



ELECTRIC VEHICLE CHARGING:

# A Primer for Municipal Leaders

BY JIM BROOKS AND KYLE FUNK\*

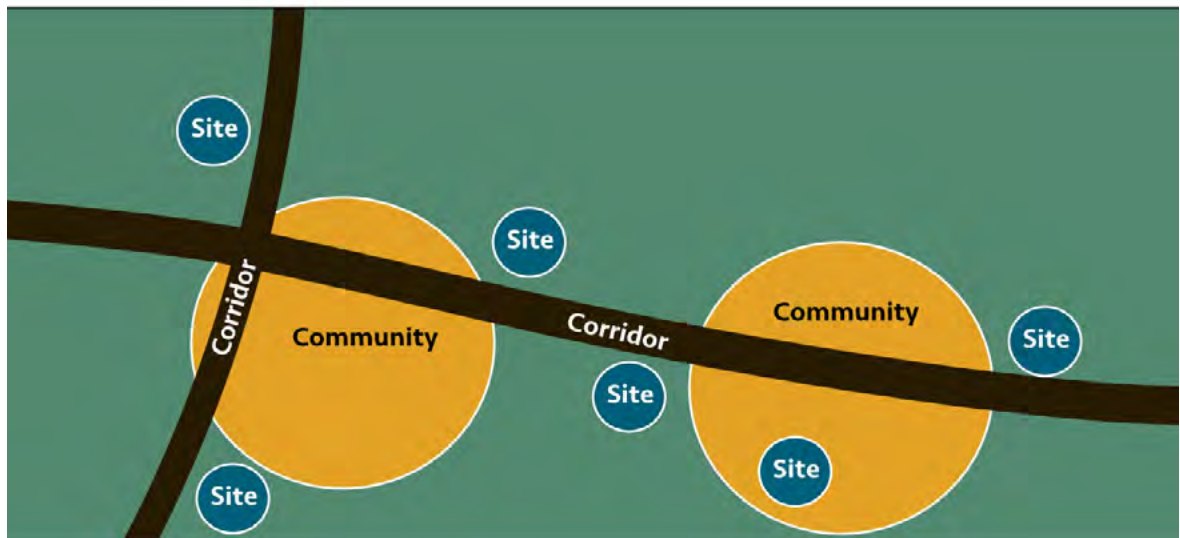
Electric vehicles (EVs) are a growing share of America's fleet through new federal and state investments, as well as charging infrastructure expansion from utility companies and private sector partners. In the Bipartisan Infrastructure Law (BIL) alone, the federal government commits \$7.5 billion for states and cities to build out an additional 500,000 EV chargers across the U.S. With EVs coming to communities, local leaders in cities, towns and villages of all sizes need to be ready to ask the necessary questions about EVs and the electric charging infrastructure that they require.

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CORRIDOR CHARGING	COMMUNITY CHARGING
<p>The BIL created the <a href="#">Joint Office of Energy and Transportation</a> to distribute these funds, combining the expertise of the U.S. Department of Transportation (DOT) and the U.S. Department of Energy (DOE). States will receive <a href="#">\$5 billion</a> through the National Electric Vehicle Infrastructure (NEVI) program to put EV charging on the U.S. <a href="#">alternative fuel corridor routes</a> near the nation's major road networks. To secure NEVI program funds, municipalities need to both ensure they are located on the alternative fuel corridor routes and work directly with their respective state DOT offices.</p>	<p>USDOT will designate the remaining \$2.5 billion through a competitive grant program that municipalities can directly apply for to install EV charging along alternative fuel corridors, publicly accessible areas (such as parks and schools), as well as in rural, disadvantaged and hard to reach communities. Additionally, the BIL provides several other EV funding opportunities, including the <a href="#">Energy Efficiency and Conservation Block Grant Programs</a> (which can be used to deploy zero-emission transportation and associated infrastructure), <a href="#">EV bus purchases</a> and <a href="#">more</a>.</p>

**Figure 1: THREE LEVELS OF ELECTRIC VEHICLE SUPPLY EQUIPMENT PLANNING: COMMUNITY, CORRIDOR AND SITE**



Source: [USDOT: Charging Forward: A toolkit for planning and funding rural electric mobility infrastructure](#)



# Key Questions for Local Leaders to Ask as They Prepare for EVs in Their Communities

## How many EVs are in use in my state?

Check data on [electric vehicle registrations by state](#) from the [U.S Department of Energy Alternative Fuels Data Center](#).

## How much existing EV charging infrastructure is in my community?

Although local GIS mapping and permitting records may provide this information on a city-by-city basis, the U.S. Department of Energy's [DOE Alternative Fueling Station Locator](#) provides an extra level of detail. Don't forget there may also be private, transit, port or micromobility electric charging.

## What are my city's EV infrastructure projections?

Municipalities can explore the Department of Energy's [Electric Vehicle Infrastructure Projection Tool](#) to project consumer demand for EV charging infrastructure. Also, city climate action plans likely have EV charging goals and strategies. A review of [50 city climate action plans](#) released from 2020-2022 reveals that 81 percent of those plans reference EVs as part of their climate solutions.

## What state incentives are available for EVs or EV Supply Equipment (EVSE), such as charging stations or docks, in my jurisdiction?

State resources and incentives have been compiled by the [National Conference of State Legislatures](#). Private or municipally owned utility companies might also have local incentive programs or plans as they prepare for the deployment of EVs. To coordinate these programs and resources to match local community needs, municipal officials must work with state administrations, Regional Councils of Governments (COGs), Metropolitan Planning Organizations (MPOs), county officials and the local electric utility.

### What is the role of the private sector in EVSE charging?

Private sector companies may have their own growth plans for EV charging, but your city's awareness and action can support and guide these plans. Municipal leaders can engage with private sector partners to ensure a robust network of chargers exists throughout their communities and to facilitate preferred locations based on zoning and planning. Communicating needs and priorities, as well as setting expectations, is paramount. Additionally, incentives and zoning can direct EVSE suppliers to specific neighborhoods or corridors more quickly to ensure equitable rollout.

## Key Questions to Help Local Leaders Define their City's Role in Advancing EV Adoption and Deployment

- ⚡ How might my city engage with community residents and businesses to prepare for EVs?
- ⚡ Should my city revise zoning laws to allow and/or promote EVSE?
- ⚡ Should my city use public assets such as municipal buildings, parking spaces or rights-of-way for EV charging?
- ⚡ May my municipality levy a fee for EV charging?
- ⚡ Should my city vehicle fleet include EVs?
- ⚡ Under what rules may businesses be permitted to construct or request EVSE in proximity to their locations?
- ⚡ Under what rules may single and multi-family dwellings upgrade electrical systems for EV charging?
- ⚡ How can our city ensure that EVSE is geographically distributed to provide equitable access to EV charging in all areas?



## Local Examples of Cities Adopting and Deploying EVs and EVSE

### Community Engagement

THE CITY OF CINCINNATI, OH developed a comprehensive public information website ([EV-CINCY](#)) that includes the city's EV goals, programs and policies; reliable resources including a charging station locator map; and a primer on the merits and advantages of EVs. Extensive stakeholder engagement was also conducted by the city of Orlando, FL as it prepared for EV deployment. Through surveys, resident engagement and outreach to commercial property owners (building owners and managers association) and environmental groups (such as Clean Cities Club and the Sierra Club), Orlando city leadership clarified and revised its [EV Ready Policy](#), which it finally adopted August 2021 with an accompanying staff report.

### Zoning Laws for EVSE

THE CITY OF [DES MOINES, WA](#) allows all three levels of EVSE in all zoning designations but does not allow EV charging stations within the city right-of-way. New Orleans, LA only allows for one EVSE in the right-of-way adjacent to a property or parcel. Local leaders can also check out this [Summary of Best Practices in Electric Vehicle Ordinances](#) for more ideas.

### Public Assets Used for EV Charging

[BELLEVUE, WA](#) owns and operates 23 electric vehicle charging stations, 15 of which are available for public use at city facilities. The city of [Madison, WI](#) requires parking spaces to be 50 percent EV-capable and up to 10 percent of all spaces to have Level 2 EV chargers. The ordinance includes a schedule to increase the percentage of EV-capable and EVs installed every five years.

## Local Fee for EV Charging

[SHAKER HEIGHTS, OH](#) has four EV chargers and levies a \$0.20 per kilowatt-hour fee for use. This enables the city to provide EV charging in a revenue-neutral manner, while providing a lower price than commercial chargers and using the 100 percent renewable electricity program that the city uses for public buildings and streetlights. The city of [Kansas City, MO](#) allows property owners to collect a service fee for the use of an electric charger.

## EVs in City Vehicle Fleets

In March 2022, the [Antelope Valley Transit Authority](#) (of Lancaster and Palmdale, CA) became the first transit authority to have all emission-free buses. Indianapolis's [IndyGo bus rapid transit system](#) is an all-electric bus system.

## EVSE for Commercial Spaces

[Oklahoma City, OK](#) requires a property owner seeking to designate on-street parking as exclusive for electric vehicles to apply through the Traffic and Transportation Commission. A privately installed EVSE on a city street is in the public-right-of-way and requires a revocable permit from Oklahoma City. [Atlanta, GA](#) has a specific ordinance for EVSE readiness requirements for commercial construction.

## Single and Multi-family Dwelling Upgrades for EV Charging

[Mountain Lake Terrace, WA](#) requires homeowners to apply for a permit if they want to install a Level 2 charger in their home. Any new homes built in Mountain Lake Terrace must be built with EV capacity for Level 2 chargers. For any new multi-family development or expansion of an existing multi-family housing unit, Mountain Lake Terrace requires 10 percent of parking spaces be EV-installed and EV-capable. At least one EV charging space must be ADA accessible for five to 50 parking spaces. Additional ADA spaces are required in parking lots with over 50 spaces. [Orlando, FL](#) requires affordable multi-family housing to have 20 percent EV-capable parking spaces, and multi-family housing, hotels and all parking structures to have 20 percent of parking that is EV-capable. Two percent of every 50 spaces must have EVSE installed.

## Equitable Access

[Columbus, OH](#) is in the process of working with community stakeholders to build an Equitable EV Readiness Ordinance that fits the city's equity goals. USDOT has guidance on [Equity Considerations in EV Infrastructure Planning](#), which includes information on how to engage stakeholders and use data such as its [EV Charging Justice40 Map](#), an interactive map of disadvantaged communities.

## Resources

[How Cities Can Ensure Equity for Siting Electric Vehicle Infrastructure](#)

[Building an Electric Vehicle Program: Where Should Cities Start?](#)

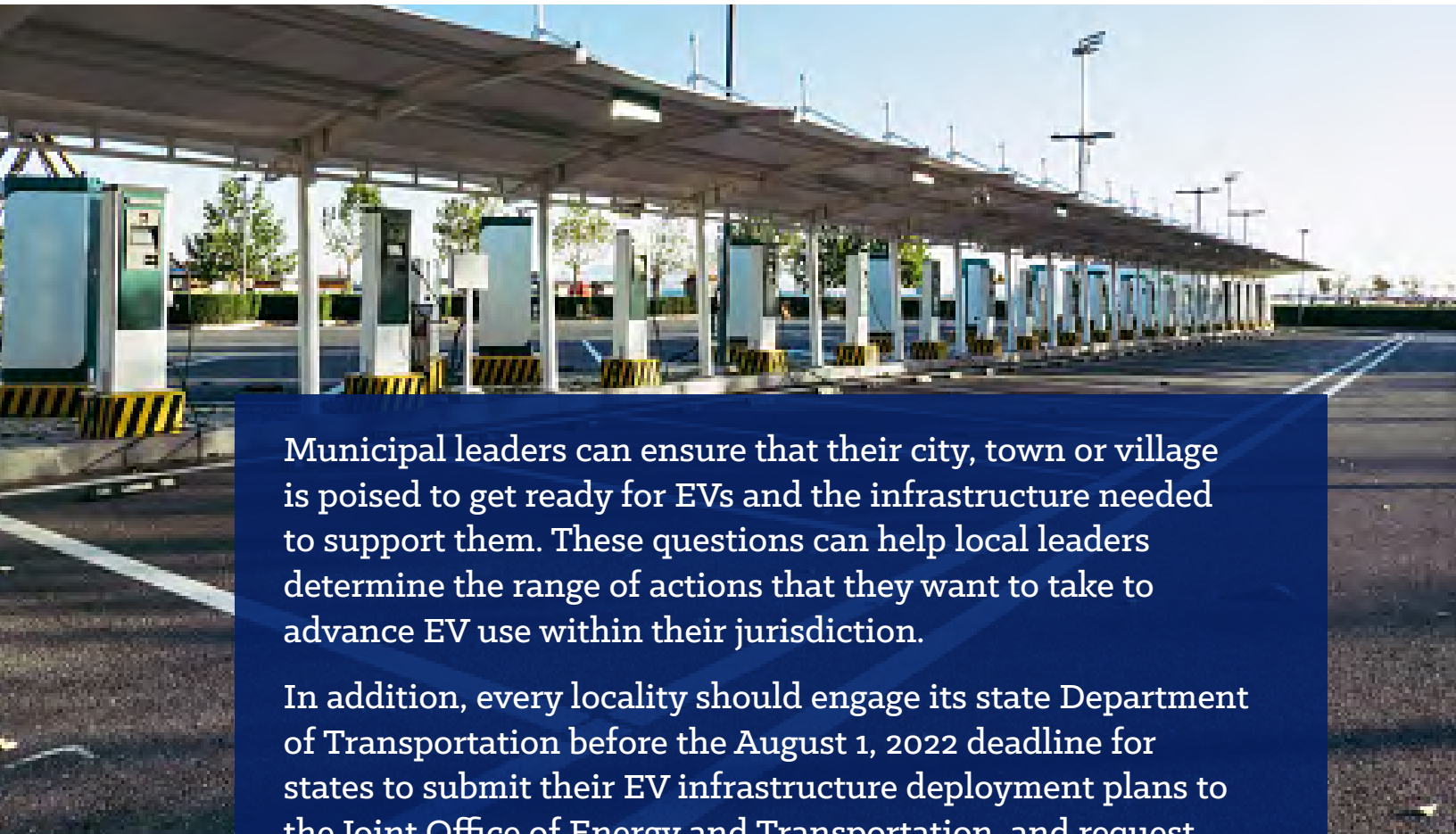
[Transportation Electrification 101](#)

[Summary of Best Practices in Electric Vehicle Ordinances](#)

[Charging Forward: A Toolkit for Planning and Funding Rural Electric Mobility Infrastructure](#)

[Electrification Coalition](#)

[Siting Electric Vehicle Supply Equipment \(EVSE\) With Equity In Mind](#)  
[EV Infrastructure Building Codes: Adoption Toolkit](#)



Municipal leaders can ensure that their city, town or village is poised to get ready for EVs and the infrastructure needed to support them. These questions can help local leaders determine the range of actions that they want to take to advance EV use within their jurisdiction.

In addition, every locality should engage its state Department of Transportation before the August 1, 2022 deadline for states to submit their EV infrastructure deployment plans to the Joint Office of Energy and Transportation, and request information on available NEVI funds for EV charging.

# ELECTRIC VEHICLE CHARGING FOR CITY LEADERS

## IMPORTANT TERMS

To better understand the basics of EVs when talking with residents, community leaders, private companies and other government officials, this fact sheet outlines some of the main things local leaders need to know.

## KEY CONCEPTS

**Battery Electric Vehicles (BEVs):** What most people consider to be “electric vehicles,” or EVs. They run solely on the electricity from their batteries. An example includes the Tesla Model 3.

**Plug-in Hybrid Electric Vehicles (PHEVs):** Can be driven and charged like an electric vehicle but have a traditional engine that runs on gasoline as well. These can be considered EVs as they require similar infrastructure to charge. An example includes the Toyota Prius Prime.

**Electric Vehicle Supply Equipment (EVSE):** The infrastructure that supplies electricity to an electric vehicle. Commonly, EVSE refers to charging stations or charging docks.

**Charging station:** Similar to a gas station but provides electricity for EVs instead of gasoline. These usually contain Level 2 or Level 3 chargers.

**At-home charger:** An EV charger that can be placed in a typical home, usually a Level 1 or Level 2 charger.

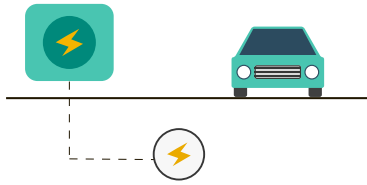
**Battery swap station:** A commercial station that will swap out a used EV battery for a fully charged one.

Check out **NLC’s Electric Vehicle Charging: A Primer for Municipal Leaders** brief to see how cities are stepping into the EV space and the questions local leaders need to ask themselves as they get started.



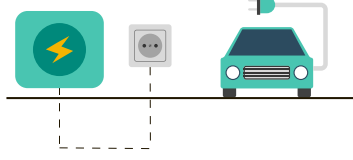
## THREE TIERS OF EV READINESS

Source: Image based on Orlando, FL EV Readiness Policy



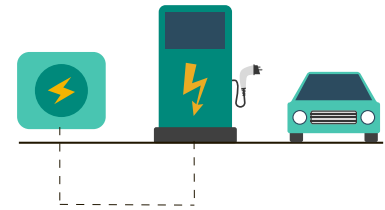
### EV Capable:

An installed electrical panel with the potential to be a future EV charger.



### EV Ready:

An installed electrical panel capacity and raceway with conduit to terminate in a junction box or 240-volt charging outlet. It can charge a vehicle with additional equipment.



### EV Installed:

Contains the necessary electrical work and the physical EV charger to power a vehicle when plugged in.



### Level 1 charging:

The most cost-efficient charging station, typically found in homes with a 120-volt outlet. They charge an average of three to six miles of range per hour. A full charge can take 24 hours.



### Level 2 charging:

A charging station that requires the high power of a 240-volt outlet. They are frequently found in commercial settings but are becoming more common in homes. They charge around 18-28 miles of range per hour. A full charge can take up to eight hours.



### Level 3 charging:

Known as DC fast charge or fast charge, these are the highest power (480 volts) and fastest charges currently available. Currently, a faster charger can add a 200-mile range (close to a full charge) in about an hour.

Images source: [Charge Hub Charging Guide](#)

With some basic knowledge of EVs, local leaders can decide how they want their communities to get ready for electric vehicles.

Electrification, grid upgrades and demand from EV drivers is going to happen, and cities need to be aware of these impacts in their communities. Cities should begin by going through NLC's primer on EVs, and can then dive into some of the resources listed there.