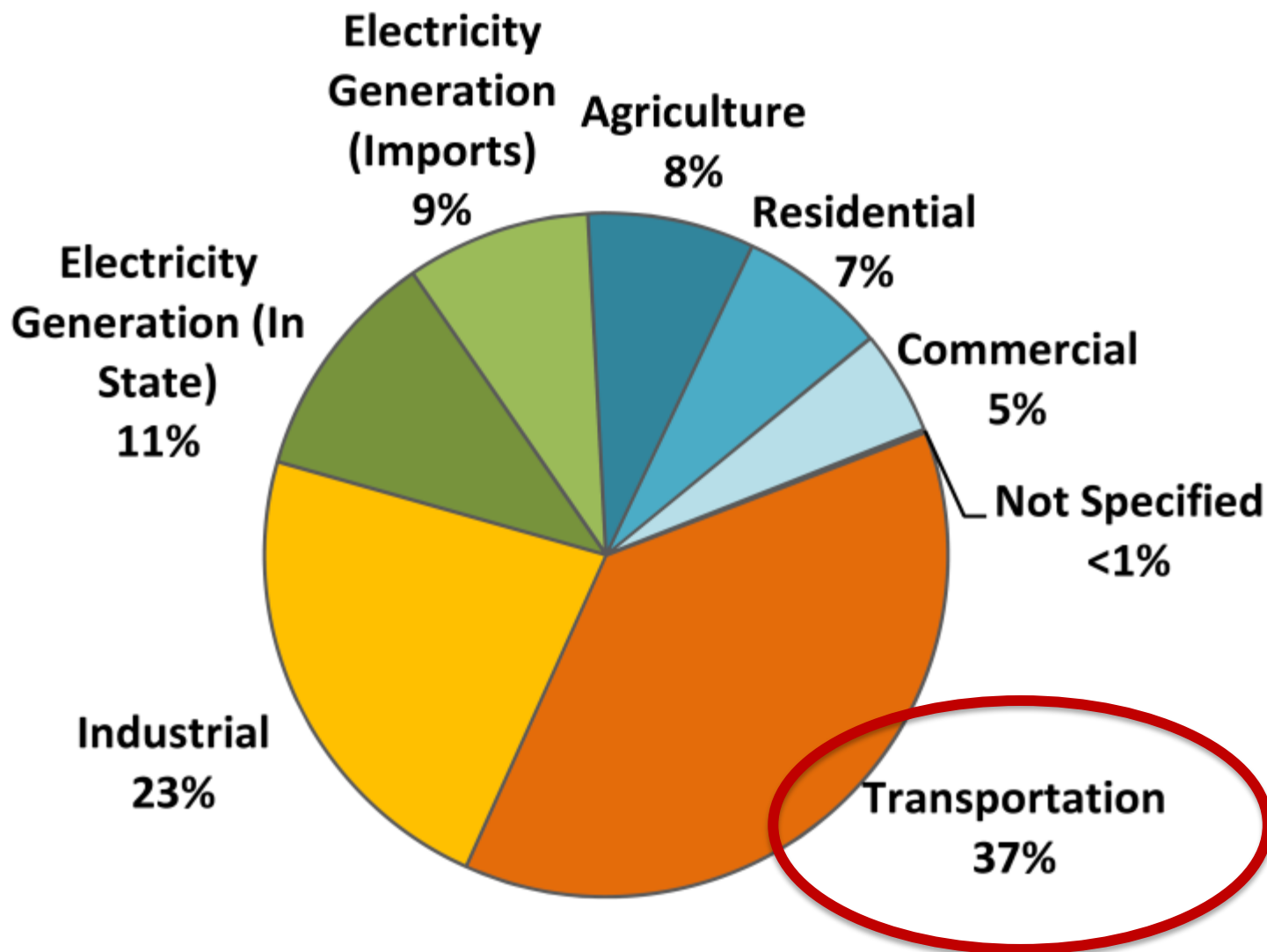


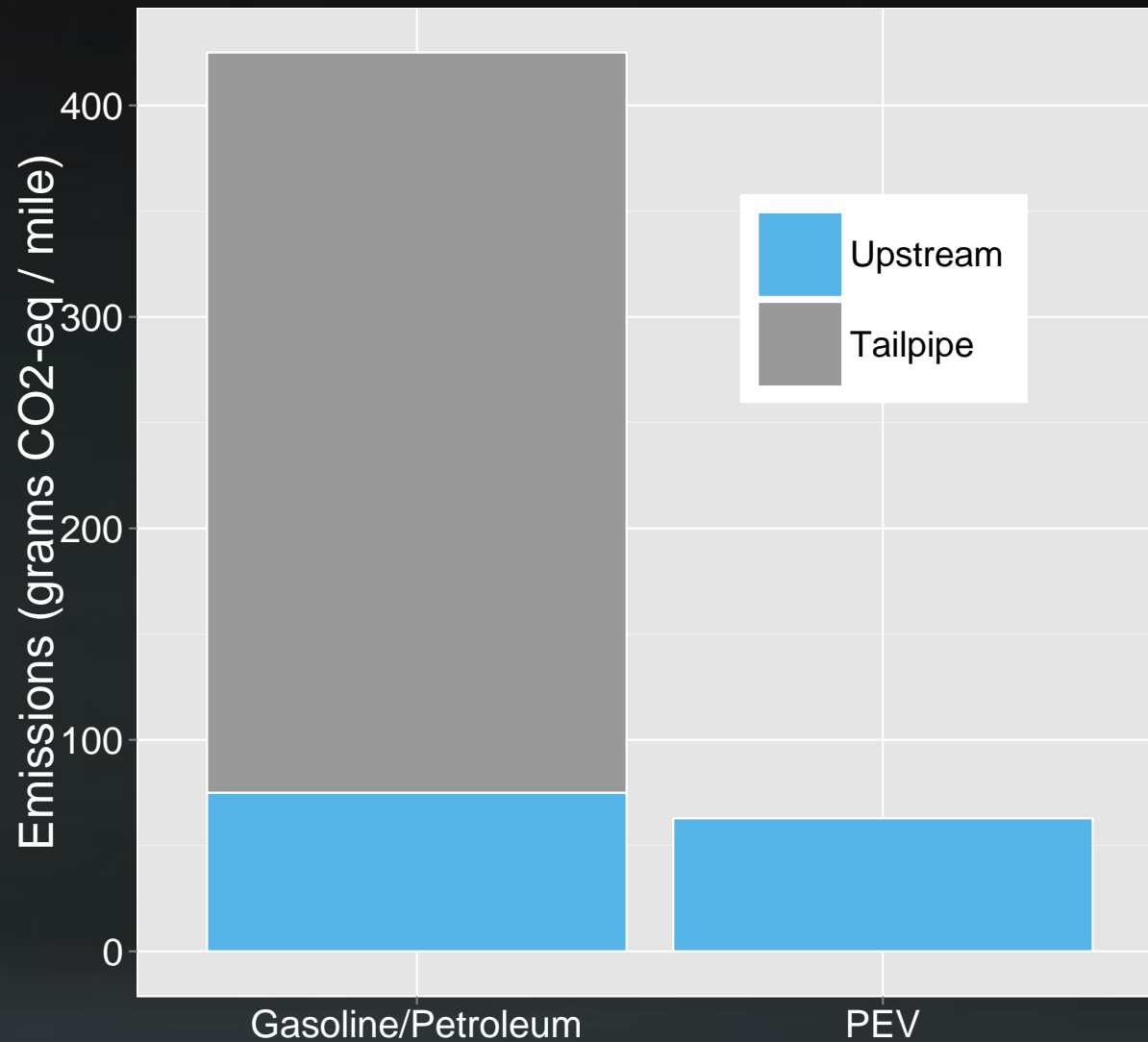
# Energy Efficiency and Demand Management in Planning Electric Vehicle Technologies



# California's GHG Emissions



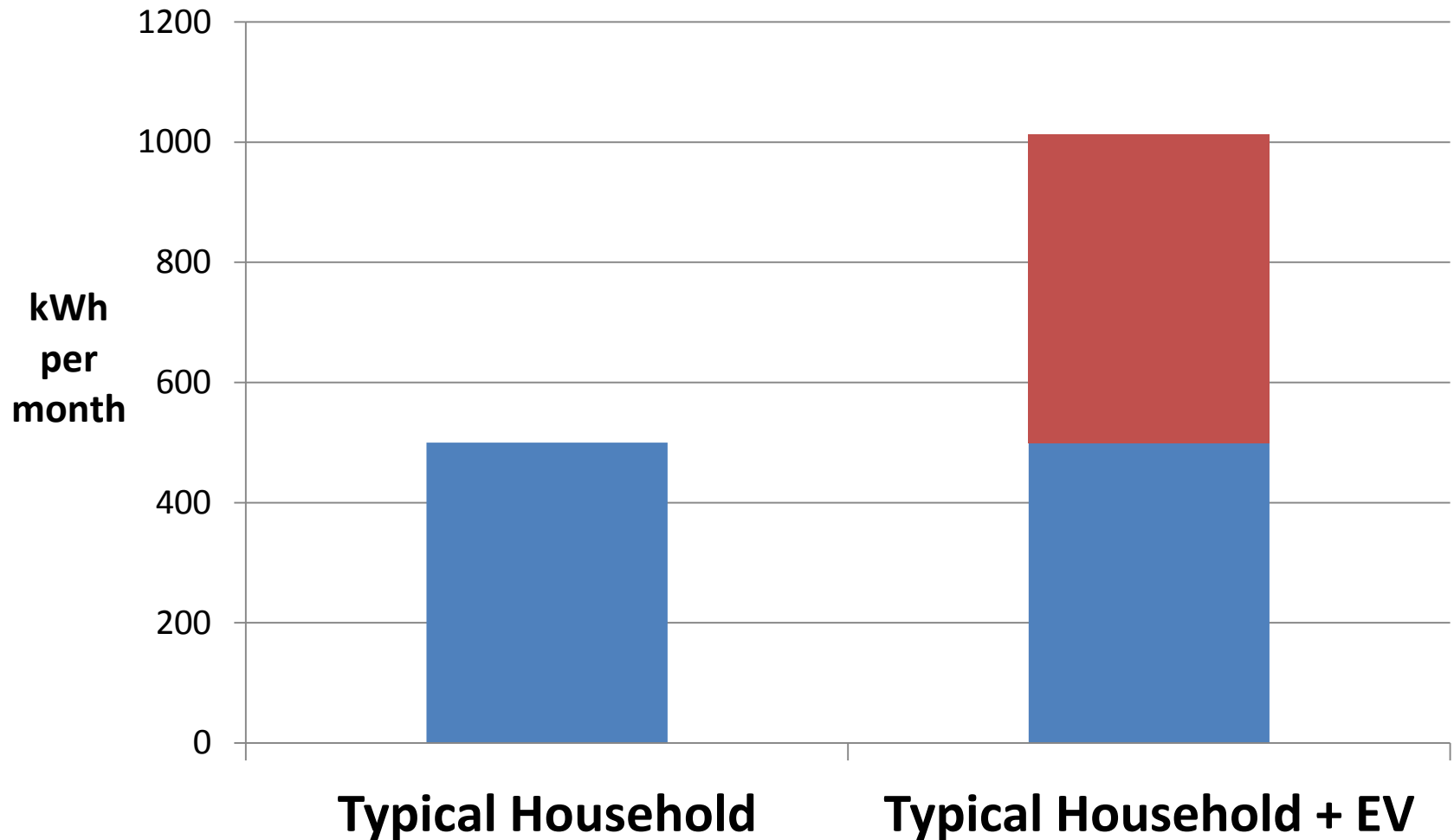
## GHG Emissions from Conventional Light Duty Vehicles vs PEVs



**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**

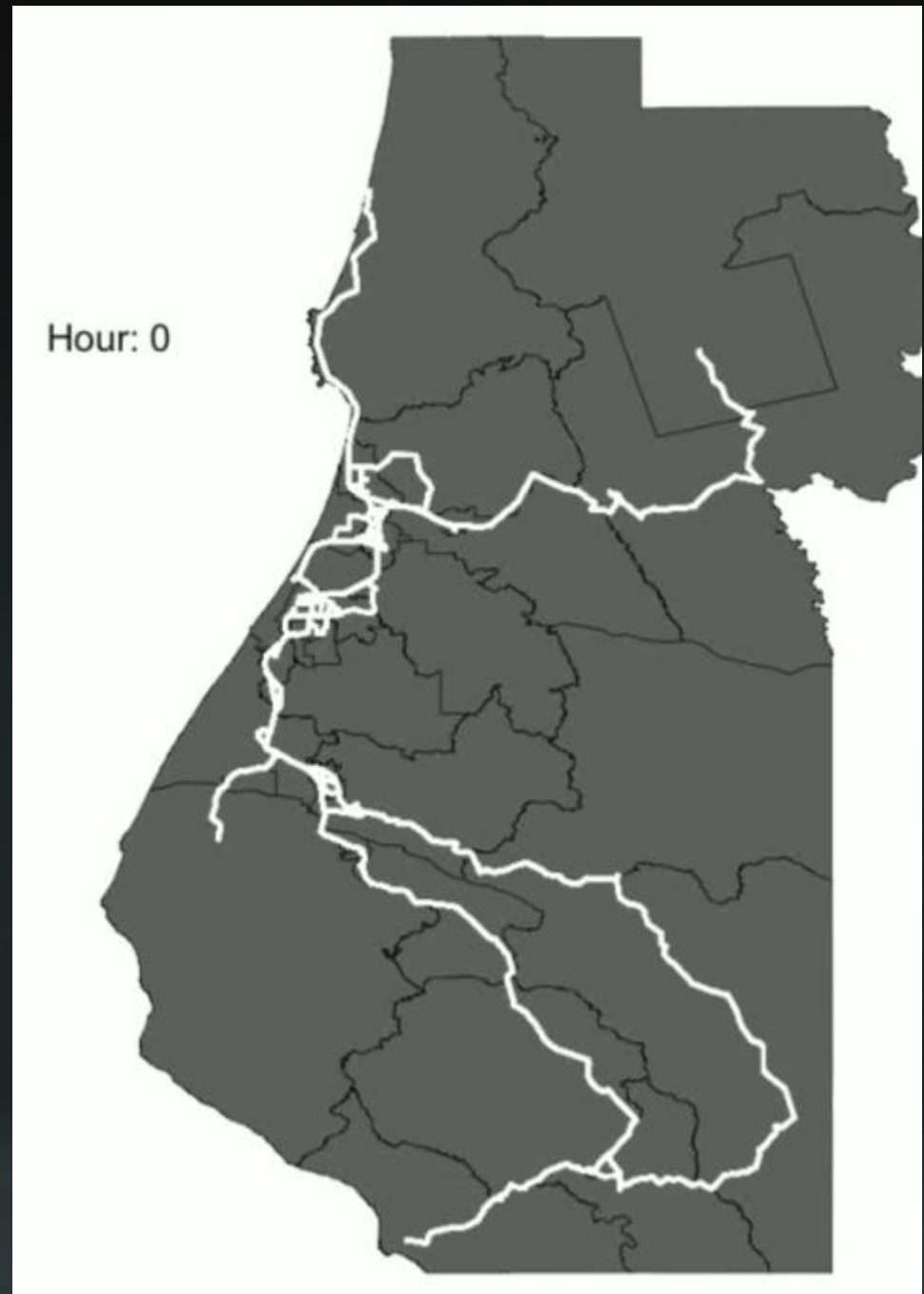
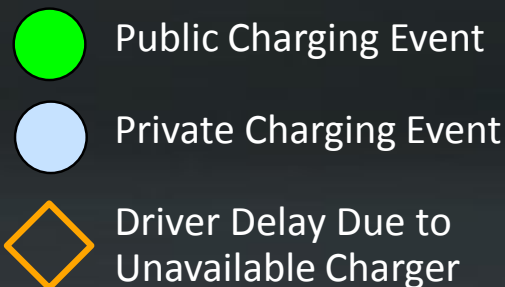




- **Regional planning**
- **Challenges**
- **Strategies**

# Charging Infrastructure Plan

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

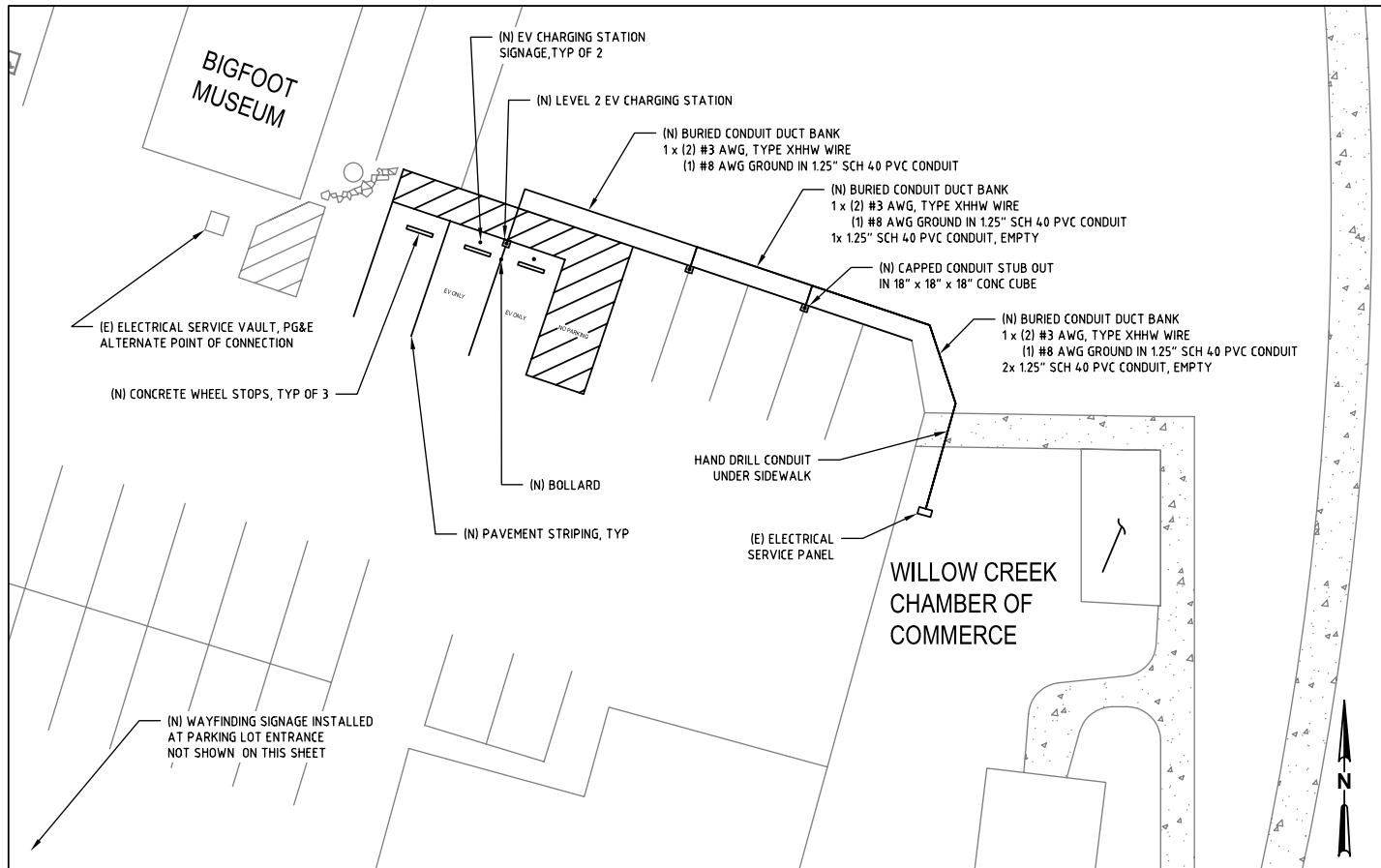




# Micro-siting Analysis



# Preliminary plans for high-priority sites



WILLOW CREEK  
BIGFOOT MUSEUM

NORTH COAST PEV CHARGING NETWORK  
PHASE 1



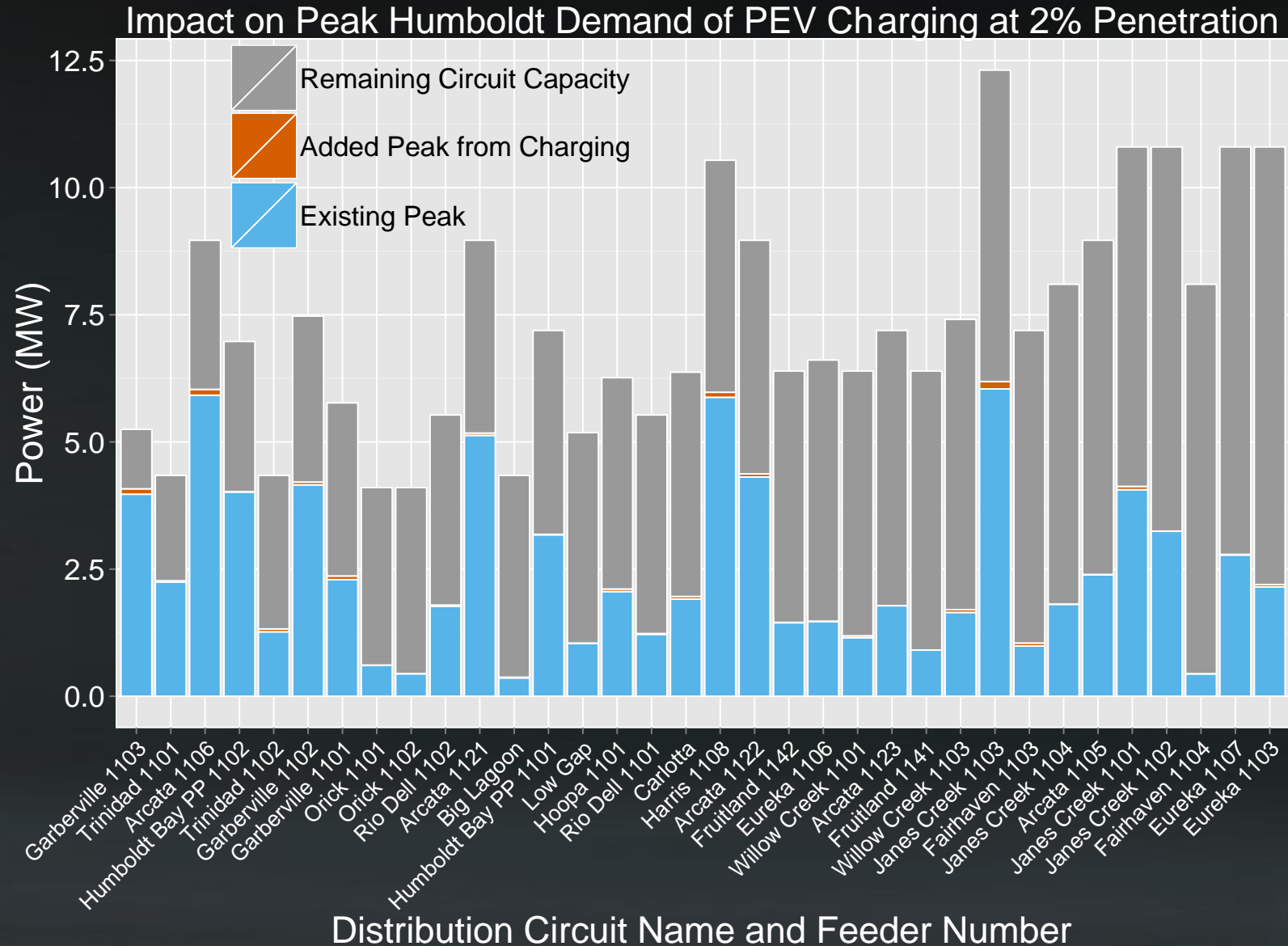
Job Number  
Revision 1  
Date 01/28/2014

Figure 4

718 Third Street Eureka California 95501 USA T 1 707 443 8326 F 1 707 444 8330 W www.ghd.com



# 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



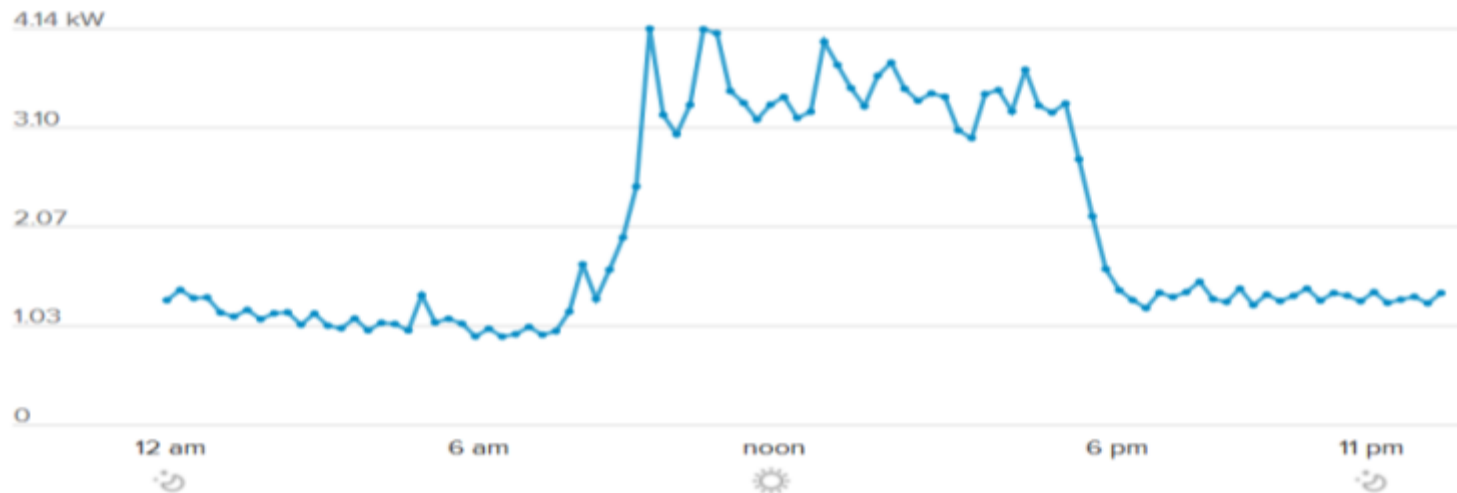


# Usage impacts on site load





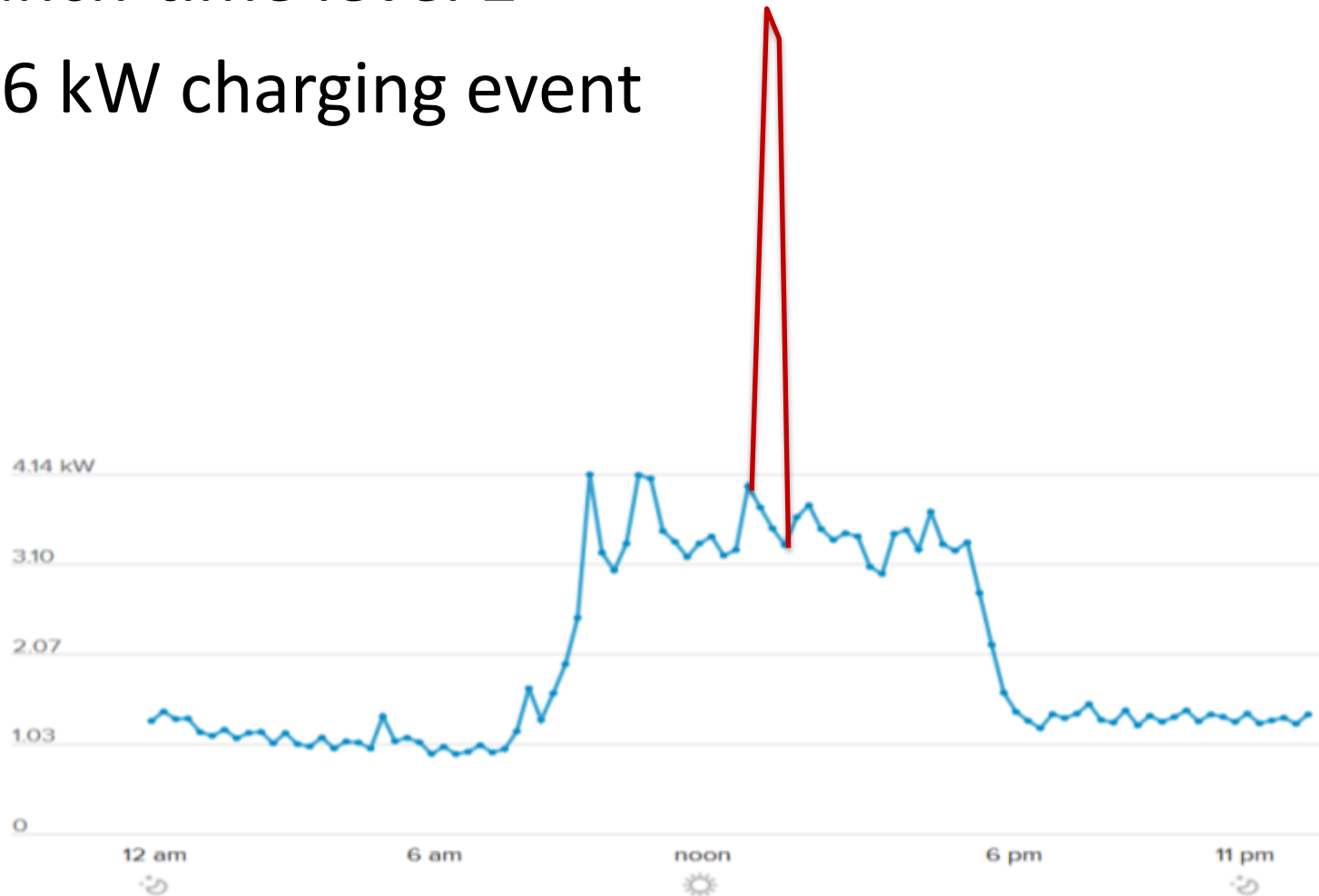
# Last Thursday at RCEA



# 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**



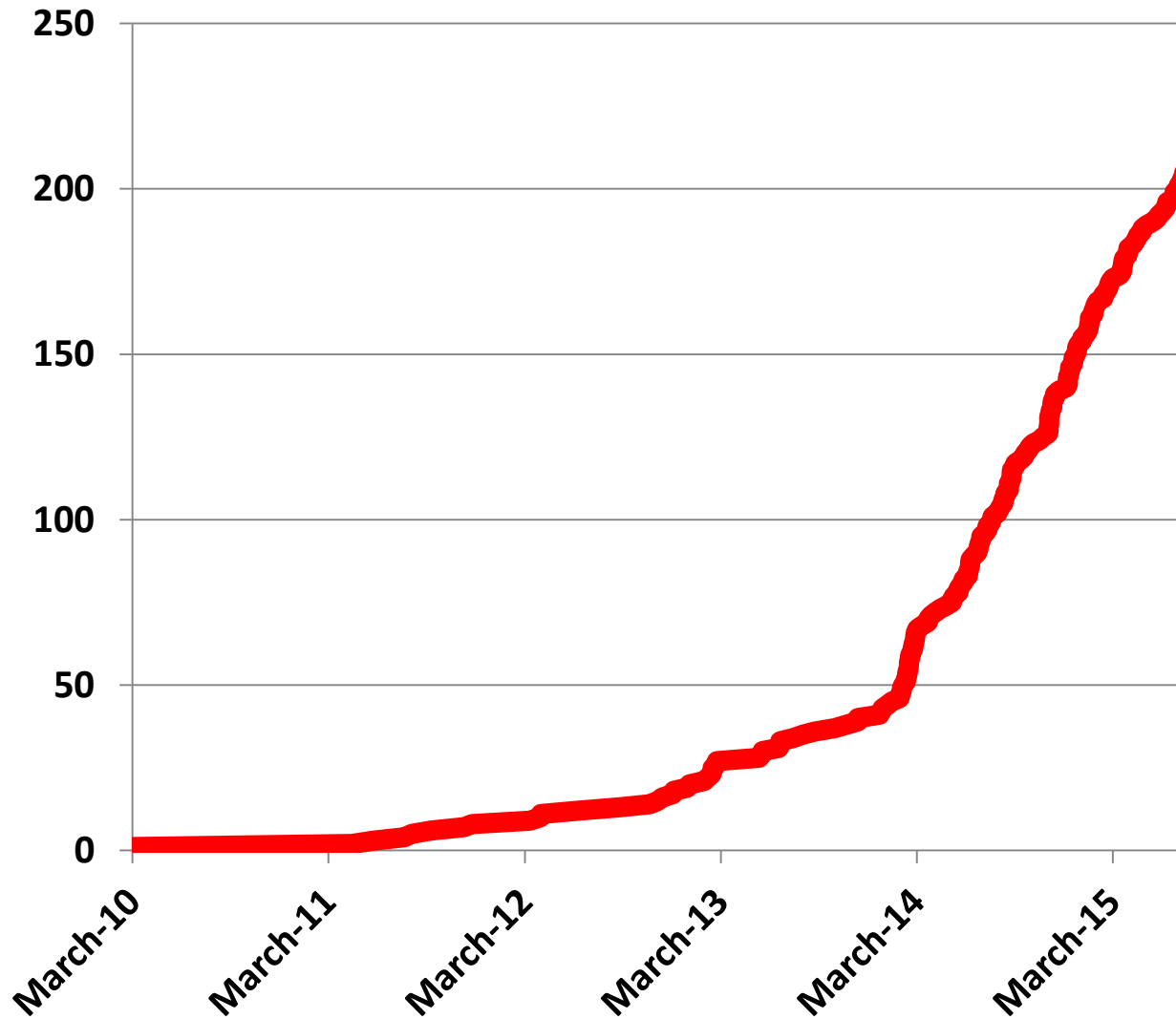


**High costs and lower usage  
= early-stage business case is shaky**

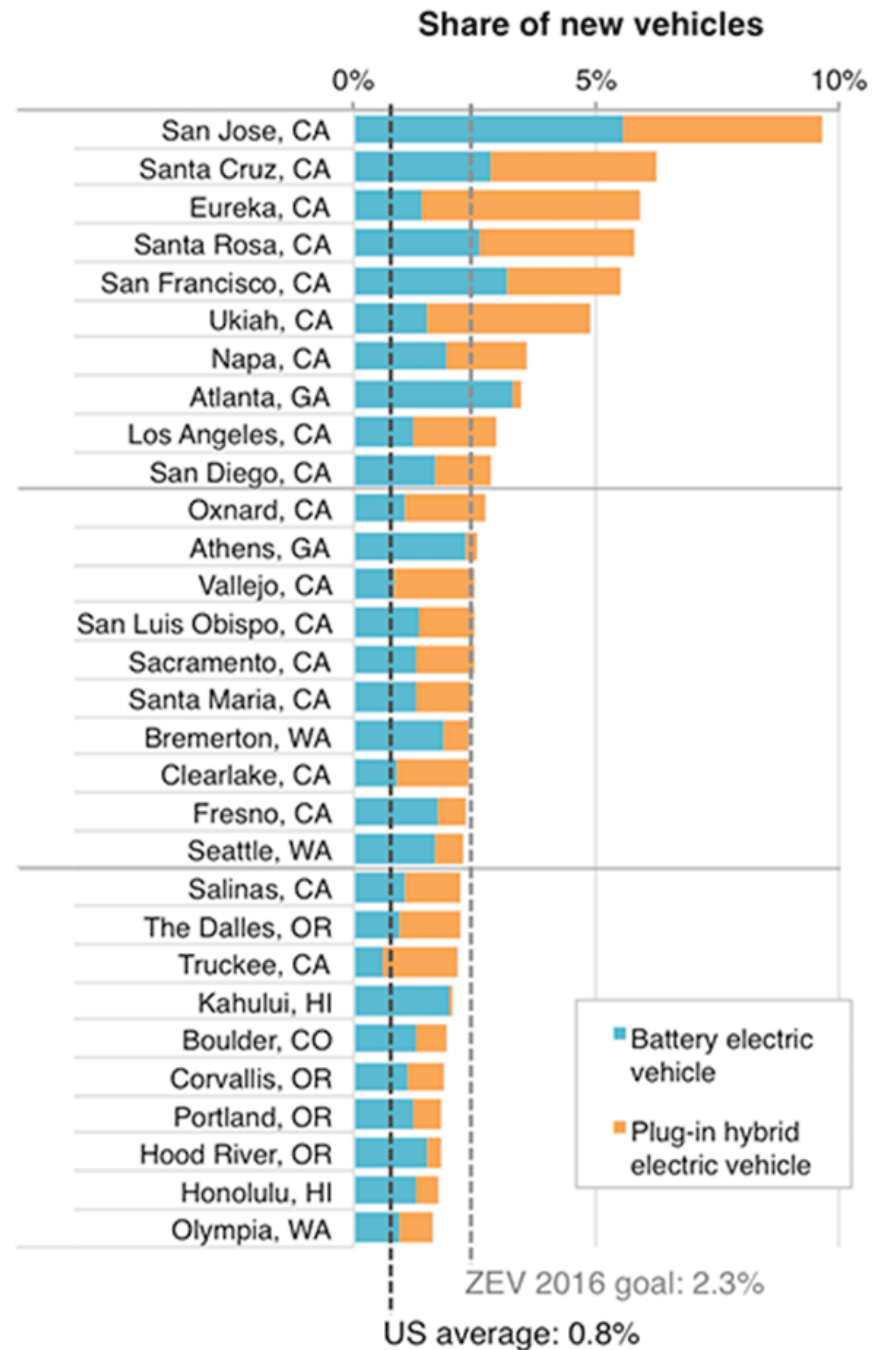
**Need careful planning  
and strategic  
use of resources**



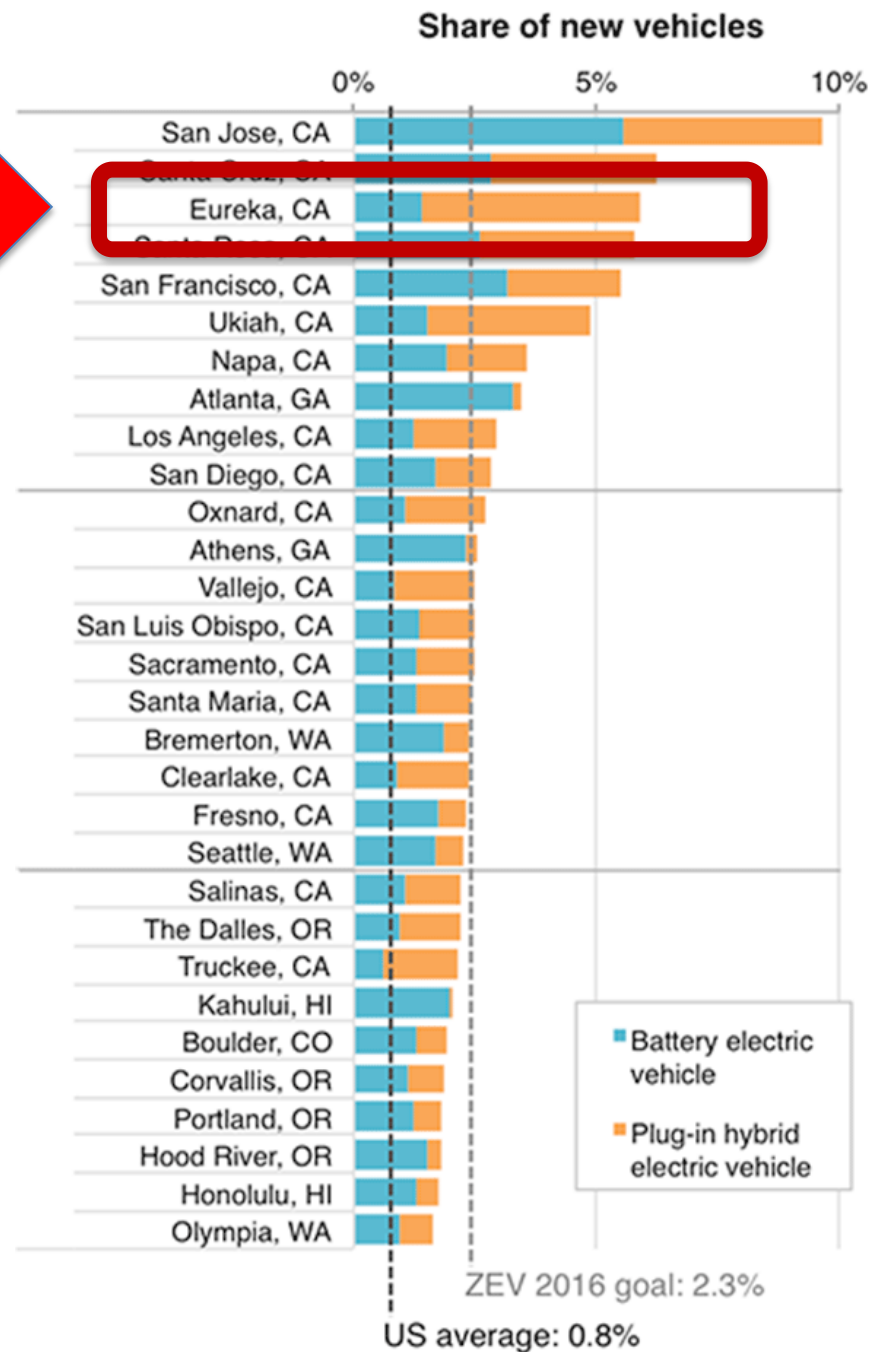
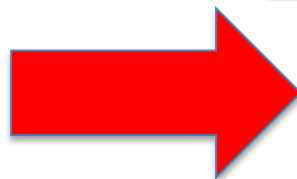
# Humboldt County electric vehicle sales



# Share of new vehicle sales



Humboldt is #3 in  
the United States



Share of new  
vehicle sales



# Thank You

