

# Technical Assistance Help Sheet

## Joint Office EV Charging Community Readiness

Cities and states across the country are gearing up for growth in electric transportation. Communities are preparing by anticipating electric vehicle (EV) charging infrastructure needs for their residents, workforce, fleets, and visitors.

To support efforts to develop a convenient, reliable, affordable, and equitable national EV charging network, the [Joint Office of Energy and Transportation](#) (Joint Office) is providing [technical assistance](#) to states, communities, and tribes implementing projects to help answer questions on EV chargers and zero-emission fueling infrastructure. The Joint Office also offers webinars to help states and key stakeholders increase EV knowledge and plan for new charging infrastructure. Past webinar recordings and announcements of upcoming webinars can be accessed at [DriveElectric.gov/webinars](#).

### Resources for States and Communities

[DriveElectric.gov/states-communities](#)

Below is a summary of additional resources, tools, and publications designed to help communities prepare and plan for the expansion of EVs and charging infrastructure.

### EVs 101

The U.S. Department of Energy's (DOE) [Alternative Fuels Data Center \(AFDC\)](#) provides a wealth of information, data, and tools to help governments, communities, fleets, and other stakeholders navigate decision-making for advancing alternative fuels, including EVs and charging infrastructure. The [AFDC Electricity page](#) contains links to resources such as maps, data, case studies, publications, and tools related to EVs and charging.

### Batteries, Charging, and Emissions

Unlike internal combustion engines, which burn fuel to power the vehicle, EVs use an electric motor powered by energy stored in an on-board battery. Electric vehicles can be all-electric, powered solely by electricity stored in the vehicle's battery, or plug-in hybrid electric, powered by both gasoline for the internal combustion engine and stored battery energy to drive the electric motor. To charge the battery, EVs are plugged into an electric power source.

Fully electric EVs produce zero tailpipe emissions, and hybrid EVs can produce lower tailpipe emissions than internal combustion vehicles, so they are critical for reducing transportation-related emissions. The [AFDC Emissions from EVs page](#) can help communities evaluate climate impacts from increased EV adoption.

Understanding a community's EV purchasing decisions can be helpful when planning for new charging infrastructure. The [AFDC TransAtlas tool](#) helps users view trends in EV registrations in their state.

To search for available EV models, [fueleconomy.gov](https://www.fueleconomy.gov) has a comprehensive vehicle search feature, which allows the user to search vehicle options by make, model, class, miles per gallon (MPG), and fuel type.

### Charging Infrastructure

EV charging infrastructure, also referred to as electric vehicle supply equipment (EVSE), is used to recharge a vehicle's on-board battery. The charging speed—or the time it takes to fully charge an EV—depends on the type, also known as the level, of charger used.

- Level 1 chargers provide power through a 120 volt (V) AC plug. Most, if not all, EVs will come with a portable Level 1 cable set, so no additional charging equipment is required. Level 1 charging is typically used when there is only a 120 V outlet available, such as when charging at home, but can easily provide charging for most of a driver's needs.
- Level 2 chargers provide power through 240 V (typical in residential applications and use for dryers and other large appliances) or 208 V (typical in commercial applications) electrical service. Most homes have 240 V service available. Since Level 2 equipment can charge a typical EV battery overnight, EV owners often install it for home charging. Level 2 equipment is also commonly used for public and workplace charging.
- Direct-current (DC) fast charging equipment enables rapid charging and requires inputs between 480–1,000 V. It is often installed along heavily trafficked corridors to enable longer-distance travel.

The [AFDC Developing Infrastructure to Charge Electric Vehicles](#) page contains additional information on charging terminology for advanced charging options, such as extreme fast chargers and inductive charging, as well as links to infrastructure model guides. For a high-level overview of the different types of EVs and charging infrastructure, download the [At a Glance: Electric Vehicles](#) fact sheet from the National Renewable Energy Laboratory.

To find EV charging stations, visit the [AFDC Fueling Station Locator](#). This web-based mapping tool allows users to search for alternative fuel stations. Users can find charging stations by location or along a route or use advanced filters to search for charging stations that match search criteria. The [AFDC Fueling Station Locator Fuel Corridors tool](#) shows alternative fuel corridors designated by the Federal Highway Administration and measures the distance between stations that meet the criteria for corridors.

### EV Readiness

Communities are preparing for increased EV adoption and expansion of charging infrastructure by drafting policies, developing strategies, and organizing planning efforts with stakeholders. The [AFDC Electric Vehicle Readiness page](#) provides a high-level overview of considerations for EV readiness to facilitate planning at local, regional, and state levels. The [AFDC State Information](#) pages are a one-stop shop for information about laws and incentives, stations, coalitions, fuel consumption, videos, case studies, fuel prices, projects, and emissions. This [fact sheet](#) also contains information on initiatives and resources to help facilitate local, regional, and state EV readiness planning.

In addition, this [toolkit from the Electrification Coalition](#) was designed to support local communities by providing a summary of the key electrification policies for local policymakers, government administrators, public officials, planning organizations, sustainability and environmental departments, and other decisionmakers. The toolkit contains policies and case studies from cities that have implemented policies and practices for EV charging infrastructure deployment, procurement, EV-ready ordinances, equitable charging factors, permitting, funding, and high-level strategies for electrifying transit, port, and freight sectors.

### EV Program Development Tools

These resources can help states with developing an EV charging program:

- [EV States Clearinghouse](#)
- [Alternative Fuel Toolkit](#)

This [toolkit](#) provides best practices in EV deployment and summarizes key policies relevant for state and local governments, tribal governments, policymakers, transit agencies, utilities and regulators, and businesses to accelerate adoption of electric vehicles. It also highlights recent federal investments from the Infrastructure and Jobs Act and the

Inflation Reduction Act.

The U.S. Department of Transportation (DOT) developed [Charging Forward: A Toolkit for Planning and Funding Rural Electric Mobility Infrastructure](#) to assist rural communities with scoping, planning, and implementing EV infrastructure projects. The toolkit includes an overview of EV vehicle and charging infrastructure technologies, benefits and challenges of rural electrification, planning considerations, partnership opportunities, financing options, and list of relevant environmental statutes and executive orders. The DOT [EV Infrastructure Project Planning Checklist](#) covers site-level planning considerations for EV infrastructure, which also contains useful information for community-level and corridor-level planning.

Additionally, the California Governor's Office of Business and Economic Development released the [Electric Vehicle Charging Station Permitting Guidebook](#), which reflects the input and feedback received from several federal, state, and local agencies, along with a host of industry and nonprofit electric vehicle charging station experts. The guidebook includes a deep dive into requirements, recommendations, and best practices for four key areas, including planning, accessibility, permitting, and energization. These findings tie recommendations together with a zero-emission vehicle (ZEV) readiness scorecard and checklists.

### Funding

The [Charging and Fueling Infrastructure Discretionary Grant Program \(CFI Program\)](#) is a new competitive grant program to strategically deploy publicly accessible electric vehicle charging and alternative fueling infrastructure in urban and rural communities, in addition to along designated Alternative Fuel Corridors (AFCs). The first round of funding will be used to strategically deploy EV charging infrastructure and other fueling infrastructure projects in urban and rural communities in publicly accessible locations, including downtown areas and local neighborhoods, particularly in underserved and disadvantaged communities. The Federal Highway Administration (FHWA) released this [funding document](#) highlighting relevant policies and funding available for states, tribal governments, territories, metropolitan planning

organizations, and federal land management agencies to build out EV chargers along the National Highway System. This document provides an overview of funding and financing programs available to accelerate EV charging deployment.

To find additional incentives pertaining to EVs and charging infrastructure, see the [AFDC Federal and State Laws and Incentives](#) database, which contains information on federal, state, and local laws and incentives related to alternative fuels and advanced vehicles.

### **Equity**

Developing EV infrastructure that prioritizes equity for disadvantaged communities (DACs) is an important consideration. The Joint Office established the [Joint Office United Support for Transportation \(JUST\) Lab Consortium](#), which comprises three DOE national laboratories, to conduct actionable research on integrating equity into federally funded EV infrastructure deployment efforts. The consortium will share equity best practices and provide technical assistance through analysis, webinars, trainings, and reports to Joint Office constituents, including state departments of transportation, cities and local agencies, tribal nations, and community organizations.

The [Electric Vehicle Charging Justice40 Map](#) is a tool that can help EV charging planning efforts align with the Justice40 goal for 40% of the federal investments in clean transportation to support DACs. The map is searchable by various data layers, including existing EV charging infrastructure, DACs, FHWA-designated EV corridors, tribal lands, and U.S. territories. This [report from Argonne National Laboratory](#) provides examples of applying mapping tools to identify priority locations for installing EV chargers that consider energy and environmental justice communities in four planning approaches. These approaches include corridor charging, community charging, fleet electrification, and diversity in STEM and workforce development.

The U.S. Access Board has also released [Design Recommendations for Accessible Electric Vehicle Charging Stations](#), which covers Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Standards that include requirements applicable to EV charging stations. Those provisions refer to access to sites, facilities, buildings, and elements, as well as specific requirements for operable parts and accessible routes. For a high-level overview of opportunities for communities to deploy EV charging in underserved communities, read this [white paper from the American Council for Energy Efficient Economy](#).

### **Partnerships**

Preparing for the transition to EVs is a community-wide effort involving numerous stakeholders. Key partners can include governments, tribal nations, school and transit fleets, utilities, local businesses, universities and educational institutions, environmental groups, underserved community representatives, and community-based organizations.

### **Coordinating with Utilities**

Coordinating with utilities is essential to build out EV charging infrastructure, and they are among the first partners that should be considered for EVSE installation. DOT provides a helpful [overview](#) of the role of the electric utility with EVSE deployment. The [Utilities, Commissions, and](#)

[State DOTs: Working Together to Deploy EV Charging Webinar](#) from the Joint Office dives into the perspectives of a utility, a public utility commission, and a state DOT working to deploy EV charging infrastructure.

The [National Electric Vehicle Infrastructure Utility Finder \(NEVI U-Finder\) tool](#) provides networking resources for EV charging infrastructure installation that helps states, communities, and fleets by providing lists of local utility partners and incentives.

The [AFDC Examples of Utility-Related Laws and Incentives](#) page also provides summaries of utility programs that promote and incentivize EVs and EV charging infrastructure and lists examples of utility EV programs.

### Coordinating with Local Partners

[DOE's Clean Cities coalitions](#) work to build partnerships among local stakeholder networks to advance alternative fuels, advanced vehicles, and other fuel-saving initiatives. Local coalition directors can help access local and regional information and resources on EV charging infrastructure.

### Case Studies

The search function on the [AFDC Case Studies page](#) can be used to find case studies and success stories on how cities and communities are leading the charge with EVs. In addition, select case studies are featured below.

### Community EV Readiness

Northern Colorado was one of the first regions to deploy a collaborative, comprehensive model for community EV charging by leveraging local policies, charging infrastructure, consumer education, and private-public partnerships. Drive Electric Northern Colorado (DENC), a partnership between the Electrification Coalition, the City of Fort Collins, the City of Loveland, and Colorado State University, was established to create a living laboratory for the development and testing of successful strategies to accelerate the adoption EVs. This [case study from the Electrification Coalition](#) details the DENC project, and provides key information for communities seeking to accelerate EV adoption.

The Oklahoma Department of Environmental Quality (DEQ), in collaboration with local Clean Cities coalitions, launched the ChargeOK program to leverage funding to build out the state's EV charging network. This [case study](#) details methods that DEQ used to engage stakeholders to address some of the barriers to implementation and launch a successful EV charging grant program.

In 2021, the Native Sun Community Development—a native-led, Minneapolis-based nonprofit organization working for environmental justice—received \$6.66 million from DOE to deploy EV charging stations in community settings in tribal areas. This [article from the Environmental and Energy Study Institute](#) contains information about spurring EV uptake in tribal communities.

Additionally, the Center for Law, Energy, and the Environment at the University of California Berkeley developed [a brief](#) highlighting case studies of successful EV charging infrastructure

deployment around the world. The cases describe how jurisdictions engage in planning and regulatory frameworks to support EV adoption and infrastructure.

### Curbside Charging

The DOE Vehicle Technologies Office (VTO) has funded curbside and streetlight EV charging projects. Lessons learned from these funded projects can highlight opportunities for greater efficiency and successful implementation. The [Project Lessons: Curbside EV Charging page](#) contains information on best practices for engaging stakeholders, strategies for improving project benefits, site selection factors, and permitting and policy considerations.

### EV Car Sharing

EV car share programs involve the purchase or leasing of EVs which can be used for personal trips, ride-hailing, or delivery services. The DOE VTO has funded multiple EV car share projects. The [Project Lessons: EV Car Share page](#) includes a review of project outcomes and interviews with project staff to highlight lessons learned.

### EV Charging at Multifamily Housing Units

Increasing EV charging at multifamily housing (MFH) units is an important strategy for expanding the EV market. Residents of apartment complexes, condominiums, townhomes, and other housing units require low-cost and long-dwell charging solutions, especially for those that do not have access to off-street, dedicated residential charging. DOE VTO has funded several approaches to MFH EV charging. A review of project approaches and key considerations can be found on the [Project Lessons: EV Charging for Multifamily Housing page](#).

### EV Mobility Hubs

EV mobility hubs allow for simultaneous charging of multiple vehicles and other electrified transport modes, such as electric buses and e-bikes. Partners' real-world operating data can help demonstrate how to scale EV charging equipment and vehicles. Visit the [Lessons Learned: EV Mobility Hubs page](#) to learn from past funded projects.

## About the Joint Office of Energy and Transportation

The Joint Office is a collaboration between the U.S. Departments of Energy and Transportation to support the buildout of a nationwide network of electric vehicle chargers, zero-emission fueling infrastructure, and zero-emission transit and school buses.

Learn more at [DriveElectric.gov](https://www.driveelectric.gov).