

UCDAVIS

Electric Vehicle Research Center

Institute of Transportation Studies

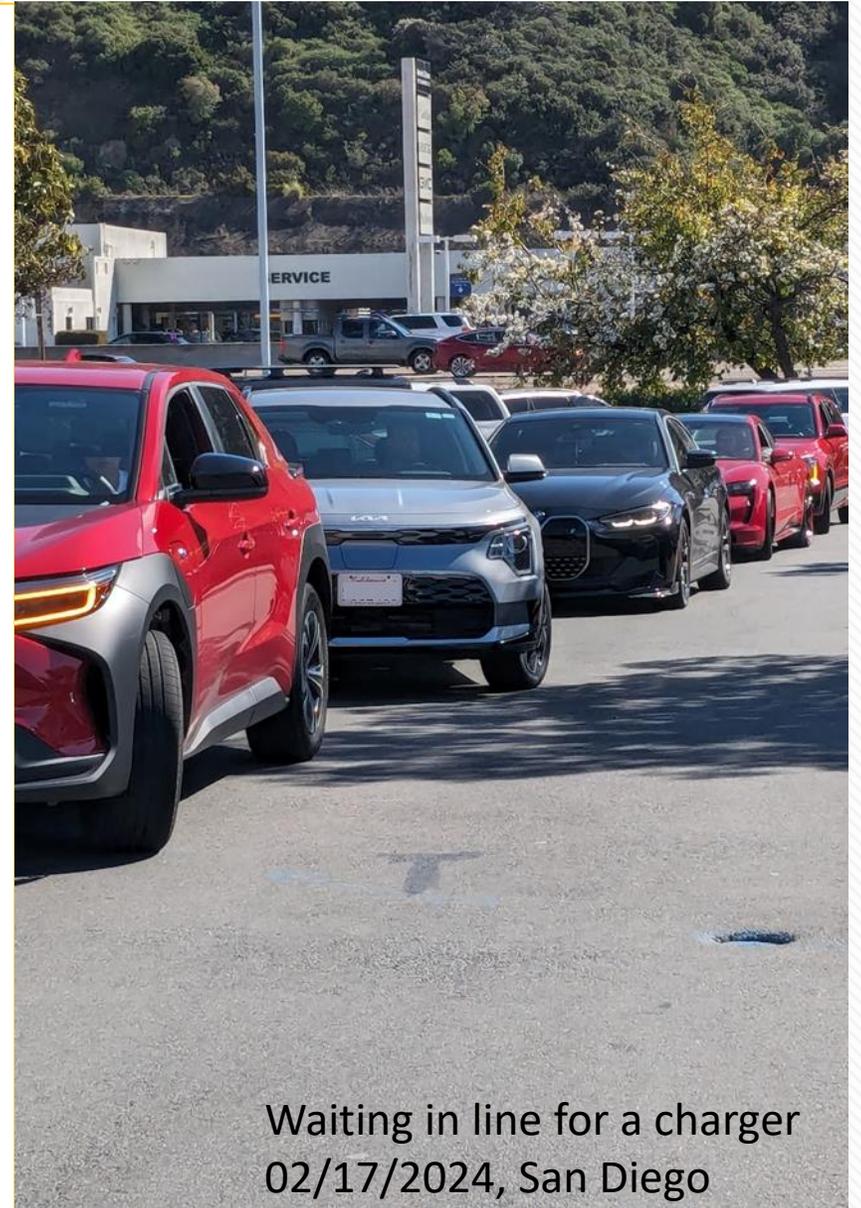
UC ITS Legislative Briefing on Vehicle Charging and the Grid

Accessible, Dependable, and Affordable Charging Options For All: Policy and legislative perspective

Gil Tal

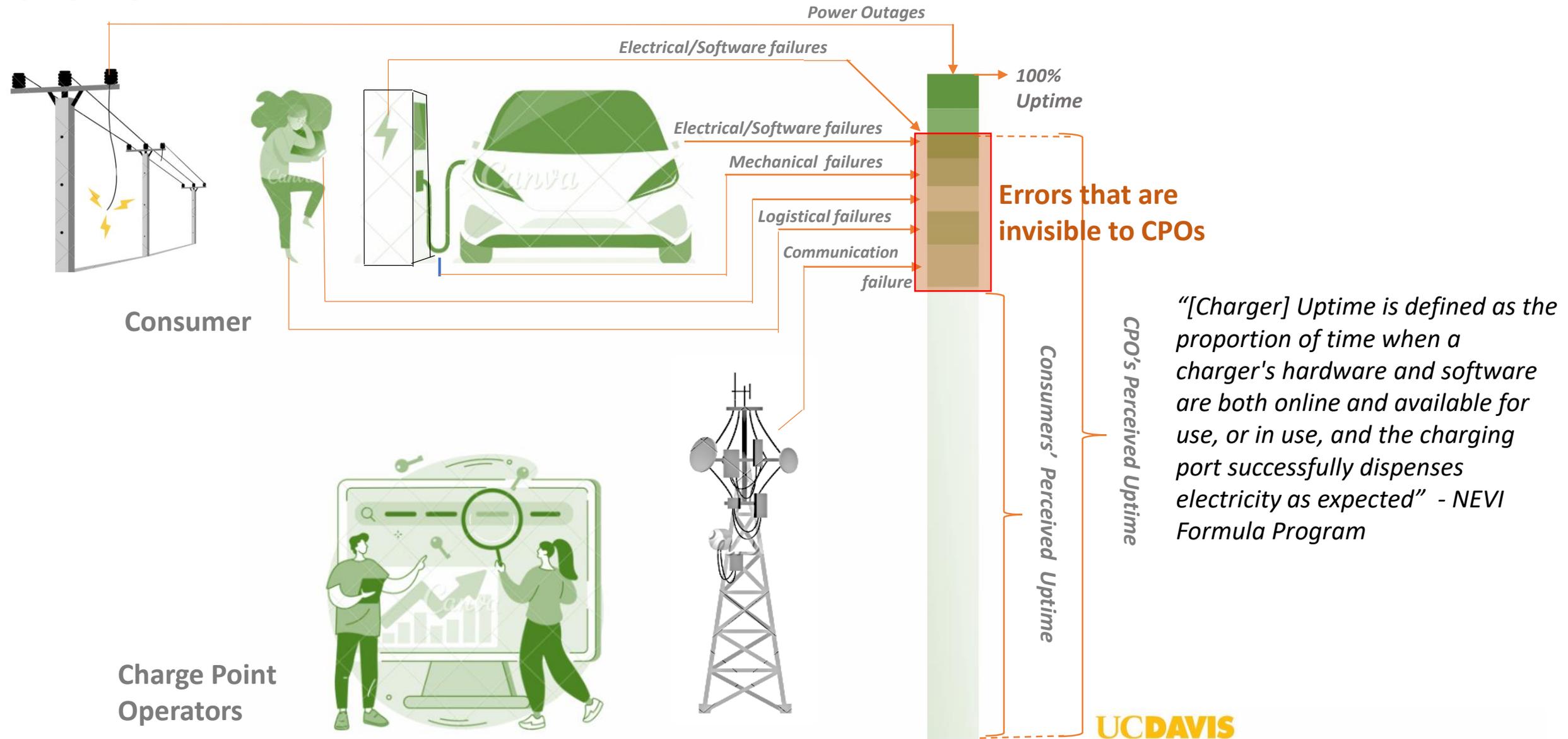
02-21-2024

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Waiting in line for a charger
02/17/2024, San Diego

HOW IS EV CHARGER RELIABILITY BEING MEASURED, REPORTED, REGULATED and AUDIT ?



"[Charger] Uptime is defined as the proportion of time when a charger's hardware and software are both online and available for use, or in use, and the charging port successfully dispenses electricity as expected" - NEVI Formula Program

Technology is only one part of reliable and dependable charging infrastructure

Who is responsible for clearing the way?



What about locked parking locations at nights and weekends?

The composite image consists of two parts. On the left is a screenshot of a mobile app for a ChargePoint station. On the right is a photograph of a charging station in a parking lot with 'PRIVATE PARKING' signs.

ChargePoint Charging Station
3.3 ★★★★★ (4)
Electric vehicle charging station

Overview Reviews

Directions Save Nearby Send to phone Share

CHAdEMO - 50 kW	0/2
CCS - 50 kW	0/2
J1772 - 6.48 kW	8/20

725 7th St, Sacramento, CA 95814
Located in: Sacramento County Parking Garage

Open now ^

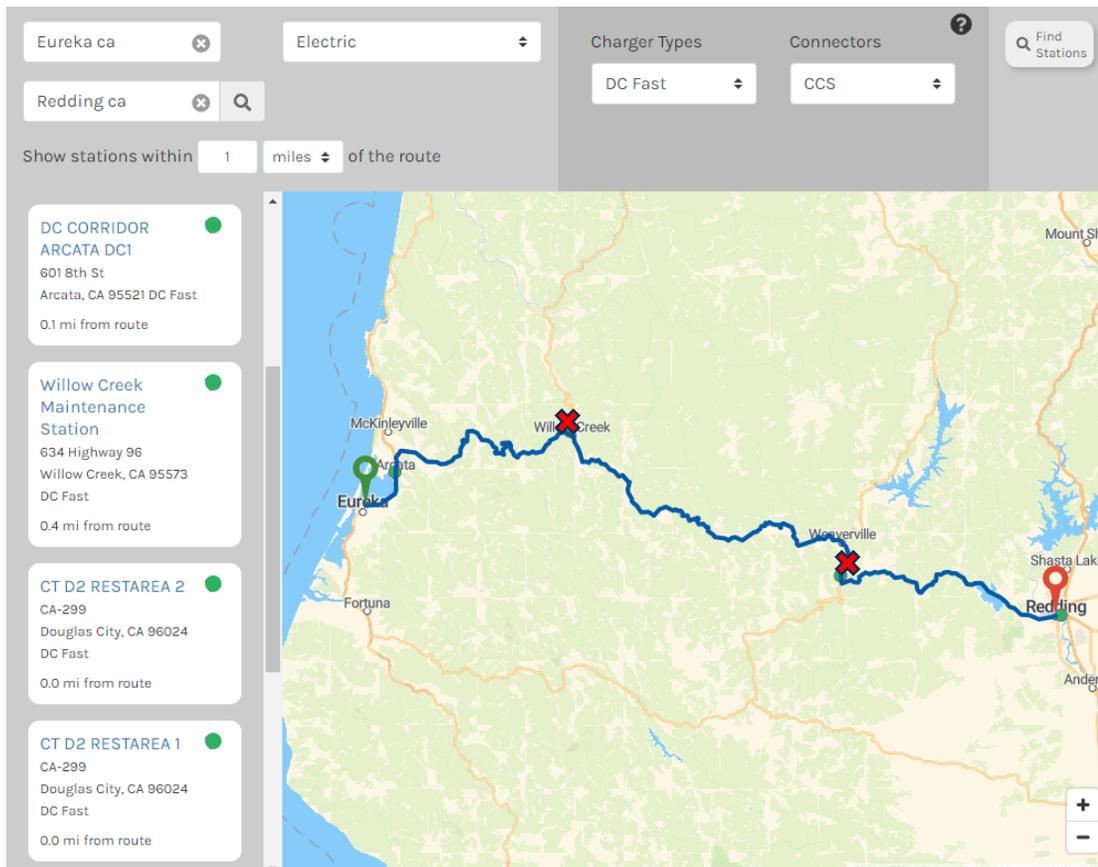
Tuesday	6:30AM-6 PM
Wednesday	6:30AM-6 PM
Thursday	6:30AM-6 PM
Friday	6:30AM-6 PM
Saturday	Closed
Sunday	Closed
Monday	6:30AM-6 PM (Washington's Hours might differ Birthday)

The photograph on the right shows a charging station in a parking lot. Two signs on poles in the foreground read 'PRIVATE PARKING'. The station is a metal cage with a charging cable inside. In the background, there are buildings and a blue recycling bin.

High Reliability (uptime) is expensive, not all locations will need the same level of reliability

97% uptime = The two charging locations between Eureka and Redding is down for 10 days every year.

90% uptime = At Any Given Time 10 out of 100 chargers at this location are under maintenance



- Past trends show a risk of charger abandonment post-contract.
- Essential to explore innovative contracting and ownership to ensure positive operating revenue.
- Consider a Build-Operate-Transfer model for government or successor entities.
- Shift focus to subsidizing operations over hardware installation.
- Study and adapt alternative models from global practices like those in Norway

Exploring Business and Ownership Models for Positive Operational Revenue

ECOtality Bankruptcy: Blink EV Charging Network Changes Hands but Can't Shake Its Bad Reputation

\$100 million DOE money in, \$4.3 million out. Customers of bankrupt ECOtality have very low regard for EV chargers under new ownership.

JEFF ST. JOHN | OCTOBER 11, 2013





Should we consider price control?

Pro

- Electric driving must stay cheaper per mile than driving on gas.
- Lower-income households, renters, and multi-unit dwellers have less control over electricity prices and rely more on public charging.
- Operating costs, including maintenance for high reliability, may increase prices in rural areas.
- Lower-income households have fewer opportunities to respond to dynamic pricing.
- Locations with low demand, such as rural areas or disadvantaged communities, will receive a lower level of service in terms of:
 - Number of chargers
 - Time to repair
 - Charging power

Cons

- Lower revenue will reduce investment in new infrastructure.
- Lower revenue will decrease investment in regions with lower reliability.
- It will become more challenging to offer a faster, premium charging experience.



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Potential tools for Accessible, Dependable, and Affordable Charging Options For All

- Charging Infrastructure Ownership Models:
 - Build-Operate-Transfer
 - Utility and Private Partnership
 - State Pays for Service, Not for Hardware
- Charging Network Neutrality Regulation
 - Uniform Minimum Service Requirements for All, Including Used EVs and Rural Locations including
 - Queuing
 - Charging speed
 - Reservation system
 - Cost per charging
 - Other costs

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Thank You

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