# NARUC Electric Vehicles State Working Group

INNOVATIVE CHARGING SOLUTIONS

DECEMBER 10, 2024, 3:00 - 4:30 PM ET

# Welcome

EV SWG Chair

**Commissioner Katherine Peretick, Michigan Public Service Commission**

EV SWG Vice Chair

**Commissioner Milt Doumit, Washington Utilities and Transportation Commission**

EV Commission Staff Lead

**Steve Olea, Arizona Corporate Commission**

NARUC Staff

**Danielle Sass Byrnett and Robert Bennett**

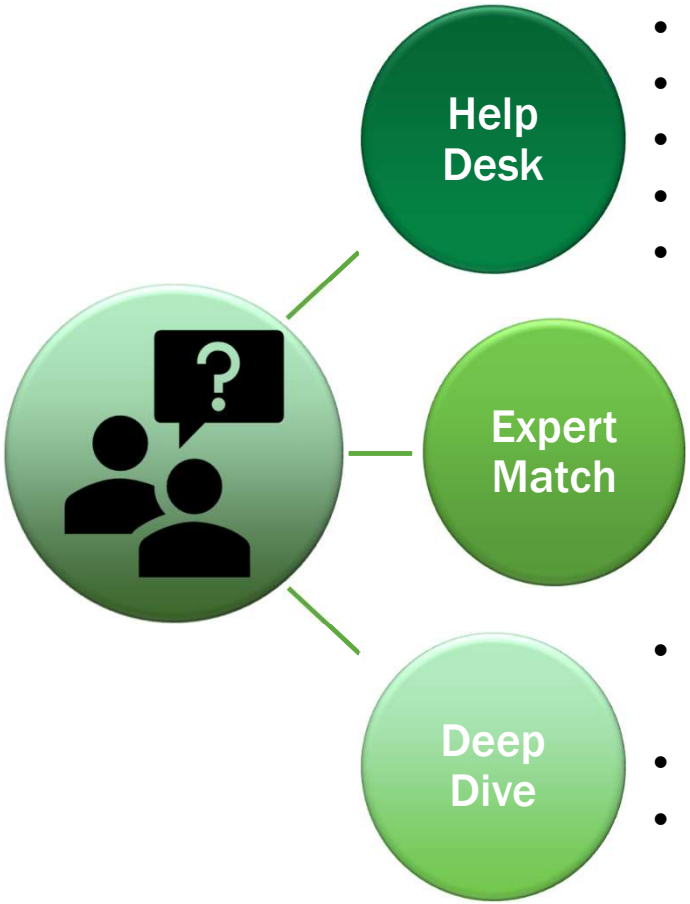
# Agenda

***Feel free to enter questions into chat at any time***

| | |
|---|---|
| **3:00 PM** | **Welcome and Announcements: Commissioner Peretick**<br>• Agenda review<br>• LBNL State TA Funding Opportunity |
| **3:05 PM** | **Debs Schrimmer, The Joint Office of Energy and Transportation (JOET)** |
| **3:15 PM** | **Stefan Tongur, Electreon** |
| **3:25 PM** | **Dean Spacht, EVSE LLC** |
| **3:35 PM** | **Speaker Q&A** |
| **3:55 PM** | **Peer Sharing Discussion** |
| **4:30 PM** | **Adjourn** |

EV Fact of the Week: **In North America, 37% of Shared Micromobility Trips Replaced a Car Trip.** For more info and other facts, visit DOE FOTW webpage.

# Robust Technical Assistance Opportunities



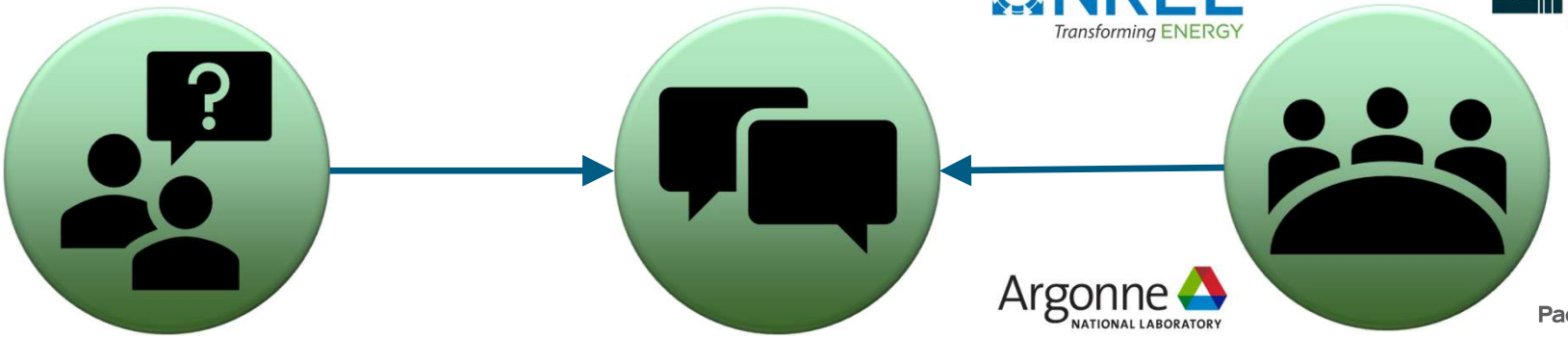

- Online intake form w/ rolling screening
- Program rep will connect w/in 2 days to clarify request
- SME will connect w/in 5 days to begin addressing request
- SME provides up to 4 person-hours of support
- Intake form and support available **now**

- Online intake form w/ rolling review
- Program rep will connect w/in 2 days to clarify request
- SME will connect w/in 5 days to begin addressing request
- SME provides up to 80 person-hours of support
- Intake form and support available **now**

- Detailed application form w/ planned 9-month work cycle by Labs & DOE, with limited opportunity for mid-cycle review
- Team of SMEs provide 80+ person-hours of support
- Detailed online application due **January 19, 2025** with TA awards announced in late **March**

https://emp.lbl.gov/projects/state-TA-program/

# Deep Dive TA Office Hours




Nov. 18th 1:00PM-3:00PM EST

Nov. 25th 1:30PM-3:30PM EST

Dec. 4th 12:00PM-2:00PM EST

Dec. 12th 11:00AM-1:00PM EST

Dec. 17th 2:00PM-4:00PM EST

Jan. 8th 4:00PM-6:00PM EST

Jan. 17th 1:00PM-3:00PM EST

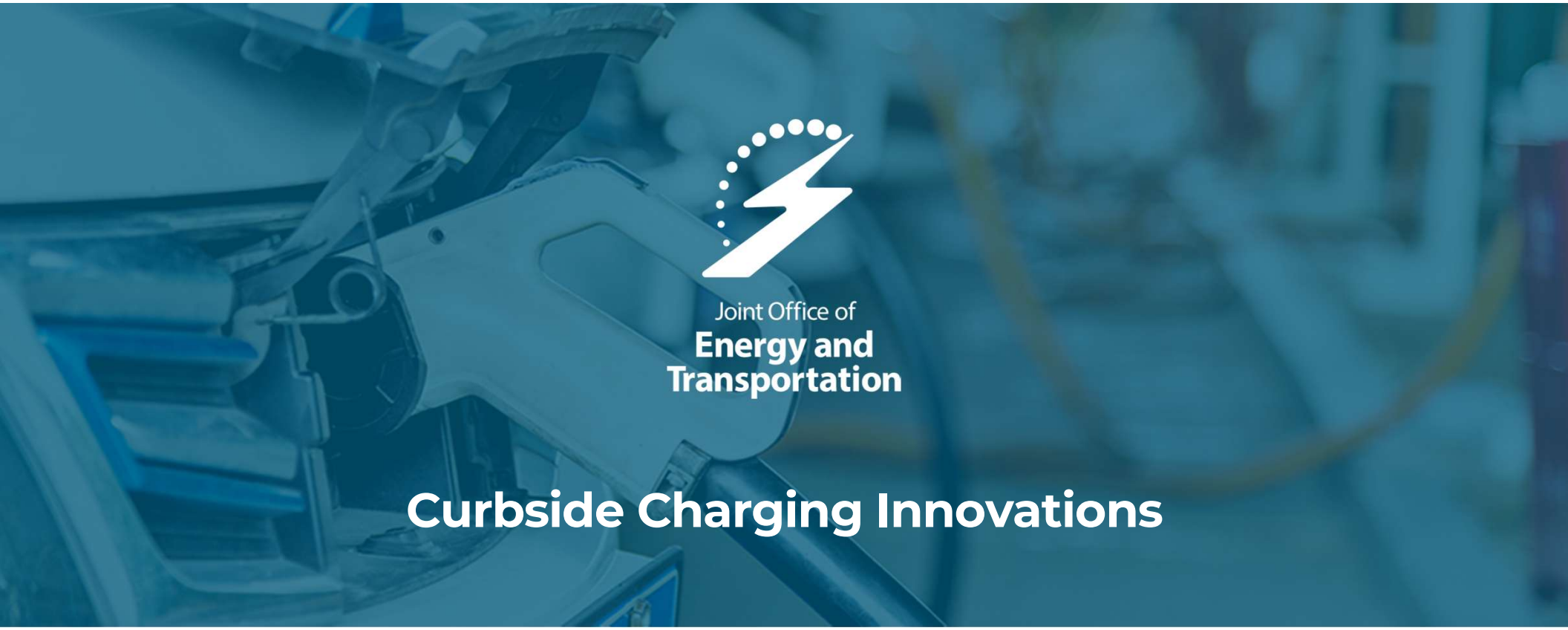
**Schedule a 30 minute time slot @ https://calendar.app.google/X5X3r5MpTi22Er396**

# Presentations on Innovative Charging Solutions

**Moderator:** Commissioner Katherine Peretick, Michigan Public Service Commission

## Guest Speaker

- **Debs Schrimmer, The Joint Office of Energy and Transportation (JOET)**
  - JOET Innovative charging solutions support and Bring Your Own Cord (BYOC)
- **Stefan Tongur, Electreon**
  - Detroit Michigan, Inductive Charging Pilot
- **Dean Spacht, EVSE LLC**
  - Curbside and Light pole charging



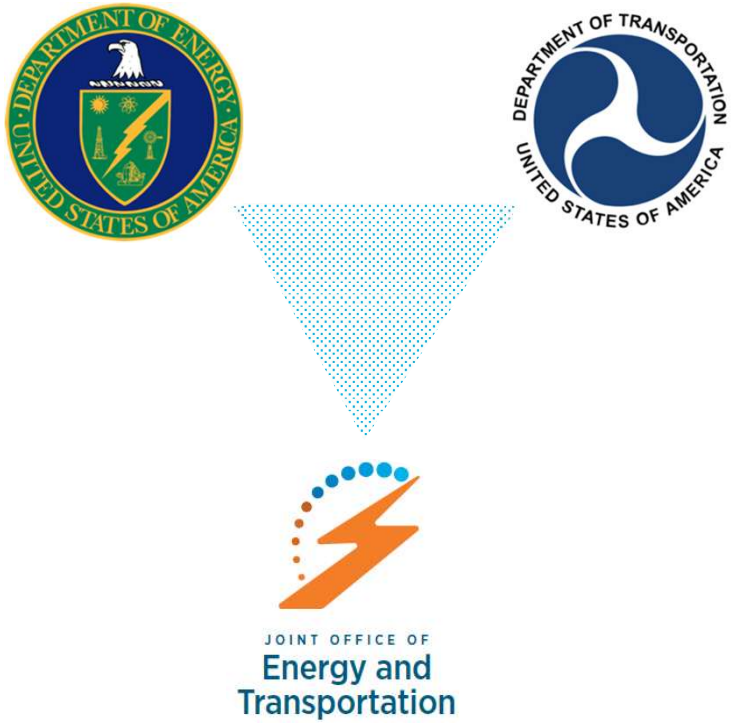

# Curbside Charging Innovations

**Debs Schrimmer, Senior Advisor**

NARUC EV State Working Group
December 10, 2024

driveelectric.gov

# Mission and Vision




## Mission

To accelerate an electrified transportation system that is affordable, convenient, equitable, reliable, and safe.

## Vision

A future where everyone can ride and drive electric.

# Joint Office is supporting over $19 billion in BIL funding for clean transportation

**National Electric Vehicle Infrastructure (NEVI) Formula Program (U.S. DOT)**
**$5 billion for states** to build a national EV charging network along corridors, including **$148** million awarded to repair and replace non-operational chargers.

**Charging & Fueling Infrastructure Discretionary Grant Program (U.S. DOT)**
**$2.5 billion for communities** to build EV charging, as well as hydrogen, natural gas, and propane fueling infrastructure

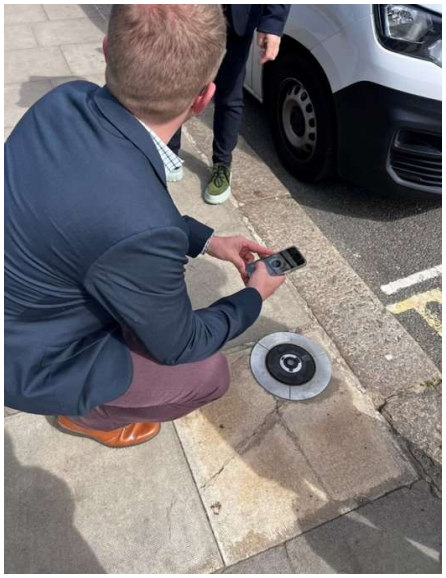
**Low-No Emissions Grants Program for Transit (U.S. DOT)**
**$5.6 billion for transit agencies** to deploy low- and no-emission transit buses

**Clean School Bus Program (U.S. EPA)**
**$5 billion** in support of electric school bus deployments

**Clean Heavy Duty Vehicles Program (U.S. EPA)**
**$1 billion** to replace existing Class 6 and Class 7 non-zero-emission heavy-duty vehicles

**Ride & Drive Funding Opportunity (Joint Office)**
**$46.5 million** to enhance charging resiliency and performance and enhance equitable access

**Communities Taking Charge Funding Opportunity (Joint Office)**
**$54 million** to expand community e-mobility, fleet electrification, and barriers to no-home charging

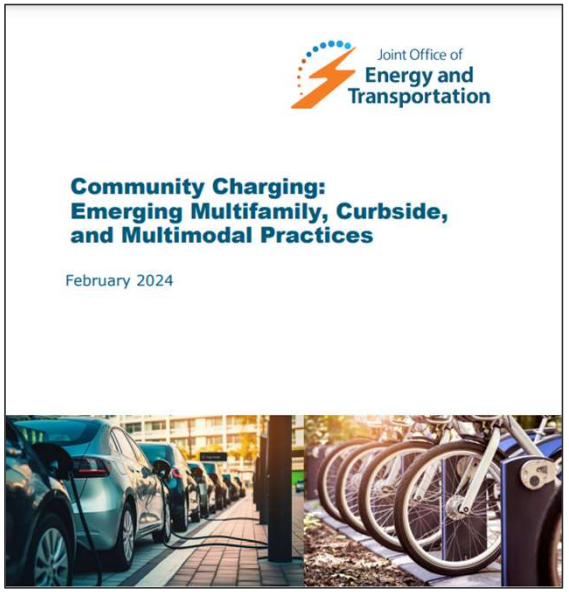



L'ABUS D'ALCOOL EST DANGEREUX POUR LA SANTÉ.
04


City of Westminster
Electric vehicle charge point for Resident Permit Holders
Please leave space for Electric Vehicles to park

# Community Charging Whitepaper

- Innovative payment methods
- Smart outlets and panels
- Battery-enabled fast charging
- Mobile and containerized solutions
- Streetlights and utility poles
- Bring Your Own Cord
- Peer-to-peer charging
- Mobility hubs




https://driveelectric.gov/files/community-emobility-charging.pdf

# Bring Your Own Cord (BYOC)

- Vehicle owner provides their own charging cord to connect their EV to a powered outlet
  - Also called carry-along cord, detachable cord, or consumer cord
- The cord is supplied by the charging network provider, the vehicle manufacturer, or a third-party retailer
- Used for Level 2 charging (up to 22 kW)
- Widely deployed across Europe, nascent in the U.S.
  - OEMs provide L2 cord at point of sale

**Benefits:**

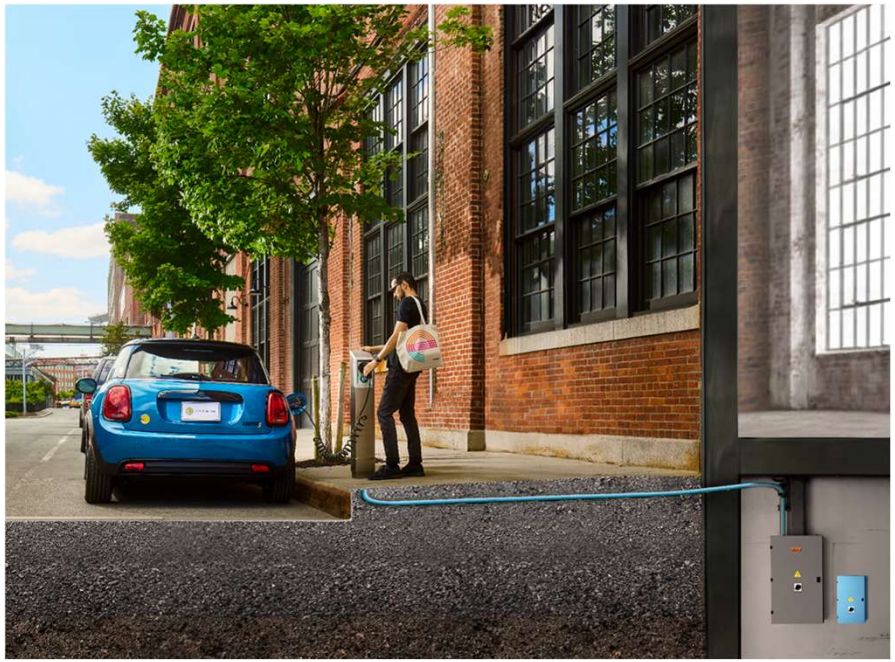
- Reliability: User keeps detachable cord in vehicle and plugs into charger when ready to charge.
- Accessibility: Keep streets free of cables when a car is not charging, fewer conflicts at the curb.
- Decreased O&M costs: Potentially reduce instances of theft and vandalism of cords and connectors.

**Example: itselectric has received $1.5 million from the Joint Office's Ride and Drive program to:**

- Deploy 60 chargers in Justice 40 neighborhoods across 4 cities.
- Train 80 residents (20/city) how to be EVSE technicians.
- Create a curbside charging toolkit for cities.

# Example: itselectric's Business and Operating Model

- Detachable cables and streamlined design.
- Leverages existing residential and commercial infrastructure.
- Lower construction costs through shallow trenching from building to curb.
- No hardware or installation costs for cities or property owners.
- Offers a revenue share for property owners.



# Example: NYC DOT Studio Pilot Program

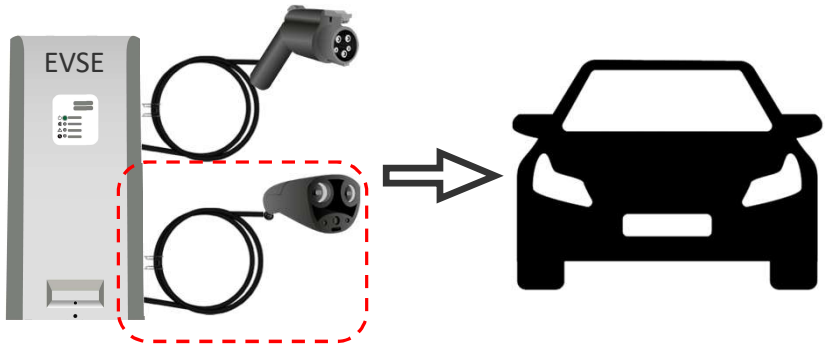

https://www.newlab.com/casestudies/readying-new-york-city-for-electric-vehicle-use-at-scale

# Considerations for Scaling BYOC

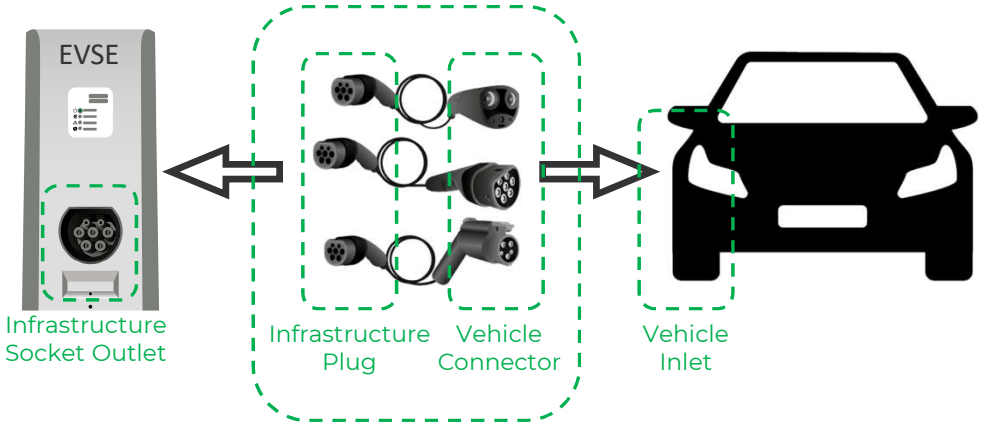
- **Regulatory**
  - § 680.106(c) Connector Type - "Each AC Level 2 charging port must have a **permanently attached J1772 connector** and must charge any J1772-compliant vehicle."
    - BYOC not currently eligible for NEVI or CFI programs

- **Operational**
  - Who provides charging cables at scale – Network operators? Automakers? Consumers buy them?

- **Technology & Standards**
  - J3400
  - J3068




Not Allowed with § 680.106(c)
AC Level 2 Ports Require Permanently Attached J1772 Connector




Bring-Your-Own-Cord (BYOC)

**SAE J3400**

- Simplifies connection to 480-Volt, 3-phase power
- Reduces transformer costs
- Industry is moving in this direction

**SAE J3068**

- Adds the Universal EV Outlet to standards
- Provides future-proofing and flexibility for all EV types Increases charging power level, provides intermediate power levels between legacy Level 2 power and DCFC levels
- Supports vehicle Secure ID for "Plug & Charge" payment and V2G

J3400 + J3068 supports BYOC and solves several public charging challenges:

1. Provides a truly universal AC EV charging outlet
2. Avoids the long lead times and high cost of transformers
3. Eliminates cord-replacement costs and downtime from theft/vandalism/damage
    - Indirectly supports uptime with fewer components to fail and universal replacements

Joint Office of
Energy and
Transportation

# Thank You!

driveelectric.gov


# NARUC–Electreon Presentation

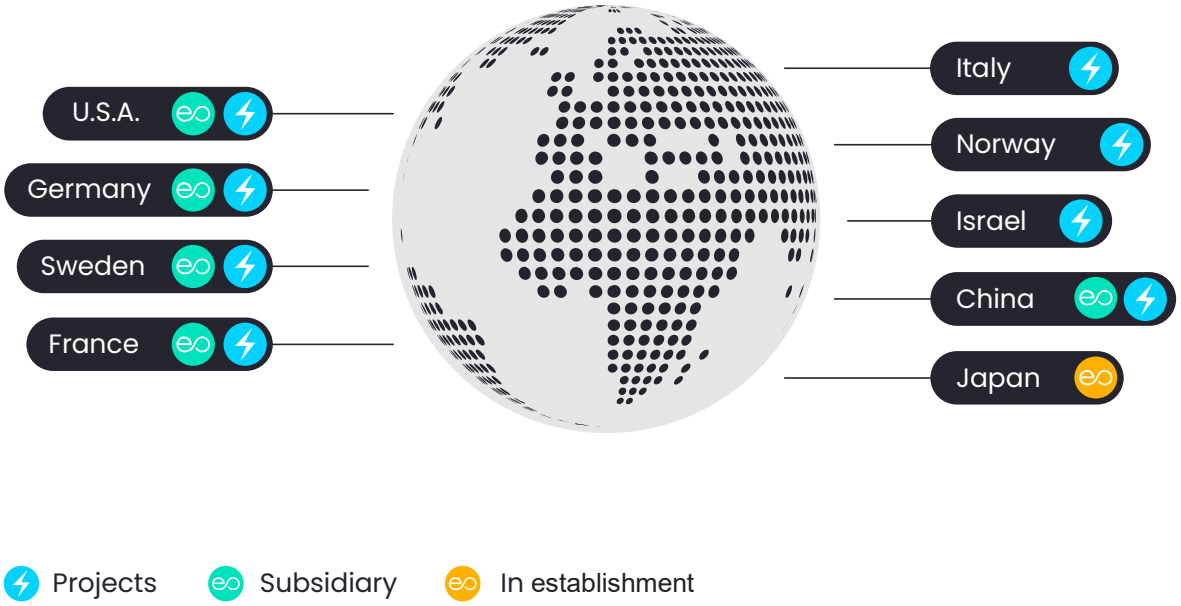
**Stefan Tongur, VP of Business Development**
**Stefan@electreon.com**

13 November 2024


STANDARD
STANDARD

treon

# Electreon – World leading Pioneer of Wireless EV Charging




Projects  Subsidiary  In establishment

**2013**
Founded

TIME
**2021**
One of the best inventions of the year

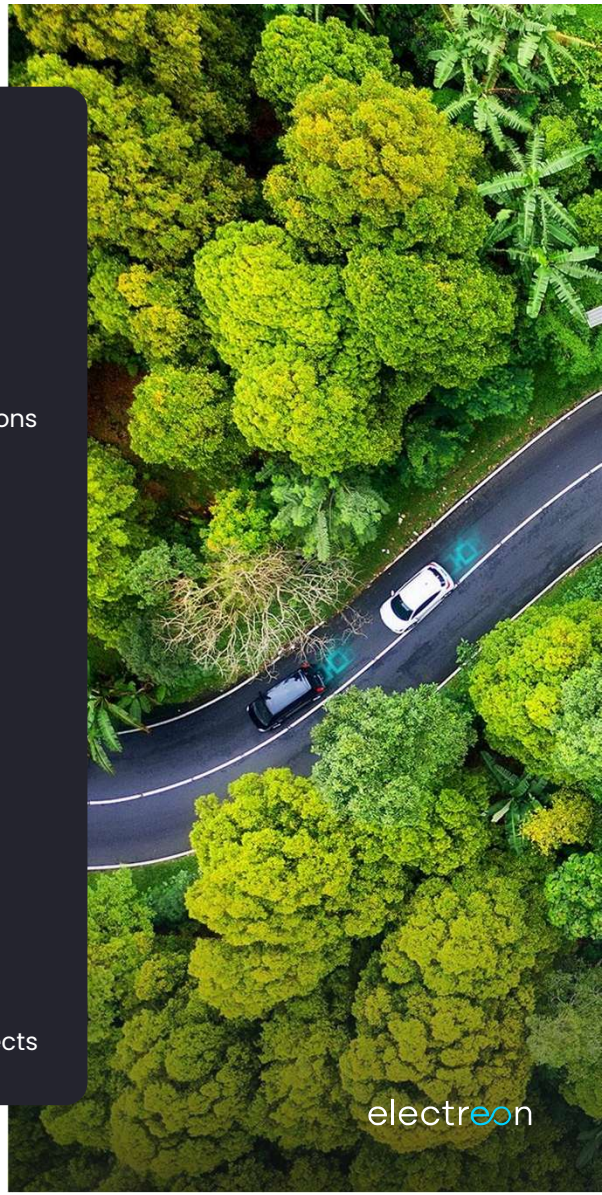
**32+**
Patents*

**16**
Automotive partners

**135**
Employees globally

**20+**
Global projects

*Registered and Pending



# Electreon's Wireless Charging System

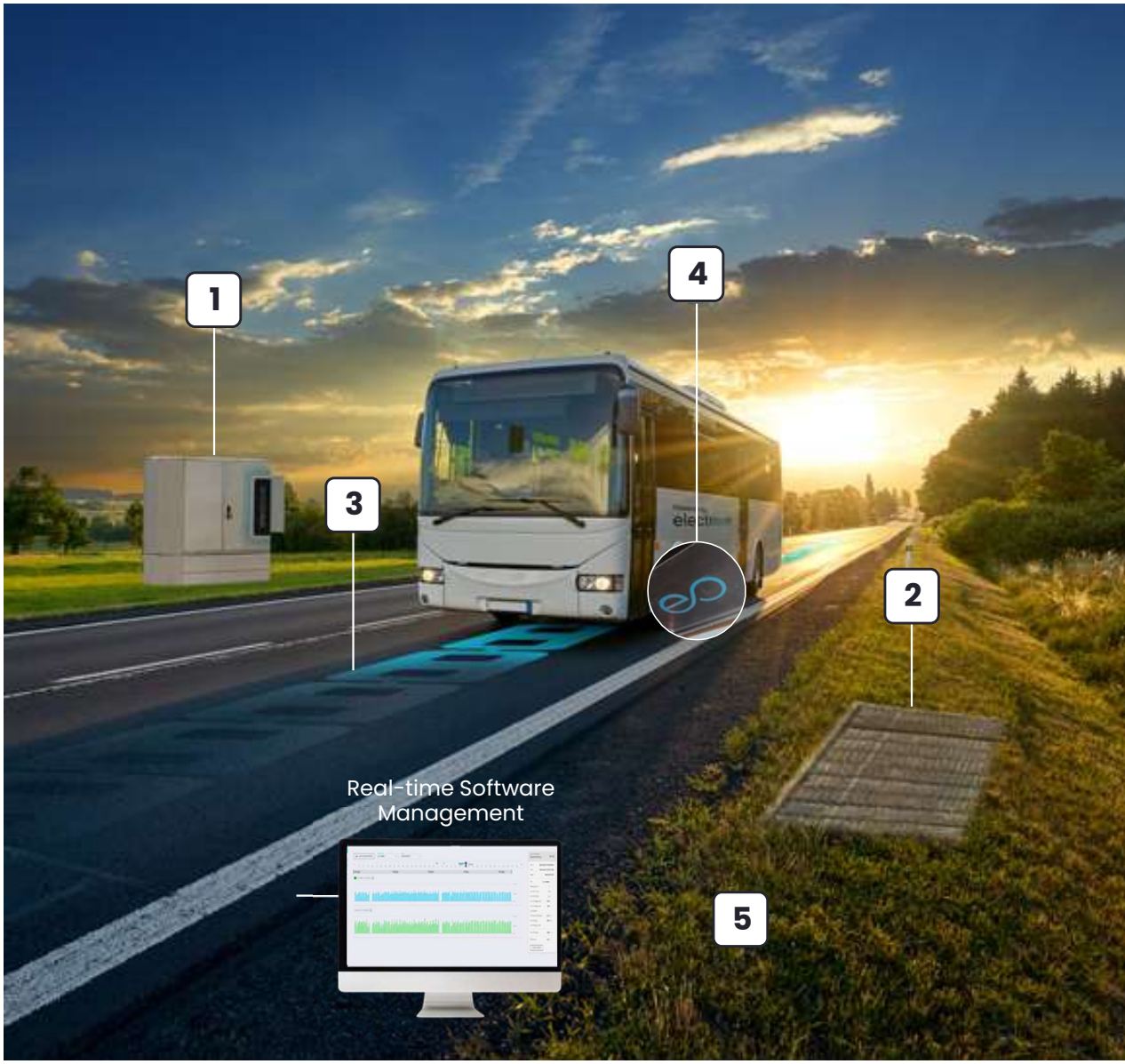
1 **Management Unit**
Transfers energy from the grid to the charging infrastructure

2 **Underground Management Unit**
Same functionality as without any visual impact

3 **In-road copper coils**
Transfers power to the vehicles' receivers

4 **Vehicles receiver**
Installed on the EV to transfer energy directly to the engine

5 **Management Software**
Monitors & manages optimal EV charging in real time



GU0

# Why Electreon

**A shared charging platform for all EV's** 3-4 EVs can charge simultaneously on a 300 feet stretch

**24/7 Uptime- No downtime**, range anxiety free with on-route and stationary top up charging

**Charging throughout time and space**
Eases the pressure on the electric grid

**Maximal Efficiency**
Reduced CO2 emissions, battery and cost reductions

**Charging Smart for Farther Driving**
Charging at optimal power levels extends battery life and enhances performance

**Slide 24**

**GU0** ST: We should start with the challenges slide
Guest User, 2024-08-21T01:36:12.477

**KA0 0** Added above
Keren Alleson-Gerberg, 2024-08-21T08:37:13.821

# Michigan – The Nation's First Public Wireless Charging Road

The nation's first wireless road, sets a precedent for sustainable infrastructure

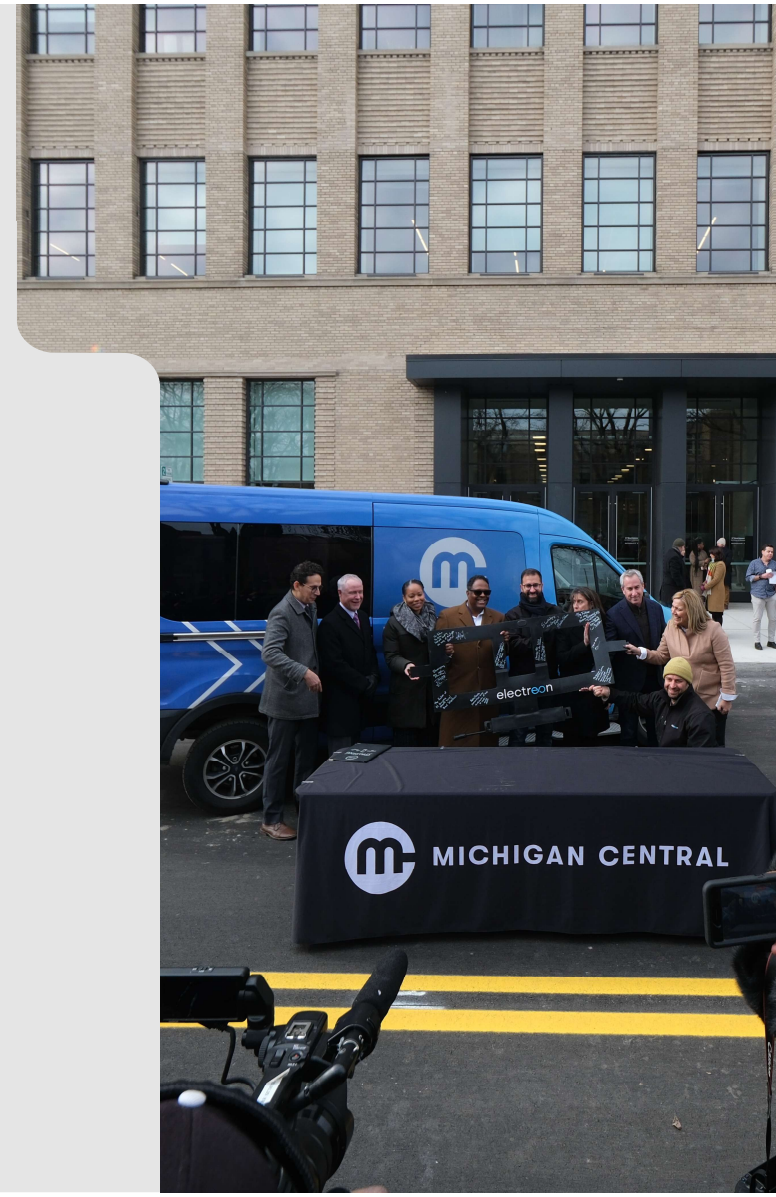
**One technology Two Solutions**
Enables both dynamic (charging while driving) and stationary (charging) capabilities

**4.9 billion in Media Coverage**
In 734 US-based publications – coverage link here

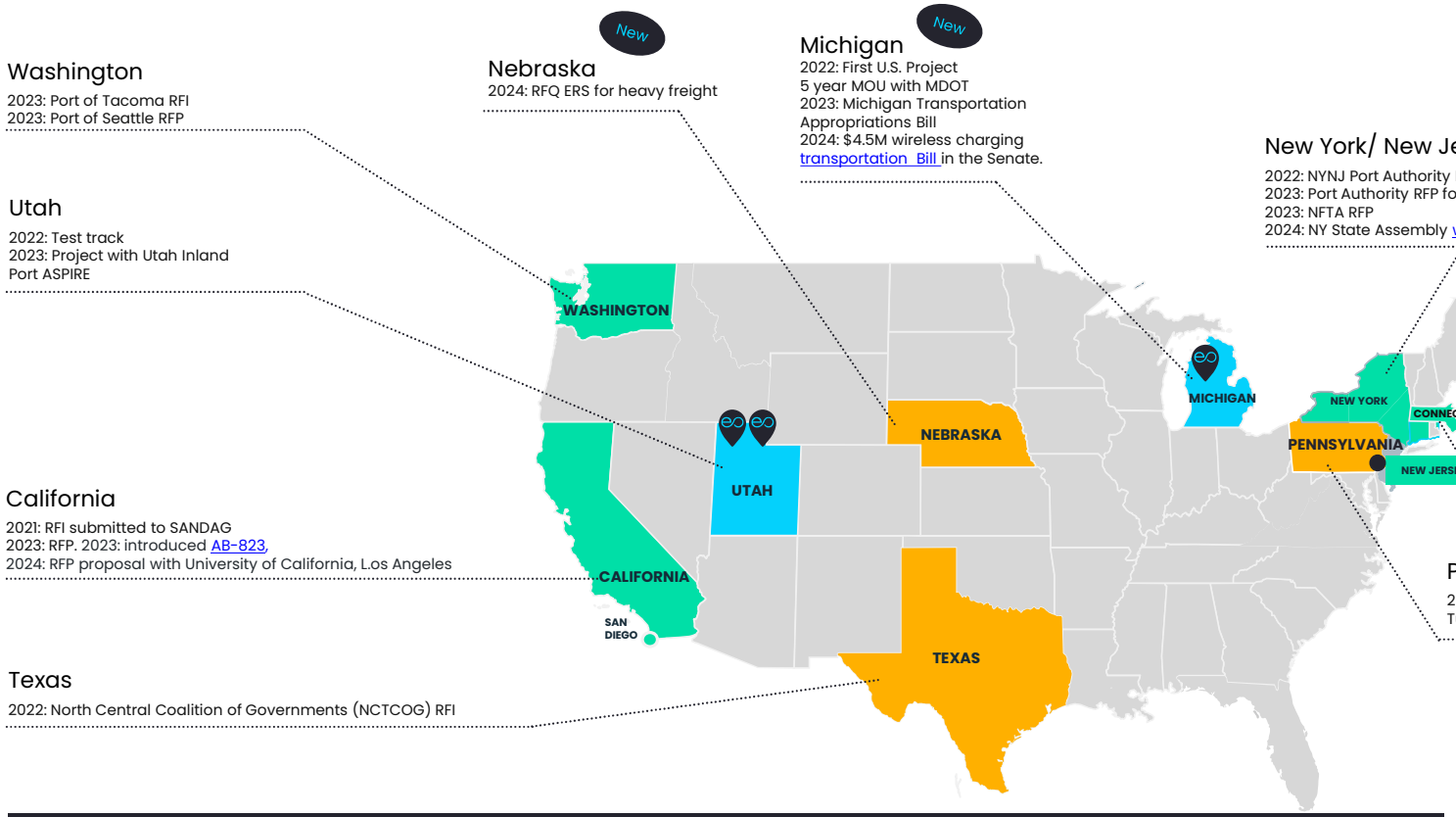
**Modular infrastructure – One Platform with Many Users**
One of the world's leading last-mile delivery companies is on board, with others in the pipeline

**5 Year MOU with Michigan State**
To lead Michigan and the U.S. in large-scale deployment of electrified roadways

## Leading an eco-system of collaboration between government and business



# Status of Wireless Electric Roads in the United States




### Washington
2023: Port of Tacoma RFI
2023: Port of Seattle RFP

### Nebraska
New
2024: RFQ ERS for heavy freight

### Michigan
New
2022: First U.S. Project
5 year MOU with MDOT
2023: Michigan Transportation Appropriations Bill
2024: $4.5M wireless charging transportation Bill in the Senate.

### New York/ New Jersey
New
2022: NYNJ Port Authority Innovation RFI
2023: Port Authority RFP for large engineering firms
2023: NFTA RFP
2024: NY State Assembly wireless charging bill

### Utah
2022: Test track
2023: Project with Utah Inland Port ASPIRE

### California
2021: RFI submitted to SANDAG
2023: RFP. 2023: introduced AB-823,
2024: RFP proposal with University of California, Los Angeles

### Texas
2022: North Central Coalition of Governments (NCTCOG) RFI

July 2023: Federal bill submitted in congress to authorize $250M in grants for wireless charging

### Connecticut
2024: Supports CTfastrak's BRT 9-mile route with dynamic and stationary charging

### Pennsylvania
2024: Pennsylvania Turnpike RFI

- Electreon Signed Project
- RFP- request for project
- RFI - request for info

US wide calls for wireless charging:
**2022**: U.S. Department of Transportation (USDOT) **RFI** on Wireless Charging, developing funding for innovative charging solutions

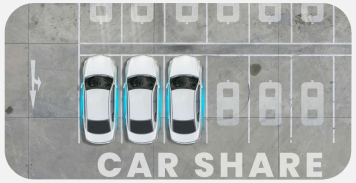
electreon

# Electreon go to market segments

Airport

Campus/Universities


Last mile deliveries



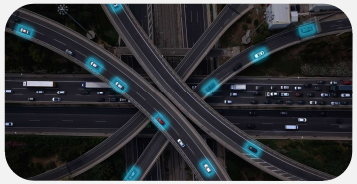

Shared cars

Point to point

Taxi

BRT

Fleet Management



Highways ERS

Privat EV's

Data-driven platform for **Smarter EV Management** and **Charging solution**


electreon

# Lamp Post/Utility Pole Charging:
## Technology Impact & Opportunities for Growth


**Dean Spacht**
Control Module Inc/EVSE
Executive Director of Sales
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dspacht@controlmod.com

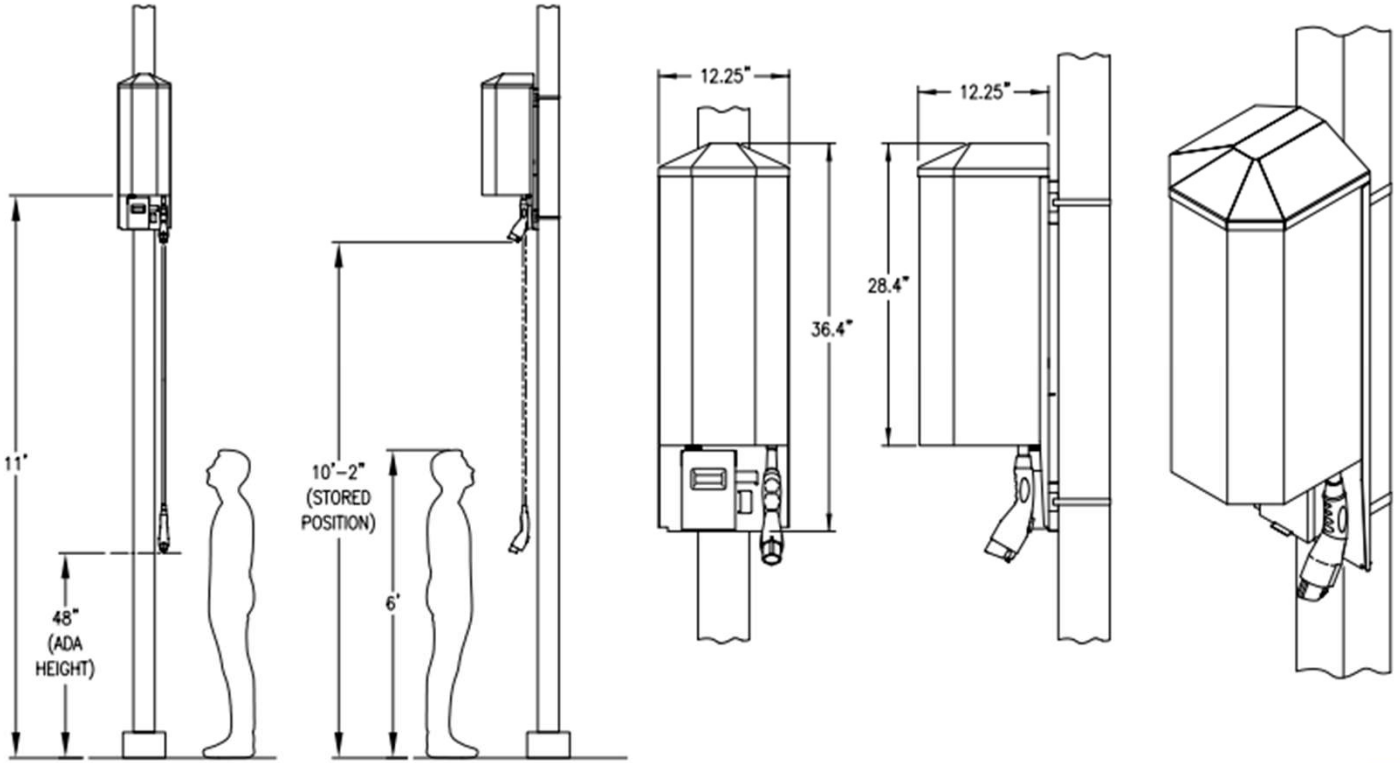
EVSE
Smart Charging Solutions for Electric Vehicles
A Division of Control Module Inc.

# EVSE Retractable Cable For Curbside Application

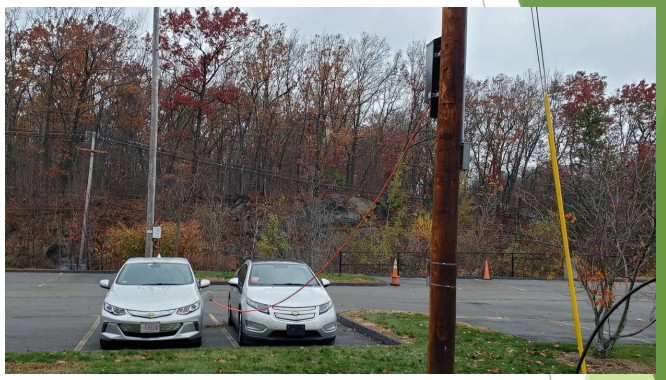
- Mount on Light/Wood Distribution/Custom Poles at Curbside
- Level 2 Product, 208-240 VAC, 40A (9.6 kWh Output, 30-33 mile per hour of charge)
- Mounted Elevated 10-12 Foot Above Ground Level, 25 Foot Cable Reaches 2 Vehicles
  - Competitors Mount at Ground Level
- Single or Dual Mounting
- Mount Away from Vandalism, Flood Waters, Other Sources of Damage
- Fixed Mount Backplate Which Stays on Pole if Charger Removed for Service
- Local Power Disconnect
- Cable Drops to ADA Level (48”) on Proper Authorization from OCPP Back Office Network
- Compatible With Driver Payments Via Credit Card, RFID, etc.


Melrose/National Grid

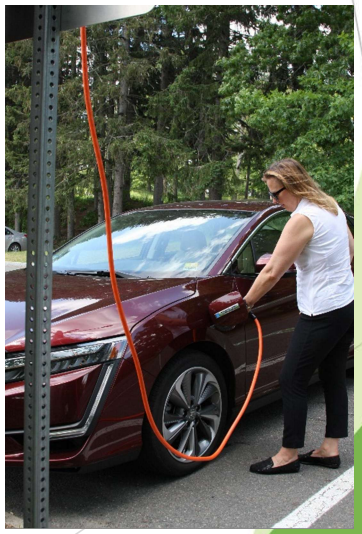
# The Template – Light Pole



# The Template – Wood Distribution Pole

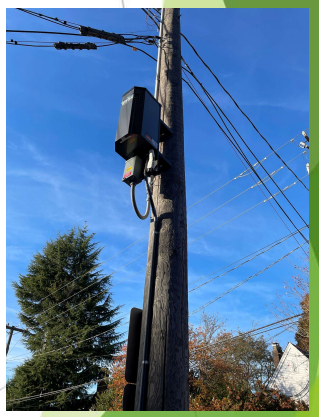
# How It Works

Also check out: https://www.youtube.com/watch?v=UjiR-Wz_Z8s

# Reasons for Curbside Application

- Off-Street Parking Not Available in Some Areas: Congested Areas, Multi-Family, Disadvantaged, Downtown, Beaches and Parks, Public Areas
- Flexible Mounting for Light/Wood Distribution or Custom Poles; Single or Dual
- Poles Owned By Utilities/Municipalities with Right of Way and Large Numbers, Readily Available
- Installation Savings of 50% or More Compared to Non-Pole Mounted Ground Level Installations
- Publicly Visible Charging Stimulates Usage
- May be the Only Way to Keep Pace to Meet State Electrification Goals Vs. Small Project By Project



Seattle City Light

# Benefits for Elevated Curbside Application

- Flexible Mounting for Light/Wood Distribution or Custom Poles; Single or Dual..Volume
- Mount Equipment Above Vandalism/Flooding/Vehicular Impact Hazards
  - Secure, Drop Cable With Authorization to ADA Level
  - Reduces Life Cycle Cost of Charging Equipment
- Removes Ground Level Obstacles to Pedestrians
- Abundance of Sites Available Using Wood Distribution/ Light Poles and Alternatives
  - Custom Poles with Power Drop
  - Alternative Technologies: Solar
  - New Light Poles

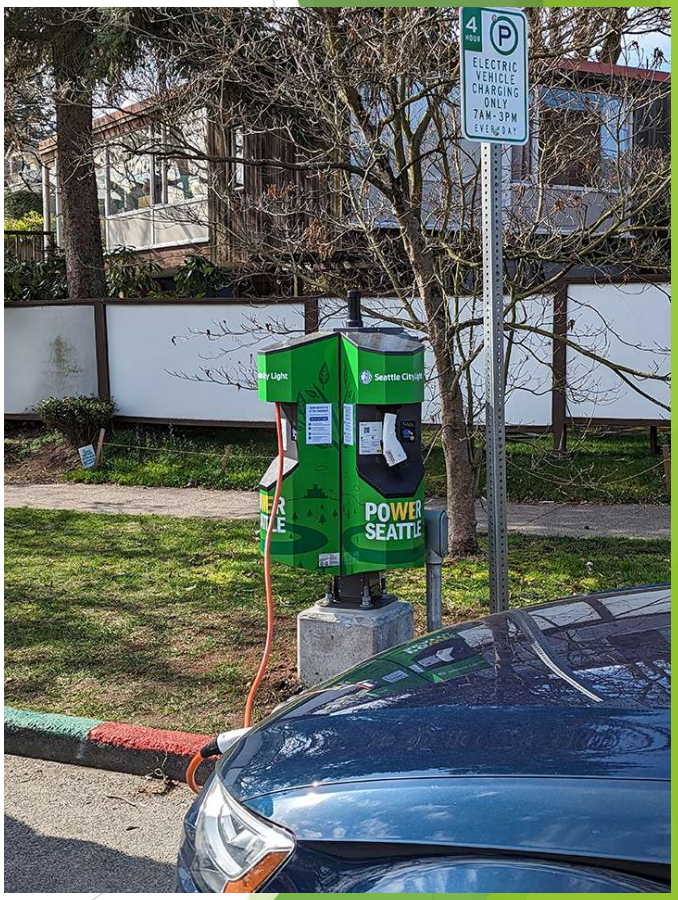

Los Angeles Bureau of Street Lighting

# Ongoing CMI/EVSE Projects

- Projects/Pilots Underway
  - Los Angeles Bureau of Street Lighting (BSL) – Light Pole (350 Ports) – Since 2016
  - Seattle City Light – Light, Utility, Custom Poles (60 Ports)
  - Portland GE – Utility Pole (150 Ports)
  - National Grid/Melrose – Utility Pole (15 Ports) – 3 Years + In Operation
  - Dominion Energy – Utility, Light Pole
  - Old Dominion Electric Coop (2 Stakeholders) – Utility Pole
  - El Paso Electric – Utility Pole
  - Madison (WI) Gas and Electric – Utility Pole
  - Rumford (ME) – Utility Pole
  - Reading MLP – Utility Pole
  - Burlington (VT) Electric - Utility Pole
  - Another Half Dozen or More Possible Within the Next 6 Months

# Inhibitors For Growth

- Requires Partnerships Between Many Stakeholders
  - Utility, Municipality, EVSE Manufacturer, Installer, Back Office Network Which Processes Billing and Data
- Some Utilities Not Allowed by DPU to Own Chargers
- Results In Municipalities Needing to Own Chargers and Results In
  - Attachment Agreements
  - Municipal Liability for Pole Infrastructure
- Long Planning and Regulatory Cycles
  - Utility Planning and Vetting of Poles
  - Utility and Municipal Stakeholder Buy In
  - Local Municipal Regulatory Issues
  - Standards Reviews and Inspection Approvals




Seattle City Light Power Drop

# Our Partners for Melrose

BROUGHT TO YOU BY nationalgrid

verizon



VOLTREK
POWERING YOUR JOURNEY

EVSE
Smart Charging Solutions for Electric Vehicles
A Division of Control Module Inc.

ampUp

CITY OF MELROSE
TOWN OF MELROSE
EXPLORED 1628
CHARLESTOWN 1629
POND FEILDE 1638
MALDEN NORTH END
1649
INCORPORATED 1850
INCORPORATED 1900

# Some Project Considerations

- Light/Distribution/Custom Pole, Voltages, Currents Available, Existing or New Pole
- Who Owns the Pole, Who Would Own the Charger, Attachment Agreements, Liability
- Who Are the Team Members, Utility, Municipality, Back Office Network, Installer, Charger Manufacturer; Close Teamwork Best
- What Customer is Being Served: Multi-Family, Workplace, Long Term Parking, Downtown Shopping, Commercial Business
- City Parking Regs, Traffic Flow, Commercial Property Access and Residential Approval, Standards Concerns, Electrical Code, Marking for Visibility, ADA Access
- Pole Vetting For Suitability
- Operational Considerations: Driver Payment, Demand Response, Installation and Service, Branding, Reporting

Seattle City Light Utility Pole

# Regulations and Codes


## Considerations

- Local Ordinances
- Traffic / Parking Related
- Overnight Parking Hours
- ADA Access
- Electrical Code
- Utility Standards – Mounting, etc.

# Streamline Regulations for Future Growth

- Allow Utility to Own Limited Numbers of Chargers to Support These Programs to Avoid Heavy Lift of Municipalities in Attaching to Utility/Light Poles With Associated Liability and Attachment Issues
  - Possibly Limit Term of this Ownership
- Eliminate Regulatory Inhibitors to Pilots Where Possible To Allow Assessment of Approach to Community With Minimal Delay
- Allow Funding of Municipalities To Permit Alternative Approaches
  - New Light Poles
  - Surrogate Poles Then Can Own Such as Solar or Custom Poles


Seattle City Light – Light Pole

# Thank You!

**Dean Spacht**
Control Module Inc/EVSE
Executive Director of Sales
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dspacht@controlmod.com

# Questions and Answers

**Moderator:** Commissioner Katherine Peretick, Michigan Public Service Commission

## Guest Speaker

- **Debs Schrimmer, The Joint Office of Energy and Transportation (JOET)**
- **Stefan Tongur, Electreon**
- **Dean Spacht, EVSE LLC**

# Member EV Roundtable

Please share the situation from your perspective:

- Have utilities proposed pilots or the use of new public charging approaches in your state?
- What incentives could be used to encourage utilities to try new charging technology?
- Are there other innovative technologies you have heard about?
- What innovative technologies do you think might be most promising for public EV charging?

# Upcoming 2025 EVSWG Topic

| Date (Last Tues. of the month) | Future 2025 EV SWG Topics |
|---|---|
| January 28, 2025 | Member EV Roundtable and Voting on 2025 Topics |
| February 25, 2025 | Topic TBD. |

Calendar invites for 2025 have been sent out, please contact Robert Bennett if you need assistance rbennett@naruc.org

# Next EV SWG Meeting: **January 28**, 3:00-4:30 pm ET via Zoom

WWW.NARUC.ORG/CORE-SECTORS/ENERGY-RESOURCES-AND-THE-ENVIRONMENT/ELECTRIC-VEHICLES/