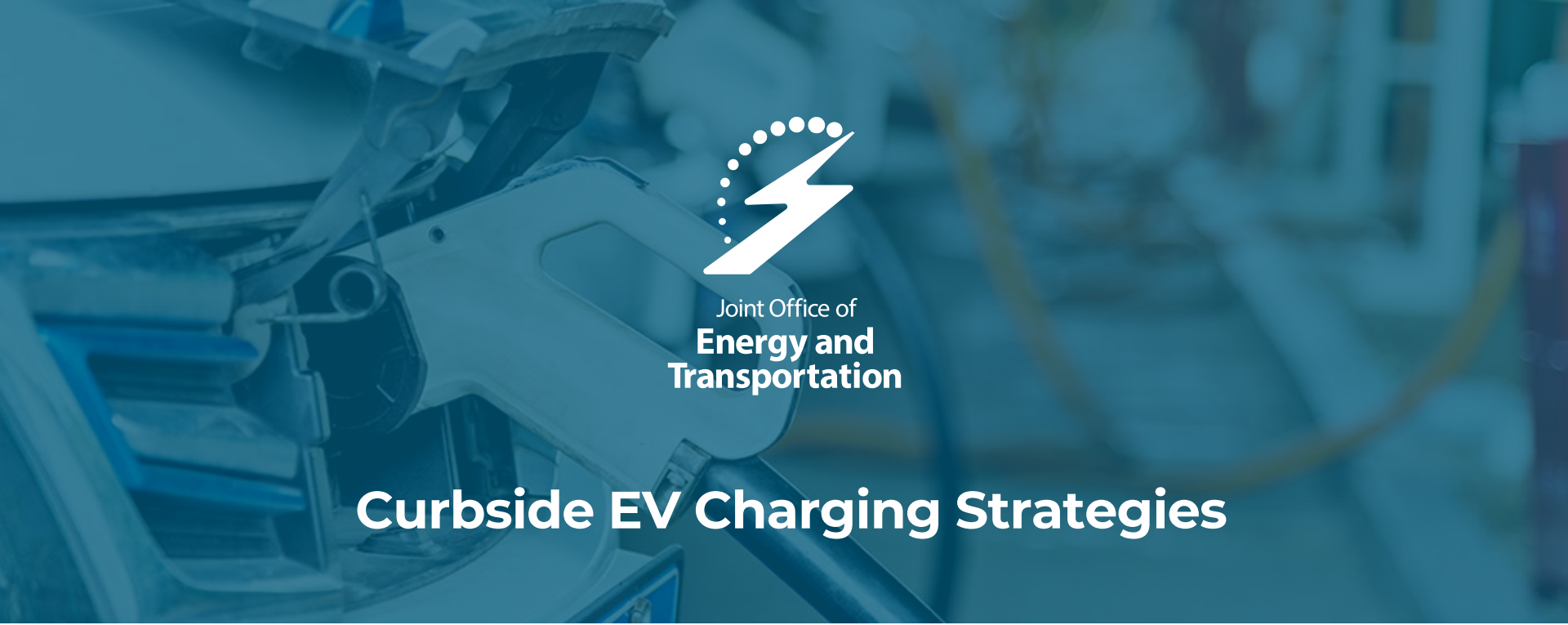


Joint Office of
Energy and
Transportation

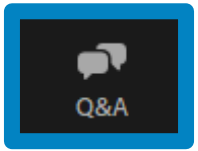
Curbside EV Charging Strategies

2/27/2024

driveelectric.gov

Zoom Tips and Housekeeping

- Controls are located at the bottom of your screen. If they aren't appearing, move your cursor to the bottom edge.
- Submit questions using the "Q&A" window



Disclaimer

Notice: This webinar is being recorded and may be posted on the Joint Office website or used internally.

If you speak during the webinar or use video, you are presumed to consent to recording and use of your voice or image.

Agenda

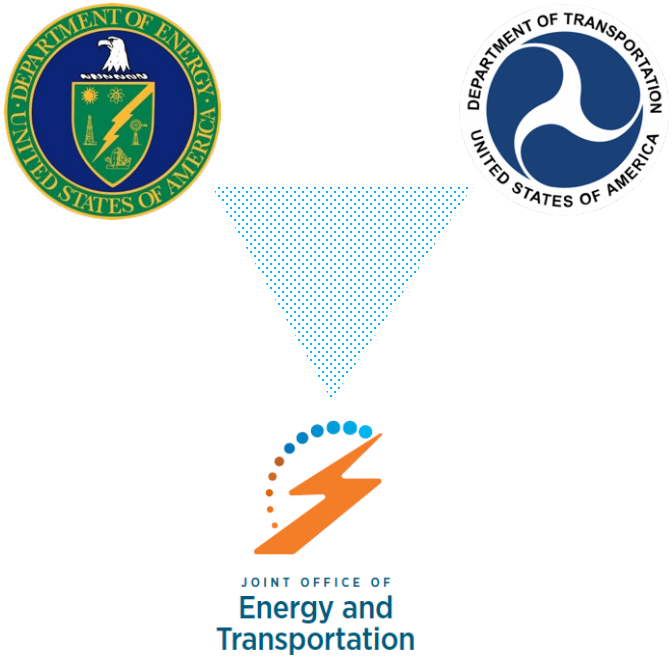
Introduction from the Joint Office

Presentations from panelists

Panel Discussion

Audience Q&A

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.

BIL Programs Supported by the Joint Office

The Joint Office will provide unifying guidance, technical assistance, and analysis to support the following programs:

National Electric Vehicle Infrastructure (NEVI) Formula Program (U.S. DOT)
$5 billion for states to build a national electric vehicle (EV) charging network along corridors

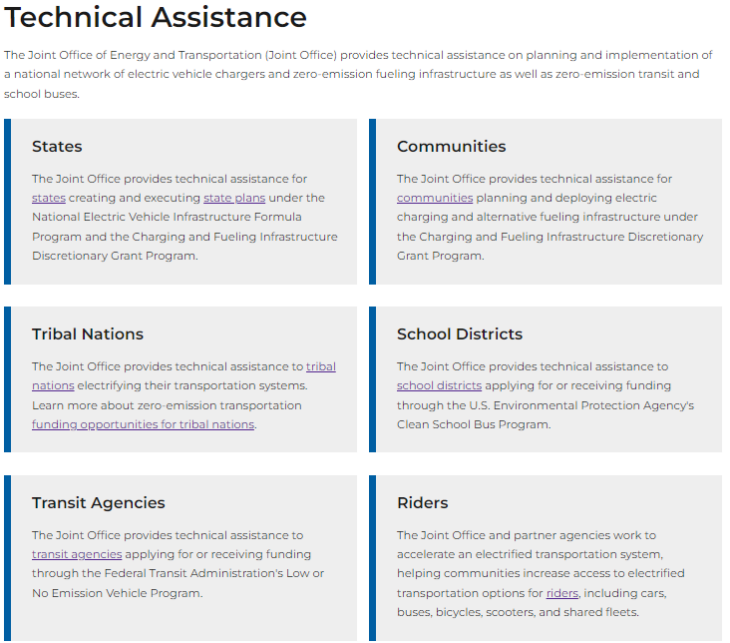
Charging & Fueling Infrastructure (CFI) Discretionary Grant Program (U.S. DOT)
$2.5 billion in community and corridor grants for EV charging, as well as hydrogen, natural gas, and propane fueling infrastructure

Low-No Emissions Grants Program for Transit (U.S. DOT)
$5.6 billion in support of low- and no-emission transit bus deployments

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

Technical Assistance Strategies

- Specialized assistance for **states, communities, Tribal Nations**, **transit agencies**, and **school districts.**
- **One-on-one meetings** with states.
- **Concierge service** (phone, email, web form) to efficiently route technical assistance requests.
- Technical assistance support team has **50 staff members across 10 organizations**.



Technical Assistance

The Joint Office of Energy and Transportation (Joint Office) provides technical assistance on planning and implementation of a national network of electric vehicle chargers and zero-emission fueling infrastructure as well as zero-emission transit and school buses.

States

The Joint Office provides technical assistance for states creating and executing state plans under the National Electric Vehicle Infrastructure Formula Program and the Charging and Fueling Infrastructure Discretionary Grant Program.

Communities

The Joint Office provides technical assistance for communities planning and deploying electric charging and alternative fueling infrastructure under the Charging and Fueling Infrastructure Discretionary Grant Program.

Tribal Nations

The Joint Office provides technical assistance to tribal nations electrifying their transportation systems. Learn more about zero-emission transportation funding opportunities for tribal nations.

School Districts

The Joint Office provides technical assistance to school districts applying for or receiving funding through the U.S. Environmental Protection Agency's Clean School Bus Program.

Transit Agencies

The Joint Office provides technical assistance to transit agencies applying for or receiving funding through the Federal Transit Administration's Low or No Emission Vehicle Program.

Riders

The Joint Office and partner agencies work to accelerate an electrified transportation system, helping communities increase access to electrified transportation options for riders, including cars, buses, bicycles, scooters, and shared fleets.

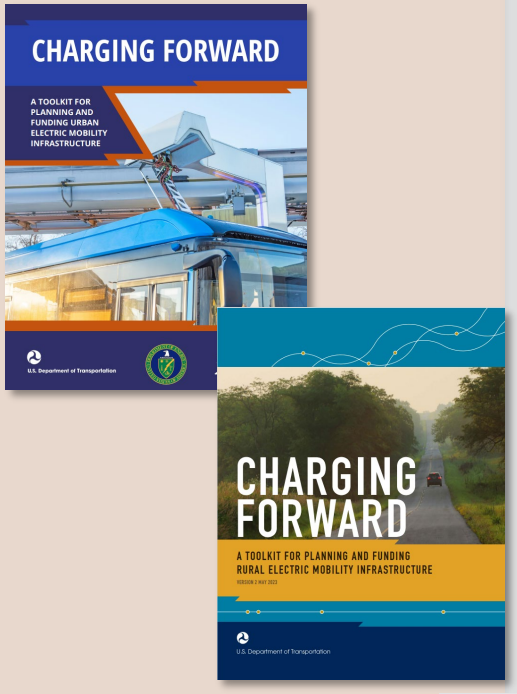
driveelectric.gov/technical-assistance

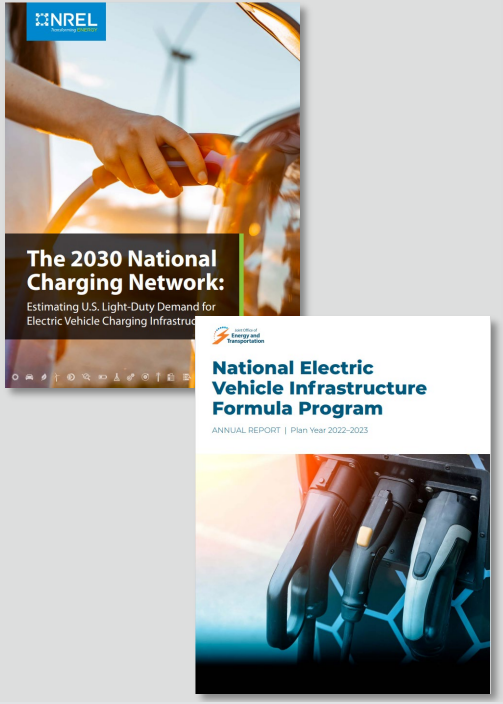
Concierge Service Contact Methods: 833-600-2751 | doe-dot.jo.ta@nrel.gov | driveelectric.gov/contact/

Rural and Urban EV Toolkits

Forecasts and Reports

Help Sheets and Checklists





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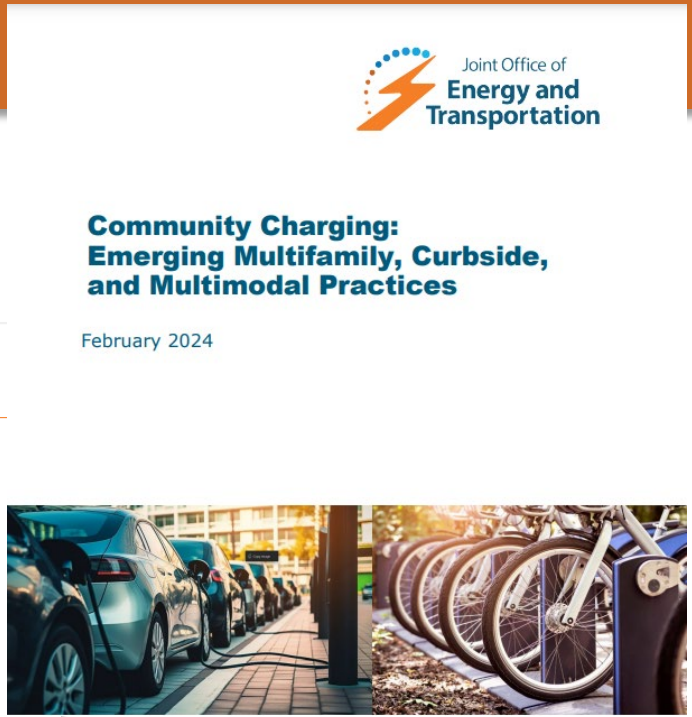
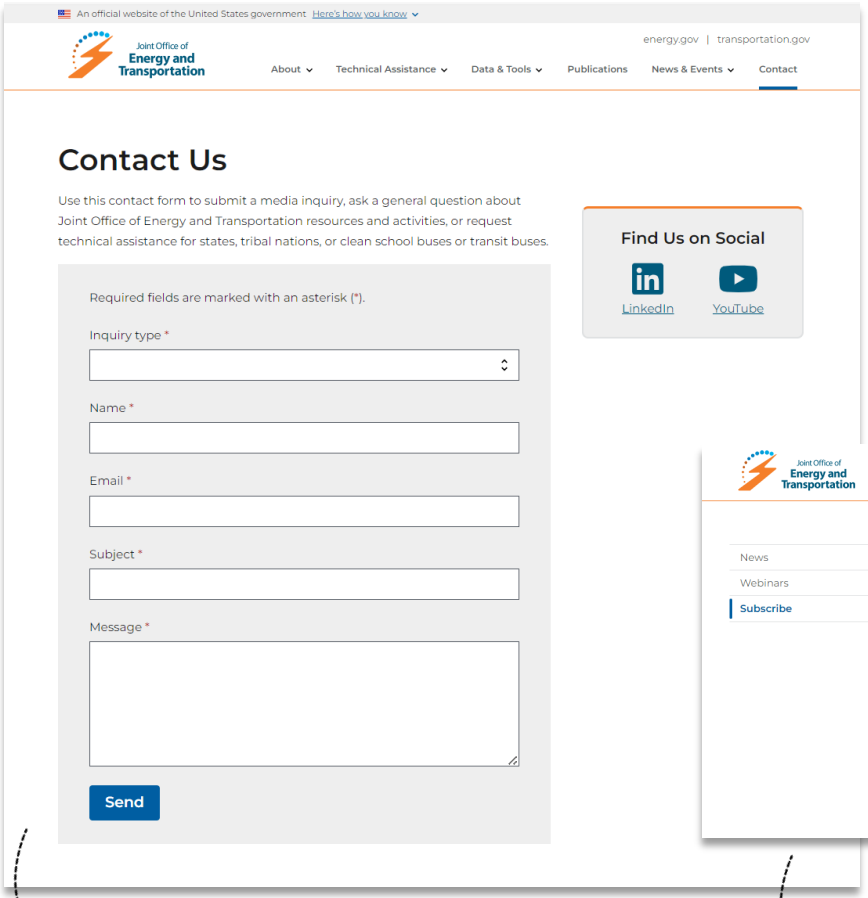
Communities

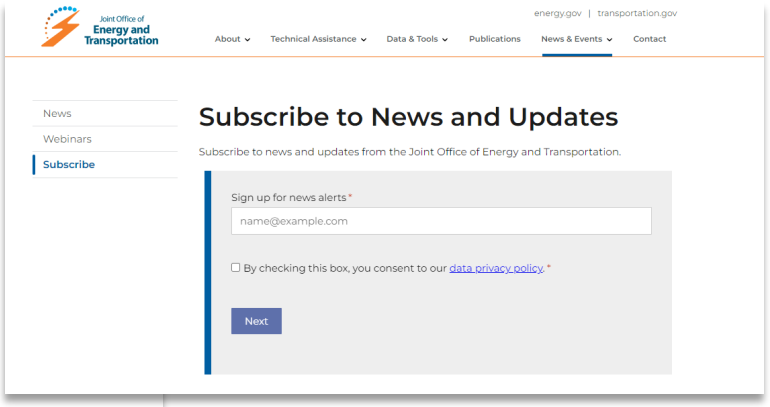
DriveElectric.gov/communities



Driveelectric.gov/publications

- Request assistance via online form
- Initial response within 48 hours
- General questions and feedback welcome!





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Polling Questions

Intro from
Executive Director Gabe Klein

Panelists

Alexander Epstein, PhD
U.S. DOT Volpe Center

Oliver Sellers-Garcia
City of Boston

Shannon Dulaney
itselectric

Alexander Epstein, PhD
U.S. DOT Volpe Center

Joint Office of
Energy and
Transportation

Community E-Mobility Charging:

Emerging Multifamily, Curbside, and Multimodal Solutions

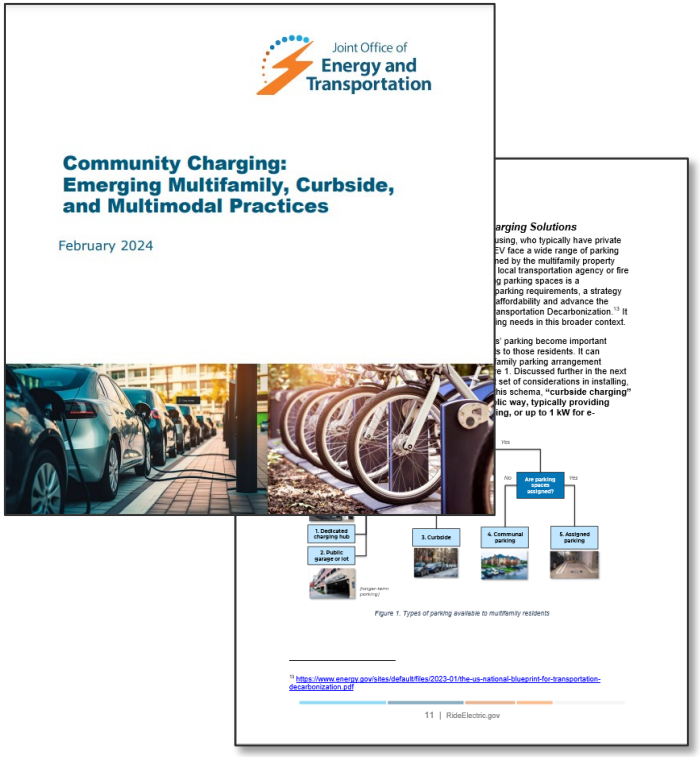
Curbside EV Charging Strategies Webinar
February 27, 2024

driveelectric.gov

Report: “Community Charging”

A summary of evolving practices and technologies serving residents of multifamily housing:

- **Describes charging solutions for five types of parking arrangements,** including on-street parking, private communal parking, and private assigned parking.
- **Highlights technical solutions to common barriers,** such as using smart outlets and panels, mobile charging, or “bring-your-own cord” approaches to reduce costs.
- **Presents case studies and example projects** from the U.S. and Europe on using public charging to serve multifamily residents.
- **Serves as a resource** for public officials, multifamily property owner-operators, vehicle owners, transit operators, and utilities.



Motivation

- **31 percent** of U.S. households—and **63 percent** of rental households—are multifamily.
- Yet **less than 5 percent** of home charging takes place in multifamily housing.
- Additionally, nearly **one-third** of Americans do not drive.

TERMINOLOGY

- **Multifamily housing** includes apartment buildings, condominiums, townhouses, and mixed-use developments.
- **Electric mobility (e-mobility)** includes electric vehicles (EVs), electric micromobility devices, and electric transit vehicles.
- **Electric micromobility** is any small, low-speed, electric-powered transportation device such as e-bikes and e-scooters.

Motivation

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- Yet **less than 5 percent** of home charging takes place in multifamily housing.
- Additionally, nearly **one-third** of Americans do not drive.

It is imperative to develop e-mobility charging solutions that support:

- ✓ Multifamily housing residents,
- ✓ Residents dependent on curbside parking, and
- ✓ Non-vehicle owners.

TERMINOLOGY

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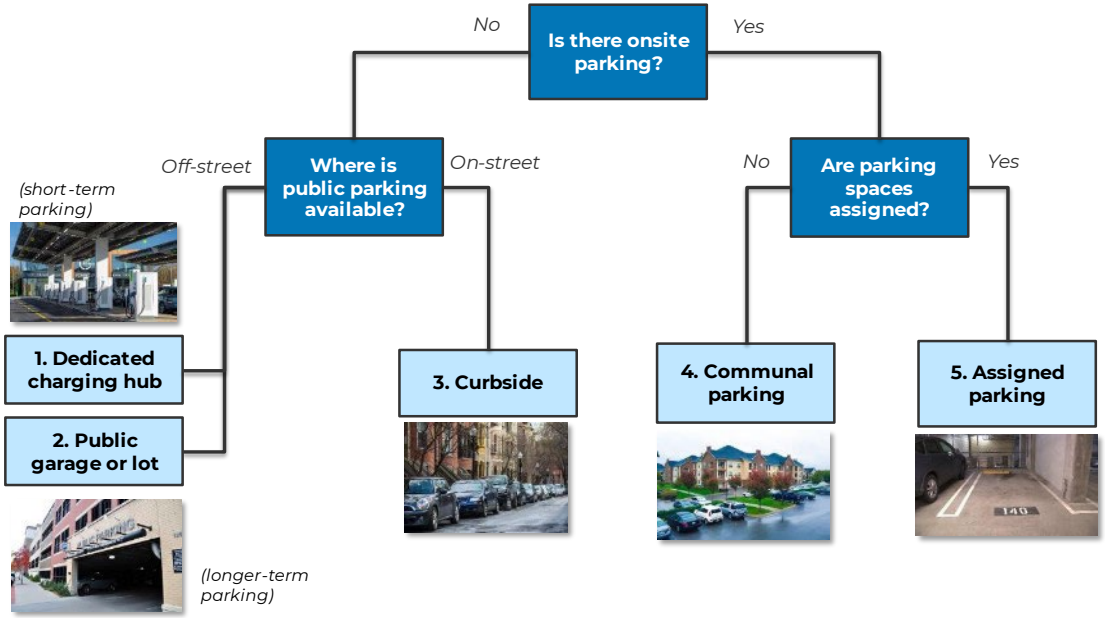
Barriers Facing Multifamily Residents

Common challenges facing EV-owning multifamily residents include:

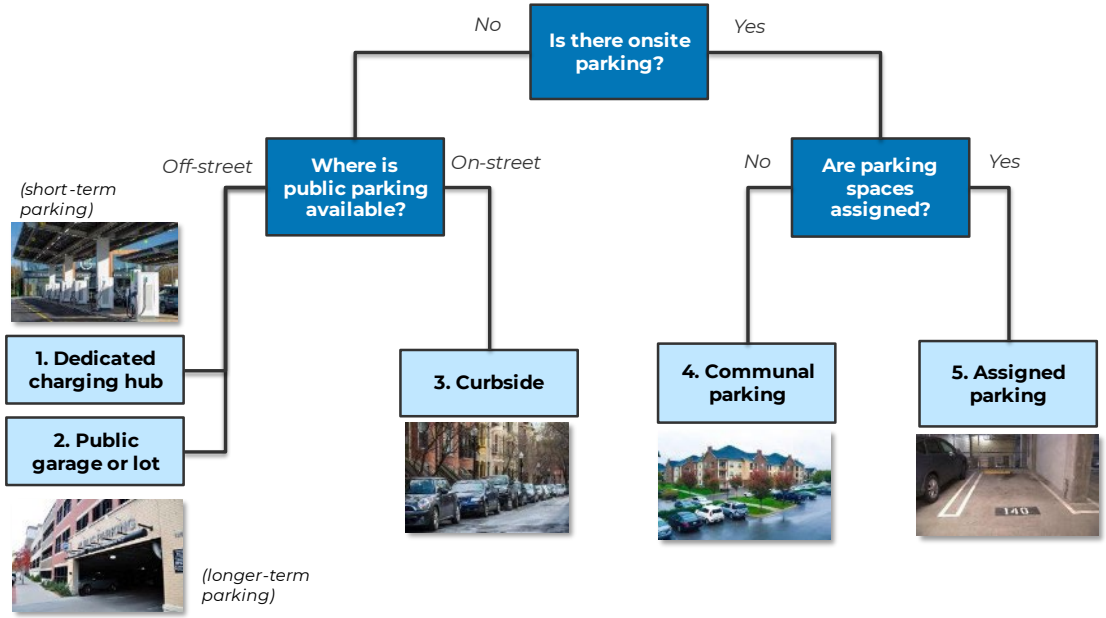
- High capital and operations and management (O&M) costs
- Insufficient grid infrastructure
- Long installation timelines
- Dependence on a property owner or manager to install onsite chargers (if off-street parking is available)
- “Charging deserts” with few or no public chargers
- Permitting and parking policies restricting curbside charging
- Limited payment methods for public chargers

Evolving technology and policy solutions can help overcome these challenges.

Charging Technologies by Parking Type



Charging Technologies by Parking Type

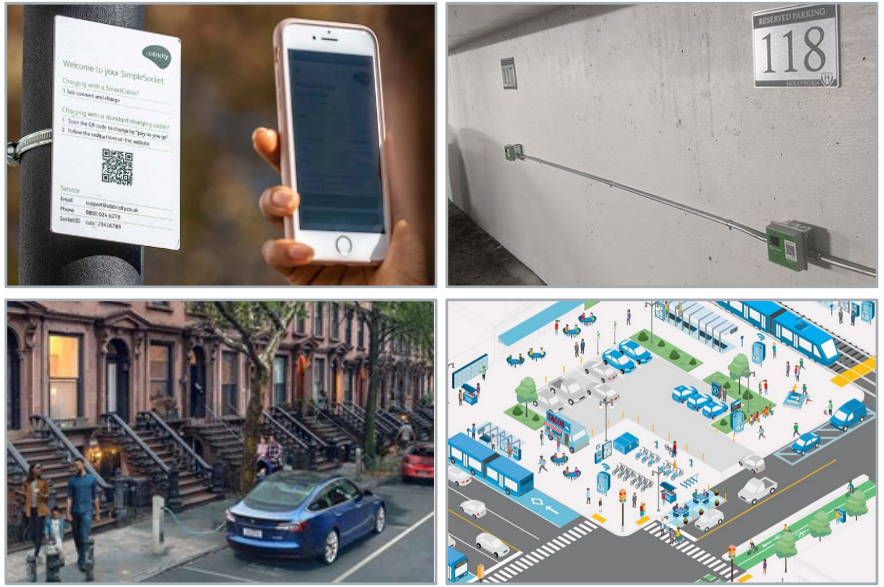


Summary of each parking type with…

- Subtypes
- Charging levels
- Unique features and considerations for implementation
- Example projects

Emerging Strategies

- New 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



QR code scanning for pay-as-you-go EV charging (top left); smart outlets (top right); peer-to-peer charging (bottom left); and schematic of a mobility hub (bottom right). Sources: Plugzio, itselectric, Metropolitan Transportation Commission.

Case Studies in Multifamily, Multimodal, and Curbside Charging

Multifamily and Multimodal
Denver Carsharing

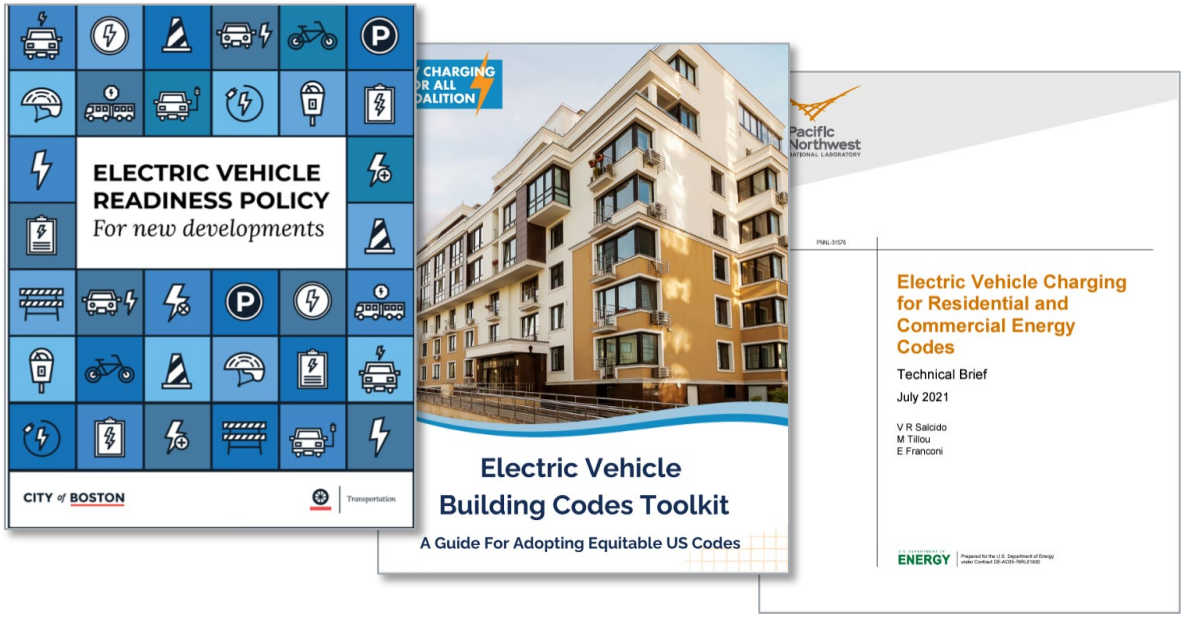
Curbside
Los Angeles Street Lighting

Curbside
New York City Curbside Charging Pilot

International Examples

State and Local Policies and Code

Many states and local governments are adding EV provisions to their building codes, local ordinances, and zoning requirements.



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International Examples

Partnership between City and County of Denver, nonprofit Colorado CarShare, and the local housing authority to bring **electric carshare vehicles** to low- and medium-income multifamily public housing properties.

SUCCESSES
- Quick implementation
- Dual public and carshare charging
- User engagement through “Car Captains”

CHALLENGES
- Varying utilization across sites
- Trade-off between installation cost and visibility
- Charger maintenance

Dual-port charger in multifamily housing parking lot. Source: CASR StoryMap (2021).

Case Studies in Multifamily, Multimodal, and Curbside Charging

Multifamily and Multimodal
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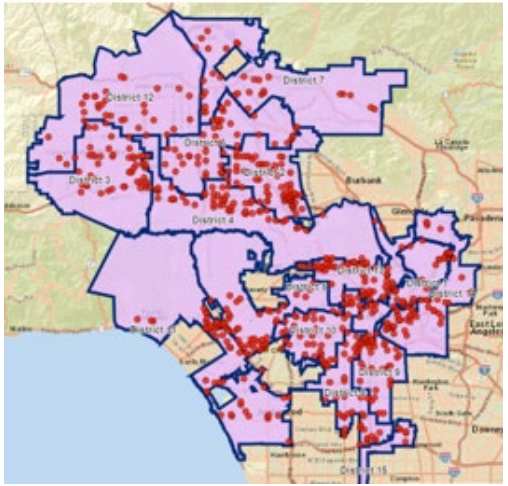
New York City Curbside Charging Pilot

International Examples

The Los Angeles Bureau of Street Lighting transitioned its streetlights to lower-power LED light bulbs, freeing up excess power for lamppost-based EV charging stations at approximately 600 locations as of fall 2023.

SUCCESSES
- Widespread implementation
- Quick to deploy and install
- Multiple vendors and station types

CHALLENGES
- Vandalism
- Competition with cell towers
- Unpopular hourly pricing structure
- Parking enforcement



Map of Los Angeles streetlight charger locations. Source: Route Fifty (2022).

Case Studies in Multifamily, Multimodal, and Curbside Charging

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New York City Curbside Charging Pilot

International Examples

The City of New York launched a curbside charging pilot program with 100 charging ports at 35 locations, collectively providing nearly 50,000 charging sessions across 7,200 unique users by the end of 2022.

SUCCESSES
- High utilization
- High charger uptime
- Low vandalism

CHALLENGES
- Parking enforcement

Source: NYCDOT Pilot Evaluation Report (2023).

Case Studies in Multifamily, Multimodal, and Curbside Charging

Multifamily and Multimodal
Denver Carsharing

Curbside
Los Angeles Street Lighting

Curbside
New York City Curbside Charging Pilot

International Examples

Several pilots and large-scale charger deployments across European cities offer potential models for both car and micromobility public charging at the curb.

Bollard charging in London (left), curbstone charging in Cologne (center), and mobile charging in Amsterdam (right). Sources: Ubitricity, Rheinmetall, L-Charge.

Joint Office of
Energy and Transportation

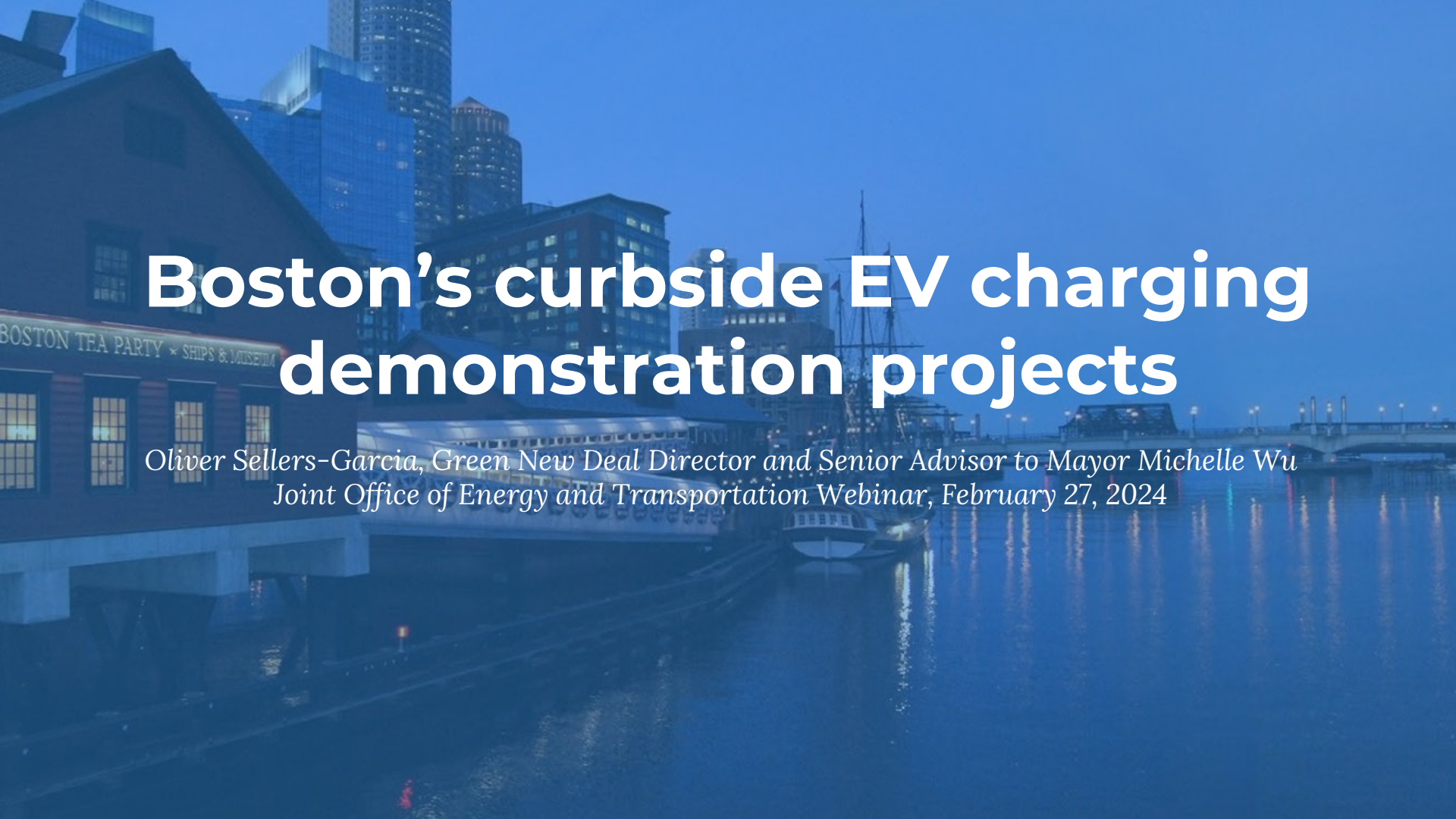
Thank You

Joint Office Lead
Debs Schrimmer
debs.schrimmer@ee.doe.gov

Volpe Center Lead
Alexander Epstein, PhD
alexander.epstein@dot.gov

driveelectric.gov

Oliver Sellers-Garcia,
City of Boston



Boston’s curbside EV charging demonstration projects

Oliver Sellers-Garcia, Green New Deal Director and Senior Advisor to Mayor Michelle Wu
Joint Office of Energy and Transportation Webinar, February 27, 2024

What is the Boston Green New Deal?

Transitioning to a Boston that thrives by tackling climate change

Policy framework

- Climate: Addressing climate change mitigation and/or resilience
- Liveability: Allocation of resources and actions toward good jobs and health
- Justice: A commitment to structural transformation needed to create racial and economic justice

PURPOSE OF THE DEMONSTRATION PROJECT

- Catalyze momentum, test engagement strategies, and build a sustainable process for scaled deployment **that works for transit/walking/cycling-oriented City**

- Expand access
  - Many of Boston's residents do not have access to off-street and/or private parking and rely on on shared, publicly accessible chargers if they want to own an EV
  - Ensure equitable access across EJ communities

- Experiment with ownership and business models
  - Test two different kinds of ownership models: City owned and operated; privately-owned and operated

- Find pain points to adjust
  - Permitting and construction
  - Utility coordination
  - Procurement

- Meet market demands

Two models

Model 1: License the Right-of-Way (Public/Private Partnership)

- Will the private market expand EV charging access to garage orphans and EJ communities in existing charging deserts?
- Can this be done at no cost to the City?
- What are the business models that will successfully support no cost to the City?
- What are the trade-offs for no cost to the City?

Model 2: Public Ownership

- Does City ownership of EV charging stations offer a faster, cheaper, or scalable alternative to privately-owned models?
- Do residents favor charging as a City service?
- Are there opportunities for MWBEs?
- Is the cost of scaling up sustainable?

Early lessons and actions

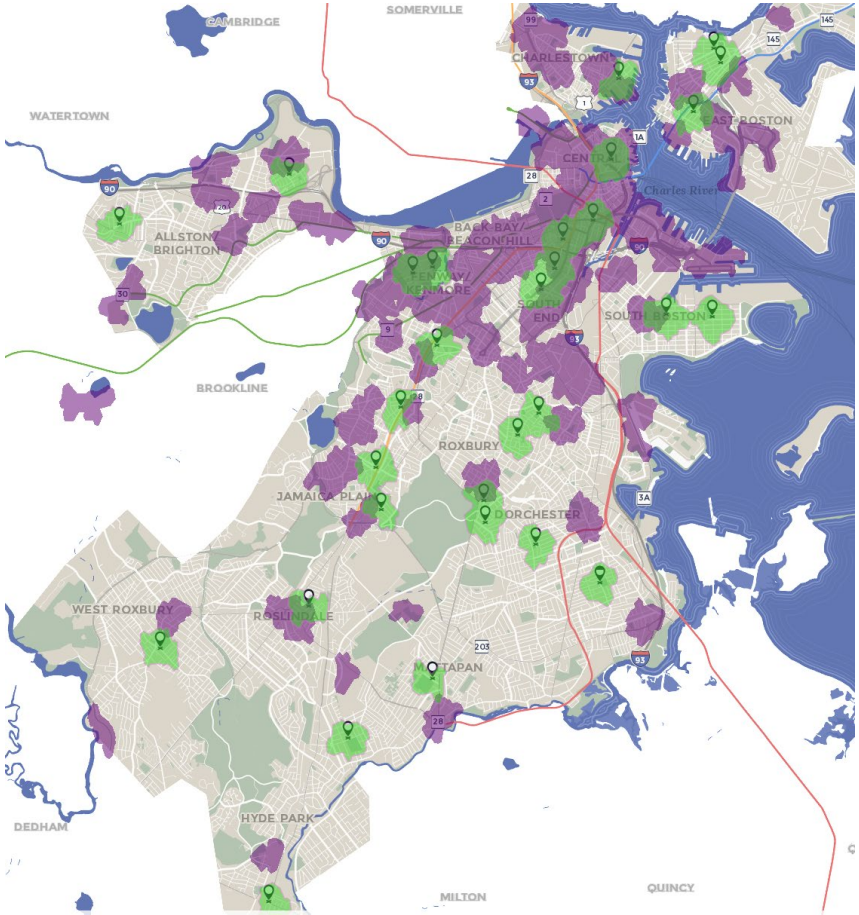
Lessons and observations

- Sustainable no-cost business models
- Advertising and urban design
- Hardware
- Limited appetite for LV III

Actions and decisions

- Selected vendors and finalizing contracts
- Almost 1-year lead time for site selection and make-ready work for City-owned sites
- Streamlined permitting process
- Engagement focused both on notifying neighborhood *and* cultivating users

Siting for proposed City-owned locations (first phase)



- Increase access for residents who rely upon publicly accessible charging to own an EV; locate in areas outside of the 5 minute walkshed (purple existing, green proposed curbside)
- 20 metrics used to qualify locations, including ADA accessibility, EJ and Justice 40 Communities, and adjacency to public amenity
- More than 600 potential locations identified, narrowed down by site visits, utility review confirming available power, and resident requests

Shannon Dulaney,
itselectric

Solving the biggest barriers cities face in the deployment of public EV charging

it's electric

1M public L2 chargers are needed in the US by 2030

For the 48 million EVs expected on the road by the same date

(Currently the US has 126,000 chargers)

1.2M Public Chargers Needed. 1M of those L2
Source: NREL / The White House 06.23

126k Current Public Level 2 Chargers In the US
Source: S&P Global Mobility 01.23

Bloomberg projects higher need at 2.2M
Source: Bloomberg NEF 06.23

AARIAN MARSHALL | MATT SIMON | BUSINESS | JAN 24, 2022 7:00 AM

Wait, So Where Will Urbanites Charge Their EVs?

Homeowners with garages can easily charge their electric cars, but not apartment dwellers. Here's what it'll take to get plugs everywhere in cities.

'Charger Desert' in Big Cities Keeps Electric Cars From Mainstream

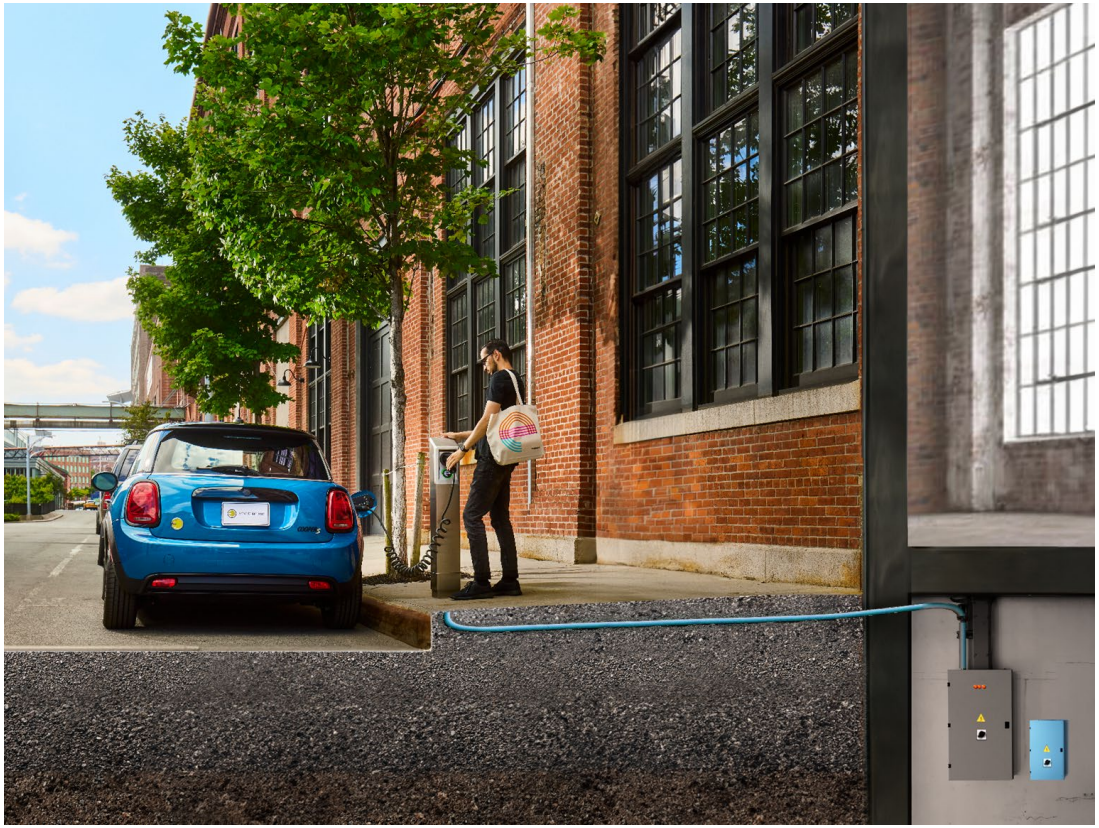
For city dwellers who would love an E.V., the biggest hurdle might be keeping it juiced up without a garage or other convenient charging stations.

itselectric is the world's first public charging system powered by buildings

Solving the biggest barrier cities face in the deployment of chargers

We utilize existing residential and commercial infrastructure to power our chargers

We simply run a shallow conduit from the building's panel to the curb to power a public charger



There are no hardware or installation costs for cities or for property owners

We are the only curbside charging company with revenue share

We are also the first US company to offer a detachable cable

Keeping streets free of cables when a car is not charging

Forbes

FORBES > INNOVATION > TRANSPORTATION

Hyundai And Itselectric Pilot Curbside EV Charging In Brooklyn

Sam Abuelsamid
Senior Contributor

Ride and Drive

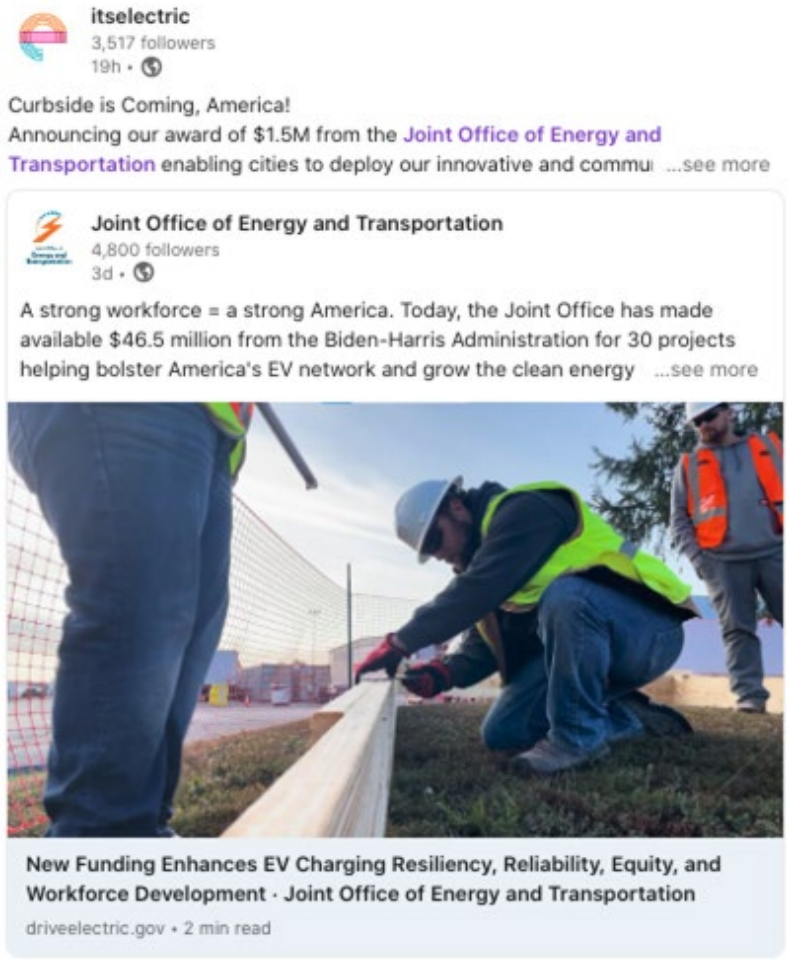
Electric

itselectric led a team that has received $1.5 million from the Joint Office to…

deploy 60 chargers in Justice 40 neighborhoods across 4 cities

train 80 residents (20/city) how to be EVSE technicians

create a “toolkit” for cities on how to do curbside charging



The future

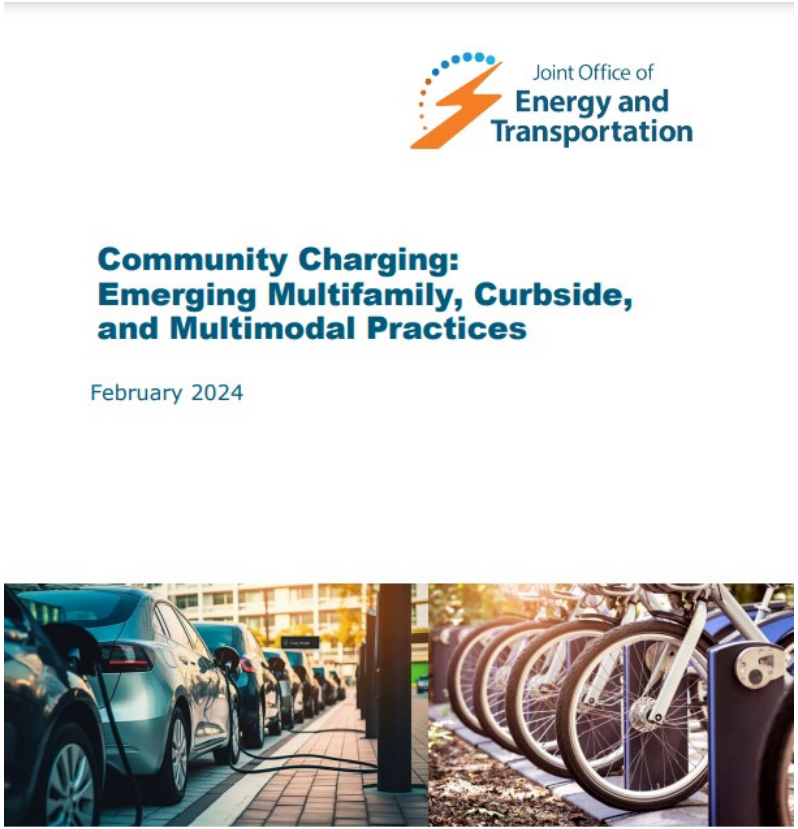
it's electric

shannon@itselectric.us

Panel Discussion and Audience Q&A

Resources

- Community Charging: Emerging Multifamily, Curbside, and Multimodal Practices report Driveelectric.gov/publications
- DriveElectric.gov Communities Technical Assistance https://driveelectric.gov/communities
- Joint Office Ride and Drive Funded Projects https://driveelectric.gov/files/ride-and-drive-foa.pdf



Thank you!

Today's Presentation:
Curbside EV Charging Strategies

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Want to learn more about this webinar topic?
Ask the Joint Office: **driveelectric.gov/contact/**

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