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Electrify America

Drivers of DCFC Charging Unreliability and How To Measure

California Energy Commission Meeting

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agenda

Introduction

Top Drivers of DCFC Unreliability & How To Measure

Recommendations & Closing Remarks

Reliability is critical to customer experience and successful network deployment

#1 concern for consumers is **charger out of service**

#2 concern for consumers is **no charger available / too long to wait**

J.D. Power 2021
Electric Vehicle Experience (EVX)
Public Charging Study

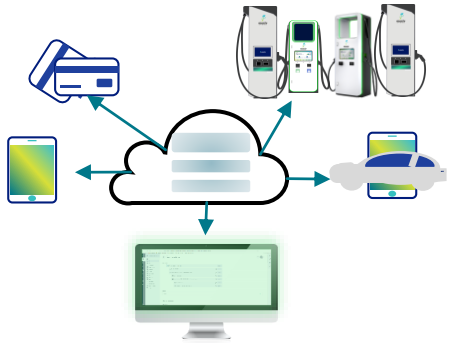
Overview

- Electrify America recognizes that reliability remains a key concern for EV driving and adoption.
- There are a number of reliability factors that must be measured and addressed in addition to uptime
- Electrify America will share specific policy recommendations to consider broader reliability measures as part of future DCFC infrastructure awards and deployments.

DCFC Charging: Top Drivers of Unreliability

	HARDWARE RELIABILITY	VEHICLE INTEROPERABILITY	GLOBAL SUPPLY CHAIN
			
DESCRIPTION	Failure rate of hardware components & service part availability	Charging experience across all EV makes and models	Sourcing and stocking service parts in-market to support field service repair as required
CHALLENGE	Commercially available chargers currently challenged to meet hardware reliability expectations	Standardization and adherence to standards is still inconsistent	Global supply chain disruptions and unprecedented demand has resulted in industry-wide parts shortages and increased lead times
METRIC	**Availability**	**Charge Success Rate**	**Availability**

DCFC Charging: Top Drivers of Unreliability

	SERVICE OPERATIONS	NETWORK IT MANAGEMENT SYSTEMS	PAYMENT SYSTEMS
			
DESCRIPTION	Comprehensive remote network operations & diagnostics	IT system that allows a CPO to communicate and manage an install base of EVSE	Customer payment authorization to initiate a charge session
CHALLENGE	Real-time remote diagnostics capabilities in the industry have not matured to match other high availability industries	Rapid utilization growth stressing IT infrastructure	Payment authorization remains a top driver of unreliable charging with many new drivers on the network
METRIC	**Time to Repair (TTR)**	**IT Network Uptime**	**Payment Authorization Success**

Key Takeaway

Uptime as a measure of charger performance does not accurately address 4 of the 6 fundamental drivers of unreliability.

Policy Recommendations to CEC:

INCENTIVE PROGRAM DESIGN

Recognize and reward investment in reliability capabilities.
Add measures and scoring that address the broader set of capabilities required to address these drivers of reliability.

REQUIRE O&M PLANS TO DEMONSTRATE RELIABILITY

Both O&M Plans and AB 2061 Reliability Oversight allow CEC to ask network providers to demonstrate reliability capabilities.

- 24/7 network monitoring and technical/diagnostic support
- Vehicle interoperability testing
- Technician training & certification programs
- Infield station testing
- Domestic warehousing of repair parts

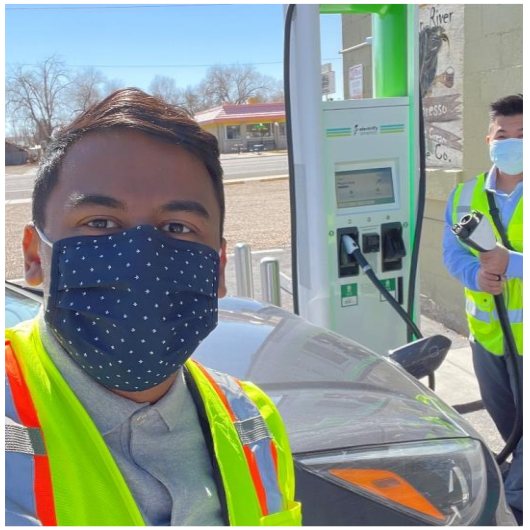
MEASURE MULTIPLE RELIABILITY METRICS

Define and measure additional performance measures beyond uptime to accurately reflect the customer experience:

- Customer Satisfaction Survey
- 3rd Party Quality Standardized Testing

Improving Reliability Requires Investment in Capabilities and Measuring Progress

- **Customer Contact Center:** Operates 24/7 via phone and email to provide personalized support including linguists who can respond in 240 languages and dialects
- **Network Operations Center**: Providing **24/7 engineering and diagnostic** support
- **Center of Excellence Test Lab**: Conduct EV **interoperability testing** with 20 OEM partners
- Field Testing: **In-field station testing** to preempt network issues
- Parts in Stock: Centralized parts distribution network provides **repair capability**
- Ground-up, Electrify America specified **4.0 generation hardware** design and architecture.
- Internally-developed **network backend** and update **HMI**, to help improve the customer experience
- Manufacturer specific **training & certification** program with field technician performance management



Closing

DCFC reliability policies should take into consideration real world operational experience and a broader set of reliability measures that ensures a positive driver charging experience.

Thank you!

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