



National Association of
State Energy Officials



Photo by: NREL,09014

MUD EV Infrastructure

A Toolkit to Inform State Energy
Office Investment, Policy, and
Program Strategies



Photo by: Erik Nelsen,
NREL,64279



EV Infrastructure in MUDs

Introduction

Electric Vehicle (EV) usage in the United States has grown dramatically in the last several years, with EV sales nearly doubling from 238,548 in 2020 to 459,326 in 2021 (Bureau of Transportation Statistics). For reasons of convenience, the bulk of EV charging is done at home. However, for EV drivers in Multi-Unit Dwellings (MUDs), access to charging options is extremely limited compared to those who own their own single-family home. According to the 2020 Census, approximately one in three Americans lives in a MUD. In dense urban areas and inner cities, MUDs can be 75% or more of the housing units. A significant part of the population lacks the ability to charge their vehicle in a personal garage or driveway, or the ability to install charging without the approval from a landlord, property management company, or a home owners association (U.S. Census Bureau, 2019). Charging stations are and will be increasingly valuable amenities for properties and will attract tenants and buyers. However, many MUD property owners lack awareness and/or the upfront capital and financial assistance to implement EV charging at their properties. This is especially true of the most affordable MUDs, especially publicly subsidized and/or affordable housing, a critical source of housing for lower-income individuals and families. The average national income of apartment residents in 2020 was \$43,000, compared to \$82,210 for owner-occupied single-family homes. Better charging options in MUDs will support equitable EV adoption and a strong secondary (used) EV market.

States' Roles in EV Charging Infrastructure

In recent years, states across the country have launched programs to support EV charging infrastructure in a wide array of settings with the goal of enhancing access to EV charging among a significant portion of the driving population and addressing the “range anxiety” barrier to adoption. In their capacity as policy developers, program designers, and stakeholder conveners, many State Energy Offices have led the development of EV charging projects and programs. This can help achieve the States’ energy, economic, and resilience goals by diversifying transportation fuels, reducing the transportation sector’s pollution and its Greenhouse Gases, while promoting infrastructure investments and jobs.

In MUDs such as apartment buildings and condos, State Energy Offices have designed targeted investments and programs that address the barriers highlighted above.

The following are key strategies State Energy Offices have used to build effective and equitable Electric Vehicle Service Equipment (EVSE) MUD programs.

General Program Considerations



Identify Funding Source and Parameters of Funding

To appropriately plan for the scope of the project, it is important to determine the total amount of funding available per project and the cost-share component. It is also critical to determine the parameters of project funding including whether the project funding is per Electric Vehicle Service Equipment (EVSE) or per charging port or plug, and whether there is a dollar cap, or a cap on the number of Level 2 EVSE eligible at each property.



Decide on Technical Specifications for Stations

Most MUD charging stations will be Level 2 chargers, which are best suited to at-home and overnight charging. For Level 2 charging, States should identify technical specifications for the charging stations which may include SAE J1772 ports, a minimum of 7kW AC output, etc. States should also consider whether the charging stations should be networked or if non-networked units are acceptable, as well as whether the chargers should be commercial-grade chargers vs. single-family chargers. Non-networked chargers may be adequate for condos and units with individual garages with separate meters.



Deciding Other Site or Program Requirements

Program requirements to consider may include a minimum number of charging units (for example, some states require a minimum of five charging units per site, while other states may require eight). In addition, signage and parking requirements; aggregated data sharing requirements; and whether the charging stations need to be publicly accessible.



Include Equity Considerations

Enabling equitable EV adoption in MUDs, considering equity in EV charging program requirements, is essential. This goal can be achieved by offering higher incentive amounts and/or requiring a certain percentage of program funds to be dedicated to, MUDs in disadvantaged communities. Other equity considerations may include translating program and technical materials into the language(s) spoken by the target community, encouraging local hiring practices, and seeking ways to reduce charging costs borne by lower-income residents.



Display Program Information

States should consider developing an easy-to-navigate website to house information and resources for EV MUD programs. The website should provide information regarding the financial incentives, application and program requirements, and other tools to assist property owners or managers. Other resources to consider are information on electrical site preparation, local permitting requirements, and information on charging installation

Funding the Program

Volkswagen (VW) Settlement

States can use up to 15 percent of their VW Environmental Mitigation Trust funds for light-duty EV infrastructure, including stations located at MUDs

- Connecticut's Department of Energy and Environmental Protection announced \$1 million in funds from the VW Settlement will be dedicated to support non-government publicly accessible EVSE, with funding specifically for MUDs to be announced in the future (DEEP,2022).
- The North Carolina Department of Environmental Quality is using \$489,544 in VW Settlement Funds for a Level 2 MUD charging installation program (NC DEQ).
 - Eligible applicants include property management companies or homeowners' associations of MUDs such as apartment complexes, condominiums, etc.
 - Ineligible locations include single-family residences, individually owned townhouses, row houses, and mobile homes, and employee or fleet-only charging.



Photo by: Abby Brown, NREL, 62417



Photo by: Erik Nelsen, NREL, 66713

U.S. State Energy Program (SEP)

Under the Infrastructure Investment and Jobs Act (IIJA), \$500 million in funds are set aside via formula for State Energy Offices to fund programs that reduce greenhouse gas emissions in the transportation sector. One option for State Energy Offices is to use SEP funds for MUD EV charging infrastructure.

Emissions Reduction Trading Program

- Regional initiatives such as the Regional Greenhouse Gas Initiative allow participating states to receive proceeds from selling greenhouse gas allowances. States can use the proceeds to invest in clean energy programs such as EV charging infrastructure for MUDs.
- California's Cap-and-Trade program allows the state to deposit revenue generated from the program into a Greenhouse Gas Reduction Fund in which state agencies can invest in clean energy projects. California state law requires 35 percent of revenues to be directed to environmentally disadvantaged and low-income communities (Center for Climate and Energy Solutions, 2018). These funds can support charging infrastructure in MUD in disadvantaged communities.

Vehicle Registration Fees

- Many states levy registration fees on EV drivers. States may choose to use a portion of registration fees to support EV infrastructure programs
 - Washington State implemented an EV registration fee for EV drivers in addition to their annual vehicle registration fee. The EV registration fee is intended to offset the loss of revenue the state would have collected from drivers at gas stations. The funds generated can be used to fund EV charging infrastructure.
 - Alabama implemented a \$200 additional annual fee for battery electric vehicles (BEVs) and an \$100 fee for plug-in hybrid vehicles (PHEVs) (Austin Igleheart, 2022). A portion of the funds generated are deposited into the *Rebuild Alabama Fund* which funds EV charging infrastructure.
 - Colorado has a \$50 additional fee for EVs. 40 percent of fees generated from the EV fees are deposited into the *Electric Vehicle Grant Fund*, which administers grants to install charging stations (Austin Igleheart, 2022).

Project Profile

Massachusetts MUD & Educational Campus Charging

The Massachusetts Electric Vehicle Incentive Program (MassEVIP) MUD & Educational Campus Charging provides incentives to residential and educational property owners to cover a portion of the cost of EV charging stations. The program is funded by Massachusetts' portion of the Volkswagen Environmental Mitigation Trust. Property owners of MUDs in Massachusetts including apartment complexes, condominiums, and townhomes are eligible to apply to the program. The program can fund up to 60 percent of EV charging station equipment and installation costs to a maximum of \$50,000 per street address for Level 1 and/or Level 2 chargers (MassDEP, 2022). Property owners or managers of MUDs with five or more residential units can apply for funding.



Photo by: Delaney Dixon, NASEO



EV Charging Station Requirements


To qualify for funding, the MUDs EV charging infrastructure stations must have the following:

- Chargers must be hard-wired Level 1 or Level 2 chargers
- Chargers must be certified to Underwriters Laboratories standards by a Nationally Recognized Testing Laboratory
- Chargers must be able to charge EVs produced by multiple auto manufacturers
- Payment options must be accessible for all EV drivers without restrictions based on network membership or subscription
- Chargers must be a new and unused EV charging station, and must not be ordered until after approval letter is received from MassDEP
- Chargers that are resold, rebuilt, rented, leased, received from warranty insurance claims, or obtained as a gift or prize, or new parts installed at an existing charging location are NOT eligible
- Energy Star certification is recommended for charging station

Location Requirements

- Applicants must provide evidence of ownership of the location identified in the application or evidence that installation is allowed on the property
- Applicants must allow practical access to, and use of, EV charging stations by all residents at the location identified in the application, and document in writing
- The EV charging station must be in an unreserved parking space
- For each port installed, one parking space must be designated for plug-in EV use only and marked clearly through permanent, visible signage
- The charging station location should be designed to prevent physical damage including measure such as curbs, wheel stops, setbacks, bumper guards, and bollards

General Program Requirements

- Must collect EV station usage data for three full consecutive years after the date the charging station is operational
 - If the EV charging station is available for public use, it must be registered on the United States Department of Energy (DOE) Alternative Fuels Data Center Station Locator
 - Applicants are also encouraged to submit the location to other EV charging websites such as PlugShare
 - Applicants must market the EV charging station to residents and visitors
- 



References

“Apply for MassEVIP MUD & Educational Campus Charging Incentives | Mass.gov.” n.d. Wwww.mass.gov. Accessed September 20, 2022. <https://www.mass.gov/how-to/apply-for-massevip-multi-unit-dwelling-educational-campus-charging-incentives>.

Center for Climate and Energy Solutions. 2018. “California Cap and Trade | Center for Climate and Energy Solutions.” Center for Climate and Energy Solutions. March 16, 2018. <https://www.c2es.org/content/california-cap-and-trade/>.

“DEEP Announces Availability of 4 Million in vw Settlement Funding for Electric Vehicle Charging.” 2022. CT.gov - Connecticut’s Official State Website. July 19, 2022. <https://portal.ct.gov/DEEP/News-Releases/News-Releases---2022/DEEP-Announces-Availability-of-4-Million-in-VW-Settlement-Funding-For-Electric-Vehicle-Charging.> '

“Household Incomes.” 2022. Wwww.nmhc.org. July 2022. <https://www.nmhc.org/research-insight/quick-facts-figures/quick-facts-resident-demographics/household-incomes/>.

“Hybrid-Electric, Plug-in Hybrid-Electric and Electric Vehicle Sales | Bureau of Transportation Statistics.” n.d. Wwww.bts.gov. <https://www.bts.gov/content/gasoline-hybrid-and-electric-vehicle-sales>.

Igleheart, Austin. 2022. “New Fees on Hybrid and Electric Vehicles.” Wwww.ncsl.org. July 26, 2022. <https://www.ncsl.org/research/energy/new-fees-on-hybrid-and-electric-vehicles.aspx>.

“Level 2 MUD Program | NC DEQ.” n.d. Deq.nc.gov. Accessed September 12, 2022. <https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-and-air-quality/volkswagen-settlement/phase-2-volkswagen-settlement/level-2-infrastructure-program/level-2-multi-unit-dwelling-program#level-2-multi-unit-dwelling-program-webinar>.

