



Investor-Owned Utility Roles in Transportation Electrification

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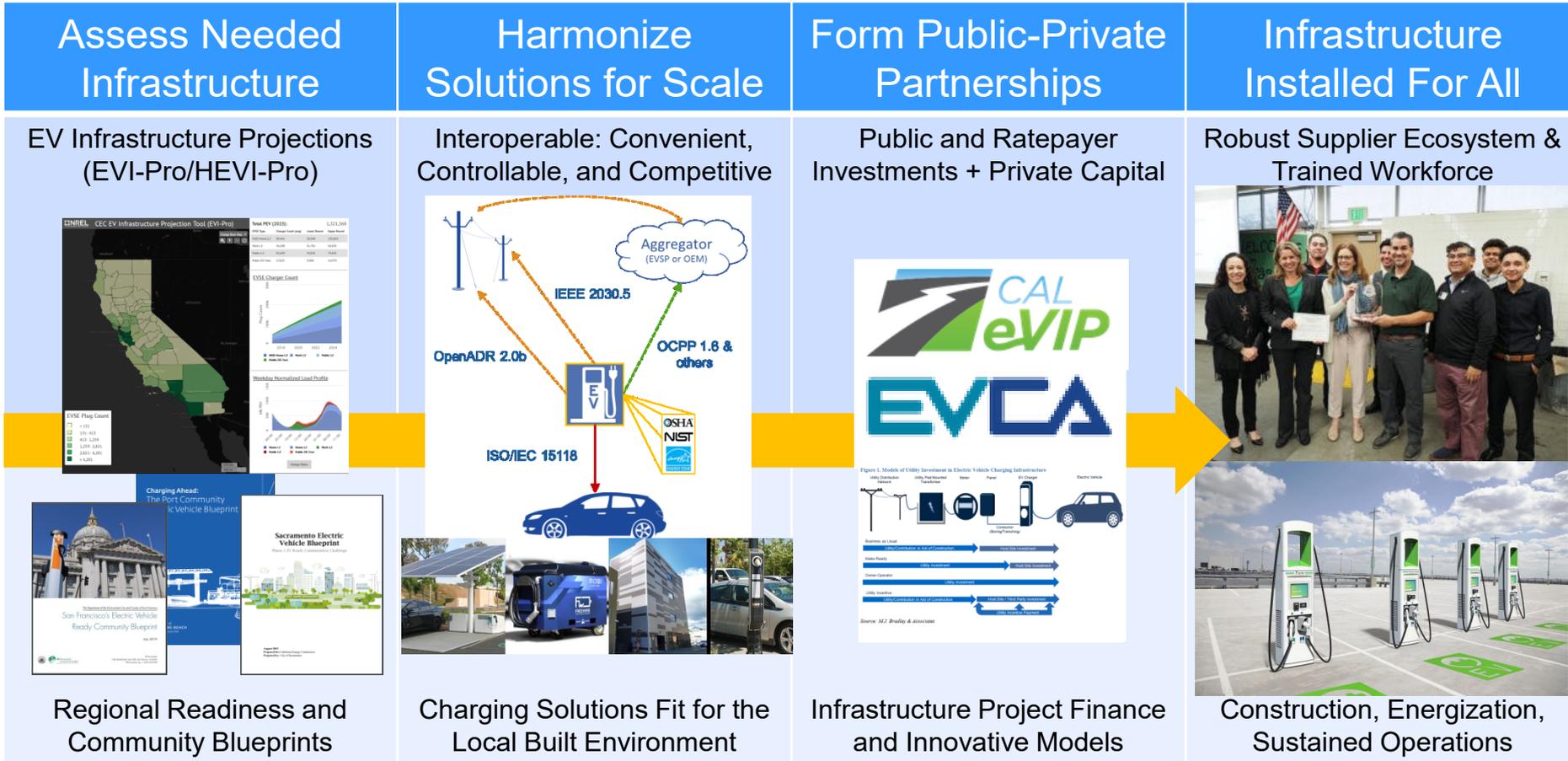
Outline and Summary

- Goal (informed per 2018 ZEV Action Plan Update)
 - Highlight CEC’s portfolio of “infrastructure deployment strategies” that can underpin a variety of utility roles for electrification, including the AB 2127 charging infrastructure assessment for 2030 needs.
 - “Spur greater private investment in the construction of infrastructure”
- Considerations for segmentation and priorities
 - Segments should be clearly defined -- and programs differentiated
 - Target interventions to ensure efficient coverage, built upon a flexible platform for independent innovators (e.g. grid & pricing)
- Economic model for sufficient, timely, and efficient charging
 - Plans for infrastructure demanded by environmental goals, given competition between locally-suitable charging supplies



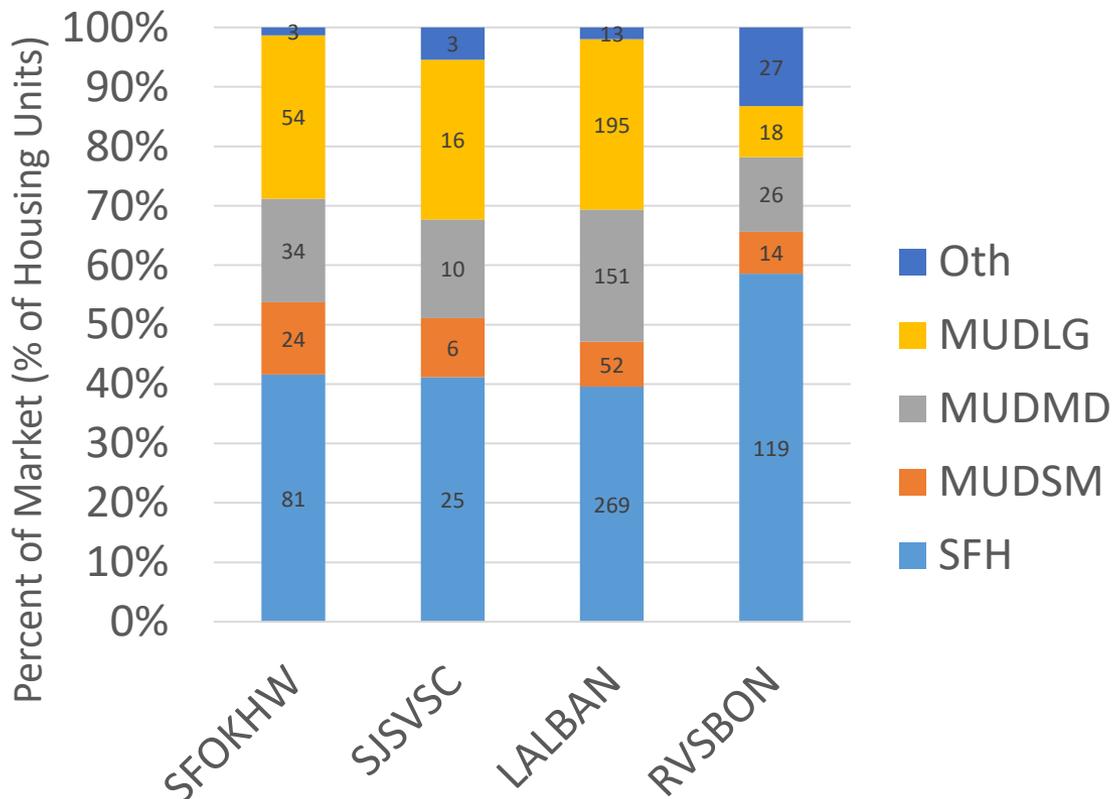
Charging Infrastructure Deployment Strategies

Local & Project Level ← → Statewide Ecosystem



Utility interventions in “market segments” should clearly differentiate need by geography, income/business case, building- or vehicle- type, etc.

Demand for Building Types by Households Earning <\$20k/year (1,000 Housing Units)



The lowest-income residents of the Inland Empire are **50% more likely to reside in a single family home** than similar earners in the San Francisco Bay or Los Angeles Metro Areas.

Residential Structure ≠ Income

Split incentive barriers exist in SFH Residential & Commercial



U.S. Census Bureau, American Housing Survey 2017.

San Francisco, Oakland, Hayward; San Jose, Sunnyvale, Santa Clara; Los Angeles, Long Beach, Anaheim; Riverside, San Bernardino, Ontario
Multi Unit Dwelling LG = >20 units, MD = 5-19 units, SM = 2-4 units

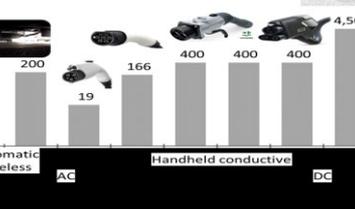
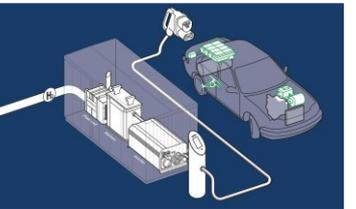
Even within one utility, segmentation analysis should specify incentive designs to meet specific objectives

E.g., if Southern California were to target charging at the largest apartment buildings (with 50 or more units), consider:

- In Los Angeles, Long Beach, and Anaheim there are 43,000 units housing residents earning greater than \$120k/year. In contrast, Riverside, San Bernardino, and Ontario have 35,000 units that serve residents of all earning levels. (See appendix.)
- Setting a charger installation target for a share of the largest apartment buildings across the territory with incentives based on the cost of upgrading the building capacity could 1) exclude geographies or 2) over- or under-subsidize if the incentive is not rated according to need.



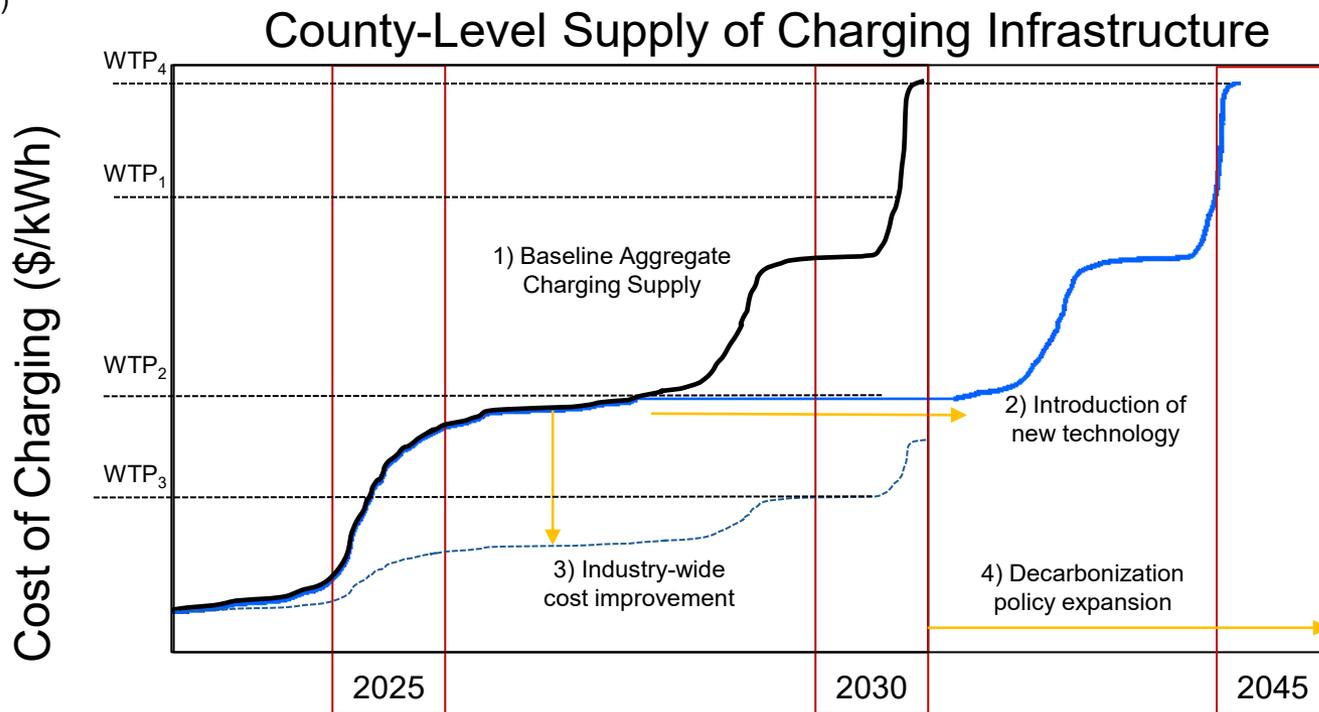
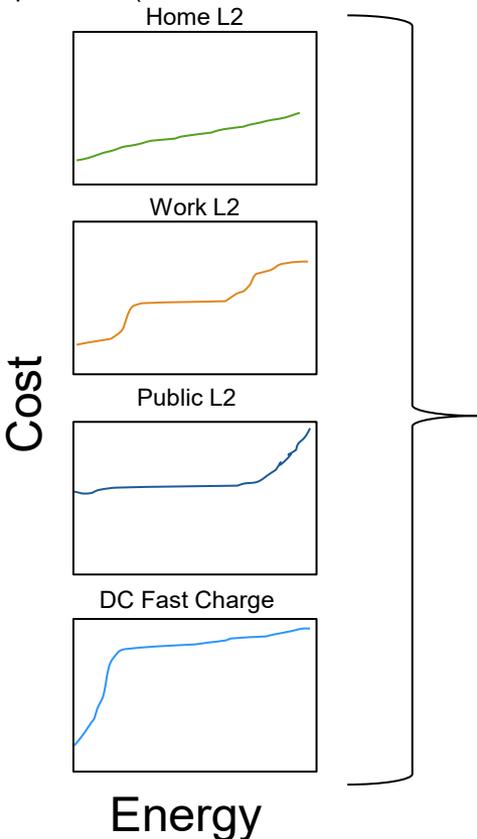
Given local built conditions, a variety of solutions can compete as substitutes to determine which best fits to the charging need.



L→R: DCFC plaza, shared residential, pantograph, wireless, robotic connectors, automated garage, smart adapter, circuit switch, utility pole-mount, intra-site storage, inter-site storage, V2G transactive charging, DER-backed, H2 fuel cell-backed, wireless + self-repairing, high power charging.

The signal to invest in charging should reflect the extent of state policy goals, supplier capabilities – and should pursue efficient substitutions

Cost of supplying energy via given charger type may increase per analyses from local blueprints (building or parking stock), the utility (grid upgrades), or service providers (customers are harder to reach)



Ranges of Total PEV Charging Needed by Year (kWh) per CEC's Infrastructure Assessments

WTP = Willingness To Pay





For questions, please contact:

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Thank you!

Housing in CA Metropolitan Statistical Areas, 2017 (U.S. Census Bureau, American Housing Survey)



Income ranges: thousands of dollars of household annual earnings

