DOCKETED	
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Staff Workshop: Charging Network Roaming

9 – 11 a.m., Friday, May 31, 2024

Jeffrey Lu and Taylor Nguyen, Fuels & Transportation Division

Workshop Agenda

9:02 CEC Overview: Interoperability and Roaming

9:13 Questions and Answers + Public Comment

9:23 Guest Presentations

There will be opportunity for audience questions following each presentation

Cory Bullis, Flo

Trishan Peruma, Hubject

Karim Farhat, EVCS

Simon Oullette, ChargeHub

10:40 Next Steps + Public Comment

Commitment to Diversity

The CEC adopted a resolution strengthening its commitment to diversity. The CEC continues to encourage disadvantaged and underrepresented businesses and communities to engage in and benefit from our many programs.

CEC staff conducts outreach efforts and activities to:

- Engage with disadvantaged and underrepresented groups throughout the state;
- Notify potential new applicants about the CEC's funding opportunities;
- Assist applicants in understanding how to apply for funding from the CEC's programs;
- Survey participants to measure progress in diversity outreach efforts.

Diversity Survey

Scan the code on a phone or tablet with a QR reader to access the survey.

One-Minute Survey (link)

The information supplied will be used for public reporting purposes to display anonymous overall attendance of diverse groups.

Zoom Participants, please use the link in the chat to access the survey or scan the QR code on the left of the screen with a phone or tablet to access the survey.

Survey will be closed at the end of the day.

CEC Overview: Interoperability and Roaming

The Charging Ecosystem Consists of Several Entity Types and Links

Charging ecosystem general architecture (please reference the CEC's Interoperability Statement):

- Long term goal: **Broad interoperability**, meaning a future where any driver with any car can easily charge at any charger on any charging network.
- Broad interoperability requires interoperability across all individual links.
- Today's workshop will focus on **roaming,** or interoperability across Link C.

* **EV** = Electric Vehicle; **CSO** = Charging Station Operator; **EMSP** = EMobility Service Provider.

Real World Examples of Roaming and No Roaming

Charging ecosystem general architecture

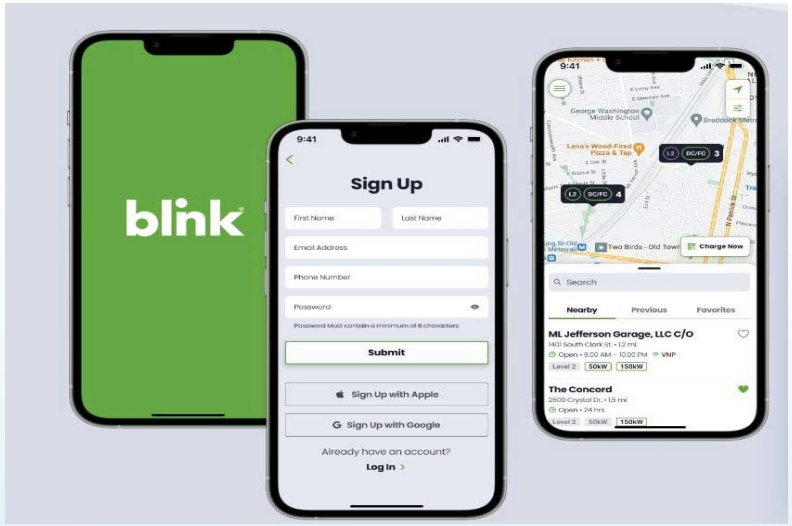
Example *with* roaming (note that CSO and EMSP are different and must interoperate)**:**

Example *without* roaming (note that CSO and EMSP are the same):

* **CSO** = Charging Station Operator; **EMSP** = EMobility Service Provider. Image credit: Wikimedia Commons.

What is Roaming for EVs?

- Interoperability between CSOs and EMSPs
- Allows EV drivers to charge at stations operated by different charging station operators with a single account.
- Eliminates need for manual one-time payment or the hassle of juggling multiple apps and accounts.



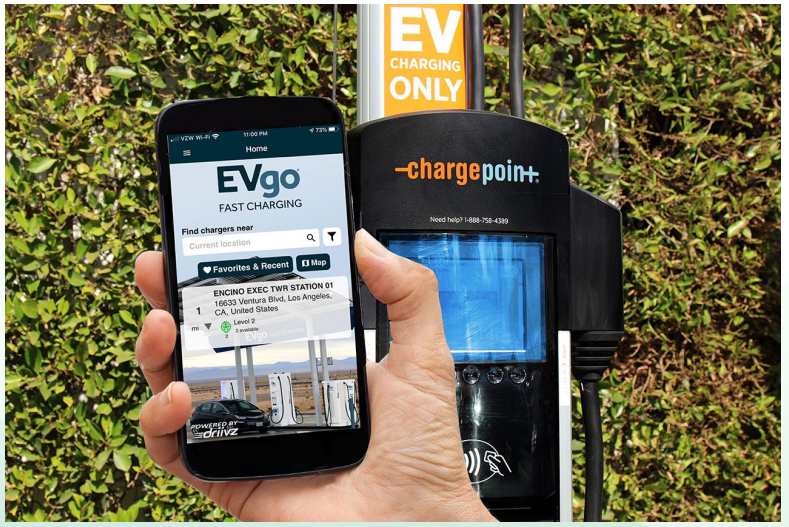
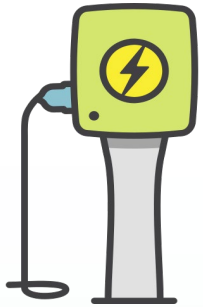


Image Credit: Blink, Electrify America, EVgo

Why is Roaming Important?

Increased roaming could make charging easier for drivers, but implementation has been limited in North America.



Expand access to existing chargers

Reduce need for multiple accounts and apps

Simple “plug and charge” experience

Image credit: Flaticon.com

Enablers for Roaming

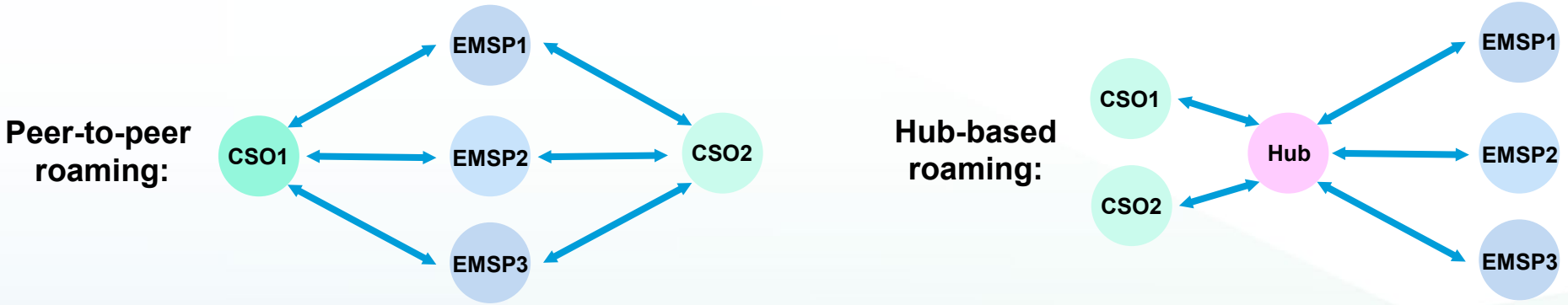
- Open Charge Point Interface (OCPI) is a common open protocol for CSO-EMSP communication.[1]
- CARB regulations have required operators of networked chargers to maintain OCPI capability since 2021.[2]
- The National Electric Vehicle Infrastructure (NEVI) Formula Program also requires charging networks to be capable of OCPI.[3]

[1]EVRoaming Foundation, About Us
[2]CARB, Attachment B (OCPI Test Procedures)
[3]Federal Register, NEVI Standards and Requirements

Roaming Agreements

Roaming can occur when entities enter an agreement covering:

- *What* roaming agreements entail: Business and legal provisions
- *How* roaming is enabled: Technical integration



Roaming Seen Elsewhere

- United Kingdom – Public Charge Point Regulation 2023
  - Mandates that public charging infrastructure use at least one third-party roaming provider, essentially requiring roaming capability.[1]
- European Union
  - Alternative Fuels Infrastructure Regulation (AFIR)[2]
  - Roaming is common in Europe
- New Zealand – In the process of conducting a roaming trial between their three major charging networks.[3]

[1]GOV.UK, Public Charge Point Regulations 2023 guidance
[2]European Commission, Alternative Fuels Infrastructure
[3]ChargeNet, EV Roaming Pilot

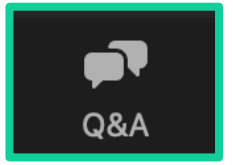
CEC Principles for Roaming

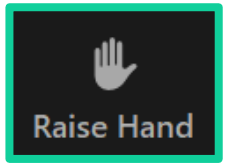
- Improving and simplifying the charging experience
- Widening charger access
- Implementation flexibility and ease for industry entities
- Ensuring innovation and competition

Questions or Public Comment?

- Enter written questions into the **Q&A box**
- Spoken questions and comments also welcome!

  Phone: ***9** to raise/lower hand, ***6** to unmute/mute
  Zoom: Click **Raise Hand** and we will enable your audio





Guest presentations

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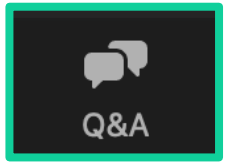
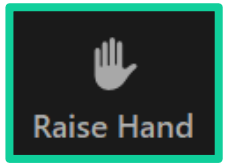
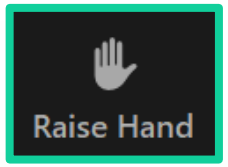




Public Comment

Raise your hand to speak. **Limit 2 minutes.**



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Thanks! Please let us know what you think

- Your comments will help inform future CEC roaming activities
- **Submit electronic comments to docket 22-EVI-06**
- Commenting deadline is **5 p.m., Friday, June 21, 2024**
- Please see the workshop notice for alternate commenting methods and staff contact information