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EV Charger Reliability and Accessibility Accelerator

California Energy Commission
Docket Unit
Docket No. 23-EVI-01
RE: EV Charger Reliability and Accessibility Accelerator

Dear Commissioners,

I respectfully submit this public comment on the EV Charger Reliability and Accessibility Accelerator proceeding. I am a Staff Software Engineer specializing in EV charging infrastructure, with direct experience building production systems that address several of the reliability and interoperability challenges this proceeding aims to resolve.

CHARGER RELIABILITY â€” THE SOFTWARE LAYER

Much of the public discussion around charger reliability focuses on hardware uptime. While hardware reliability is important, our production data shows that the majority of failed charging sessions stem from software-layer failures: authentication timeouts, session initiation errors, and communication protocol mismatches between the charger and the network backend.

Specifically, the Commission should consider requiring:

1. OCPP 2.0.1 as minimum communication standard: OCPP (Open Charge Point Protocol) 2.0.1 provides structured error reporting, device management, and firmware update capabilities that earlier versions lack. Chargers running OCPP 1.6 have significantly higher session failure rates in our operational data due to limited error recovery mechanisms.

2. Standardized session telemetry reporting: Charger operators should be required to report session-level reliability metrics (session success rate, mean time to charge initiation, error classification) in a standardized format, enabling the Commission to identify systemic reliability issues across networks.

3. Real-time status accuracy: Many "available" chargers shown in apps are actually offline or faulted. The Commission should require that charger status updates propagate to roaming platforms within 60 seconds of a state change, using OCPI 2.2.1 status notification standards.

INTEROPERABILITY â€” CROSS-NETWORK ROAMING

I have built OCPI 2.2.1 interoperability infrastructure serving 850,000+ charge points across 31 countries. From this experience, the single most impactful reliability improvement the Commission can mandate is true cross-network roaming interoperability.

Current challenges include:
- Inconsistent OCPI implementation across networks, particularly in CDR (Charge Detail Record) field compatibility and real-time session management
- Token authentication failures during roaming sessions, often caused by partner capability mismatches
- Lack of standardized error handling when a roaming session fails mid-charge

The Commission should consider requiring OCPI 2.2.1 compliance for all publicly funded chargers, with a conformance testing program similar to what NEVI requires for hardware standards.

BIDIRECTIONAL CHARGING READINESS

As V2G-capable chargers begin deployment, reliability standards should include bidirectional-specific requirements: UL 1741-SA compliance for anti-islanding, IEEE 1547-2018 for grid support functions, and cybersecurity requirements including mutual TLS authentication between V2G equipment and aggregator platforms.

CONCLUSION

Charger reliability is ultimately a software quality and interoperability problem. The Commission's framework should address the full stack â€” from hardware uptime to communication protocols to cross-network roaming â€ to meaningfully improve the EV driver experience.

I welcome the opportunity to provide additional technical detail on any of these recommendations.

Respectfully submitted,
Rishabh Vaish
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