



MODEL BYLAW

Municipal Electric Vehicle Bylaw

1. Background

The Cape Cod Commission (the “Commission”) released the Cape Cod Climate Action Plan¹ (the “Plan”) in July 2021. The Plan provides a framework for action to support a climate resilient region, and found 55.5% of the region’s greenhouse gas emissions (“GHGs”) were driven by the transportation sector. To meet the Cape’s emissions reduction goals, the Plan targets that 63% to 93% of new vehicle sales would need to be electric by 2030, and 100% by 2050. Further, to support the estimated 214,000 light-duty EVs on the road (required to reach the 2050 emissions goals in the SER1 scenario), 8,800 public charging stations would need to be deployed. Altogether, the cumulative health benefits (2021-2050) driven by reduced criteria pollutants from electrifying light-duty EVs were valued at \$82 million. Achieving these goals will require addressing barriers to transportation electrification including their higher up-front costs, lack of familiarity with owning an EV, and model availability and range concerns. One major barrier to adoption is access to charging infrastructure. Strategic planning and regional coordination will encourage the development of EV charging infrastructure and increase awareness of EV options in support of the region’s GHG reduction goals and *[insert Town’s climate/EV-related goals]*.

¹ <https://www.capecodcommission.org/resource-library/file/?url=/dept/commission/team/climate/Shared%20Documents/Climate%20Action%20Plan/Cape-Cod-Climate-Action-Plan.pdf>

2. Purpose

The purpose of this by-law is to support municipalities to encourage the strategic siting and installation of EV charging infrastructure. **This by-law defines three levels of recommended requirements to encourage EV charging development:**

1. **Base** requirements closely align with Massachusetts’s Stretch and Specialized Opt-in Code, finalized on September 23, 2022.
2. **Base Plus** provides more advanced requirements for municipalities who wish to consider increased support for EV charging infrastructure deployment.
3. **Reach** supplements the Base Plus level with stronger EV readiness provisions for communities taking a more proactive stance to supporting development of EV charging infrastructure.

The recommendations proposed in this model by-law are intended to be flexible. Municipalities may want to tailor and select requirements most applicable to their jurisdiction, and to fit their specific needs and goals.

In developing EV by-laws, special consideration should be given to balancing the benefit of increased EV adoption – and resulting health benefits – with potential project cost increases. Specifically, installing electric infrastructure to serve EV chargers is most cost-effective during new construction, versus during a retrofit. A recent California Air Resources Board (CARB) report concluded retrofit costs to serve an EV charger can be between \$7,000 and \$8,000 per space, whereas making a space EV Capable during construction costs between \$870-9602. The Technical Sections of these by-laws recommend EV chargers be installed on occupancy where it is reasonable to expect more robust charger utilization – namely, where people dwell such as at home, at the workplace, or at hotels and motels. For other types of buildings, these by-laws recommend considering EV-readiness requirements to reduce the cost and complexity of potential future charging installations.

Another special consideration should be given to multi-family dwellings where “the additional cost to install conduit between the electrical panel and their parking space, and the logistical challenges of securing HOA approval, coordinating the EV charger billing with the building owner, and persuading an owner to make a long-term investment on a rental property, are all significant obstacles to EV ownership”³. To address these barriers, it is important to encourage the development of EV charging infrastructure at workplaces and at publicly available sites and encourage low-cost charging options for multi-family dwellings.

² Attachment A: CARB Submission for EV Charging Infra for Non-Res

³ <https://www.swenergy.org/transportation/electric-vehicles/building-codes>

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Special consideration should also be given to the types of chargers installed – Level 1, Level 2, or DCFC (see definitions below). Per a 2021 Forbes report – based on a JD Powers study – roughly 80% of EV charging is done overnight at home or at work,⁴ and for most EV owners, a Level 2 plug will accommodate average daily use – which the U.S. Federal Highway Administration estimates to be an average 50 miles per day.⁵ For this reason, the recommended requirements in these model by-laws focus on policies which encourage the build out of Level 2 charging – and in certain cases, Level 1 charging. However, as EV adoption increases, the role for DCFC charging will increase in importance as well – especially along travel corridors to serve long-distance trips. The buildout of DCFC infrastructure will require regional, state- and federal-level coordination. For that reason, these bylaws consider DCFC charging on a limited basis.

3. Definitions

Automatic Load Management Systems (ALMS): A control system that allows multiple connected electric vehicle supply equipment (EVSE) to share a circuit or panel and automatically manage power at each charger, reducing the total connected electrical capacity of all EVSE.

Direct Current (DC) Fast Charging EVSE: DCFC EVSE delivers high voltage (typically 200-450V) DC power directly into the EV's battery system, enabling rapid charging. An 80% charge can be provided in 30 minutes or less for many all-electric vehicles, compared to several hours for Level 2 charging. There are three available plug standards for DC fast charging, the SAE Combined Charging System (CCS) format used by most electric vehicle manufacturers, the Tesla Supercharger proprietary system, and the CHAdeMO plug used by the Nissan LEAF and some older Kia and Mitsubishi vehicles. The Federal Highway Administration (FHWA) is requiring SAE CCS charging equipment for installations funded through the National Electric Vehicle Infrastructure (NEVI) program. The CCS plug is expected to grow in popularity as Tesla has recently made a CCS to Supercharger adapter available. Tesla may also offer CCS DCFC plug equipment options at Supercharging locations in the future.

Electric Vehicle: An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell,

⁴ <https://www.forbes.com/wheels/news/jd-power-study-electric-vehicle-owners-prefer-dedicated-home-charging-stations/#:~:text=In%20reality%2C%2080%25%20of%20EV,is%20parked%20during%20the%20workday.>

⁵ <https://nhts.ornl.gov/>

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photovoltaic array, or other source of electric current. Informational Note: defined as in 527 CMR 12.00: Massachusetts Electrical Code (Amendments) section 625.2.

Electric Vehicle Capable Space (EV Capable Space): A vehicle space with electrical panel space and load capacity to support a branch circuit and necessary raceways, both underground and/or surface mounted, to support EV charging.

Electric Vehicle Charging Port (EV Charging Port): The EVSE component which connects to vehicle charging inlets. One EVSE unit may contain multiple charging ports, which are also referred to as “plug connectors” or “heads”. Level 1 ports include connectors supplied by level 1 EVSE as well as any standard 120V outlets able to supply 15 or more amps of current to be used with the level 1 EVSE supplied by vehicle manufacturers.

Electric Vehicle Charging Station: The public or private parking space(s) served by EVSE, including all signs, information, pavement surfaces, surface markings, fee collection systems, and protective equipment, in which a vehicle is recharged.

Electric Vehicle Ready Parking Space (EV Ready Space): A designated parking space which is provided with wiring and electrical service sufficient to provide AC Level 2 or equivalent EV charging, as defined by Standard SAE J1772 for EVSE servicing light duty Electric Vehicles.

Electric Vehicle Supply Equipment (EVSE): The conductors, including the ungrounded, grounded, and equipment grounding conductors, and the Electric Vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the Electric Vehicle. Informational Note: defined as in 527 CMR 12.00: Massachusetts Electrical Code (Amendments) section 625.2.

Electric Vehicle Supply Equipment Parking Space (EVSE Space): A designated parking space which is provided with a dedicated EVSE connection.

Level 1 EVSE: EVSE which uses a 120V AC connection to a standard residential/commercial electrical outlet typically supplying 15 amps of current, for a power draw around 1.4 – 1.8 kW when charging. All EVs come equipped with Level 1 chargers from auto manufacturers.

Level 2 EVSE: EVSE which uses a 208/240V AC connection to supply increased power to EVs, reducing the amount of time required to charge the EV battery. Level 2 EVSE can provide up to 80 amps of current and 19.2 kW of power, although most current EVs can only accept 3.3 to 10 kW as determined by the vehicle’s onboard charger. Current Level 2 EVSE equipment typically uses 208/240V 40-50 amp supply circuits.

Low Power Level 2 EVSE: A 208/240-volt 20-ampere minimum branch circuit and a receptacle for use by an EV driver to charge their electric vehicle or hybrid electric vehicle.

Low Power Level 2 EV Ready Space: A designated parking space which is provided with wiring and electrical service sufficient to serve a Low Power Level 2 EVSE.

4. Technical Sections

4.1. Suggested By-Law Requirements for Residential buildings

RECOMMENDED LANGUAGE:

To meet anticipated demand for EV charging stations as the technology becomes more widespread, installed parking spaces should meet the requirements outlined in Table 1, below. Calculations for spaces shall be rounded up to the nearest whole number but will always be a value of at least one EV Charging Port to be available at the time of development occupancy.

Table 1: Recommended requirements for residential buildings

Type of Building	Base Recommendation	Base Plus Recommendation	Reach Recommendation
1 & 2 family dwellings and townhouses	At least <u>one (1) EV Ready Space</u> per household	At least <u>one (1) EVSE Space</u> per household	Base Plus Recommendation, and at least <u>one (1) additional EV Capable Space</u> per household
Multifamily dwellings with less than 20 dwelling units	At least <u>20%</u> of all parking spaces shall be <u>EV Ready Spaces</u>	A minimum of <u>10% EV Capable Spaces, 25% Low Power L2 EV Ready Spaces</u>	Base Plus Recommendation, but <u>15% EV Capable Spaces</u>
Multifamily dwellings with greater than 20 dwelling units	At least <u>20%</u> of all parking spaces shall be <u>EV Ready Spaces</u>	A minimum of <u>10% EV Capable Spaces, and 25% Low Power L2 EV Ready Spaces, and 5% EVSE Spaces</u>	Base Plus Recommendation, but <u>25% EV Capable Spaces</u>

Alterations:

When new parking facilities are added, or electrical or lighting of existing parking facilities are added or altered and the work requires a building permit, 10% of the total number of parking spaces added or altered shall be EV Capable.

Technical specifications:

- EV Capable Spaces shall comply with the following:
 - Include space in the utility room for panel(s) of at least one minimum 40-ampere branch circuit to be provided to garages and/or the exterior of the building to accommodate a future dedicated Society of Automotive Engineers (SAE) standard J1772-approved Level 2 EVSE with a J1772 connector or NEMA 14-50, or equivalent, within 5 feet of the ambient centerline for each EV charging parking space.
 - A conduit or other unobstructed path to easily run a future wire to the parking spot shall also be provided.
- EV Ready Spaces shall comply with the following:
 - At 1 & 2 family dwellings and townhouses, include at least one branch circuit with a minimum capacity of 40-amps per dwelling unit to provide for Level 2 EVSE charging.
 - At multi-family dwellings, install a 40-ampere, 208/240-volt circuit with a minimum capacity of 9.6 kVA.
 - The dedicated branch circuit shall be identified as “EV READY” in the service panel or subpanel directory, and the termination location shall be marked as “EV READY”. The circuit shall terminate in a NEMA receptacle or a Society of Automotive Engineers (SAE) Standard SAE J1772 electrical connector for EVSE servicing Electric Vehicles, located within 5 feet (1828 mm) of each EV Ready Space.
 - Conductors and outlets for EVSE shall be sized and installed in accordance with the MA electrical code.
- EVSE Spaces shall comply with the following:
 - Include wiring, electrical service, and EVSE sufficient to provide Level 2 EVSE or equivalent EV charging at a minimum power of 7kW, as defined by Standard SAE J1772 for EVSE servicing light duty Electric Vehicles, located within 5 feet (1828 mm) of each EV Ready Space.

Exceptions:

- In no case shall the number of required EV Capable, EV Ready, or EVSE Spaces be greater than the number of parking spaces required.
- Installed EVSE Spaces that exceed the minimum EVSE Space requirements may be used to meet minimum requirements for EV Ready Spaces.
- Installed EV Ready Spaces that exceed the minimum EV Ready Space requirements may be used to meet minimum EV Capable Space requirements.

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- Multifamily properties may elect to comply with Commercial requirements.
- One or more SAE Level 2 EVSE spaces may be substituted with multiple NEMA 5-15 receptacle Level 1 EVSE spaces provided with wiring for a minimum 15-amp, 120 volt EVSE, with a ratio of at least three Level 1 spaces for each Level 2 EVSE space required.
- On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions
 - Where there is no local utility power supply, or the local utility is unable to provide adequate power. If a property owner is awaiting utility upgrades to complete required charging infrastructure installations, then the local enforcing agency may allow a certificate of occupancy to be issued with the condition that any EV charging requirements will be met following the completion of utility work.
 - Where spaces are separated from the premises by a public right-of-way.
 - Where there is evidence suitable to the local enforcing agency substantiating that additional unique project design requirements, directly related to the implementation of these requirements, may adversely impact the construction cost of the project.
 - Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.
- Electric vehicle parking spaces are not required if one of the following conditions apply:
 - Parking spaces intended exclusively for storage of vehicles for retail sale or vehicle service.
 - Parking spaces are separated from the meter by a public right-of-way
 - Parking spaces which are limited to parking durations of less than one hour.
 - EV Capable Spaces are not required where no parking spaces are provided.

4.2. Suggested By-Law Requirements for Commercial buildings

RECOMMENDED LANGUAGE:

To meet anticipated demand for EV charging stations as the technology becomes more widespread, installed parking spaces should meet the requirements outlined in Table 2 below. Calculations for spaces shall be rounded up to the nearest whole number but will always be a value of at least one EV charging port to be available at the time of development occupancy.

Per Massachusetts' Commercial Stretch code and Specialized Opt-in code,⁶ EV charging can be met with either dedicated electric branch circuits, or with an automatic load management service (ALMS) that allows multiple spaces to be served by a higher amperage circuit, thus improving overall charging capacity at a lower installed cost.

Table 2: Recommended requirements for commercial buildings

Occupancy Classification⁷ / Building Type	Base Recommendation	Base Plus Recommendation	Reach Recommendation
Hotels and motels (transient) with less than 20 sleeping units or guest rooms	A minimum of <u>20%</u> of parking spaces shall be <u>EV Ready Spaces</u>	A minimum of 10% EV Capable Spaces, and 25% EV Ready Spaces	Base Plus Recommendation, and <u>5% EVSE Spaces</u>
Hotels and motels (transient) with greater than 20 sleeping units or guest rooms	A minimum of <u>20%</u> of parking spaces shall be <u>EV Ready Spaces</u>	A minimum of 10% EV Capable Spaces, 25% EV Ready Spaces, and 5% EVSE Spaces	Base Plus Recommendation, but at least <u>50% EV Capable Spaces</u> , and <u>10% EVSE Spaces</u>
All other R-use and Group B (Businesses)	A minimum of <u>20%</u> of parking spaces shall be <u>EV Ready Spaces</u>	A minimum of 10% EV Capable Spaces, 25% EV Ready Spaces, and 5% EVSE Spaces	Base Plus Recommendation, but at least <u>50% EV Capable Spaces</u>
All other occupancies	A minimum of <u>10%</u> of parking spaces shall be <u>EV Ready Spaces</u>	A minimum of 10% EV Capable Spaces, and 25% EV Ready Spaces	Base Plus Recommendation, and <u>5% EVSE Spaces</u>

⁶ Massachusetts 2023 Commercial Stretch code and Specialized Opt-in code DOER Final Draft 9-19-22 Redline: <https://www.mass.gov/doc/commercial-and-other-stretch-energy-code-and-specialized-opt-in-code-language-redline/download>

⁷ 2015 International Building Code (IBC), Chapter 3, Use and Occupancy Classification: <https://codes.iccsafe.org/content/IBC2015P4/chapter-3-use-and-occupancy-classification>

Technical Specifications

- EV Capable Spaces shall comply with the following:
 - A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the EV capable space and a suitable panelboard or other onsite electrical distribution equipment.
 - The electrical distribution equipment to which the raceway or cable assembly connects shall have sufficient dedicated space and spare electrical capacity for a 2-pole circuit breaker or set of fuses.
 - The electrical enclosure or outlet and the electrical distribution equipment directory shall be marked: "For future electric vehicle supply equipment (EVSE)."
 - Reserved capacity shall be no less than 4.1 kVA (20A 208/240V) for each EV Capable Space.
- EV Ready Spaces shall comply with the following:
 - Include a 40-amp dedicated branch circuit or larger branch circuit with ALMS in accordance with Table 3
 - Installed wiring suitable for 6.6kW or higher SAE J1772 Level 2 EVSE shall be connected to the service panel and run to within 6 feet (1828mm) of any qualifying parking space.
 - Conductors and outlets for EVSE shall be sized and installed in accordance with the MA electrical code.
- EVSE Spaces shall comply with the following:
 - Be capable of charging at a minimum rate of 6.2 kVA (or 30A at 208/240V).
 - When serving multiple EVSE Spaces and controlled by an ALMS, be capable of simultaneously charging each EVSE space at a minimum rate of no less than 3.3 kVA.
 - When serving EVSE Spaces allowed to have a minimum circuit capacity of 2.7 kVA and controlled by an energy management system providing load management, be capable of simultaneously charging each ESVE space at a minimum rate of no less than 2.1 kVA.

Automatic Load Management System (ALMS)

ALMS may be used to control electric vehicle loads for EV Ready or EVSE Spaces with Level 1 EVSE or Level 2 EVSE, subject to the performance requirements in *Table 3*, below. The maximum number of parking spaces that may share a single branch circuit varies based on the percentage of all parking spaces to be provided with EVSE.

Table 3: ALMS EV Ready Performance Requirements (from MA Stretch)⁸

Circuit Breaker Amperage	Maximum Parking Spaces that May Share a Branch Circuit with 10%-60% EV Ready spaces	Maximum Parking Spaces that May Share a Branch Circuit with 61-100% EV Ready spaces
40A	1	2
50A	1	2
60A	2	4
70A	3	6
80A	4	8
90A	5	9
100A	6	10

Identification

Construction documents shall indicate the branch circuit termination point and proposed location of future EVSE. Construction documents shall also provide information on amperage of future EVSE, wiring schematics, Automatic Load Management Systems, and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformers, have sufficient capacity to simultaneously charge all EVs at all required EV ready spaces.

Exceptions:

- Parking spaces and garage spaces intended exclusively for storage of vehicles for retail sale or vehicle service.
- Parking spaces specifically designated for medium or heavy duty vehicles.
- Any parking facility with 4 or more spaces providing installed Direct Current fast charging EVSE with a minimum charging speed of 150 kW to each space.
 - As explained in the Purpose section of this document, Level 2 chargers are well positioned to serve the bulk of residential EV charging needs. However, this exception

⁸ From Table C405.13.1 of IMA 2023 Commercial Stretch Code

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will provide towns and municipalities with the option to consider DCFC charging infrastructure for applicable commercial sites – especially along travel corridors.

- One or more SAE Level 2 spaces may be substituted with multiple NEMA 5-15 receptacle Level 1 spaces provided with wiring for a minimum 15 amp, 120 volt EVSE, with a ratio of at least three Level 1 spaces for each Level 2 space required.
- On a case-by-case basis, where the local enforcing agency has determined compliance with this section is not feasible based upon one or more of the following conditions
 - Where there is no local utility power supply, or the local utility is unable to supply adequate power. If a property owner is awaiting utility upgrades to complete required charging infrastructure installations, then the local enforcing agency may allow a certificate of occupancy to be issued with the condition that any EV charging requirements will be met following the completion of utility work.
 - Where there is evidence suitable to the local enforcing agency substantiating that additional unique project design requirements, directly related to the implementation of these requirements, may adversely impact the construction cost of the project
 - Parking spaces accessible only by automated mechanical car parking systems
 - Where parking spaces are separated from the meter by a public right-of-way
- Parking spaces intended exclusively for storage of vehicles for retail sale or vehicle service.

4.3. Accessory and Principal Use

While specific language and requirements will vary by municipality, the goal of defining EV Charging Stations as Accessory Uses is to streamline the permitting process. In some municipalities, this classification may not require a permit; in others, it will enable permits to be issued administratively. If Accessory Uses require significant review, municipalities may wish to consider other less restrictive classifications which may be available under their local bylaws. For example, EV charging stations could be listed as an exemption in which no review or permit would be needed.

Residential v. Non-Residential: In some cases, Accessory Uses may be addressed in Residential and Non-Residential sections of the Bylaws separately. In these cases, it will be beneficial to explicitly state that EV Charging Stations are allowed Accessory Uses in each section.

RECOMMENDED LANGUAGE:

Accessory Use Standards: Electric vehicle charging stations are permitted as an accessory residential and non-residential use within an approved parking area or approved fueling station service area in any zoning district and will not be subject to the provisions of this section.

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Accessory Structure Standards: Electric vehicle charging stations and above-ground electric vehicle supply equipment are permitted as an accessory structure in any zoning district subject to the provisions of this section. (Typical accessory structure provisions include footprint maximums, modest setbacks, and height limitations.)

4.4. Accessibility Standards

RECOMMENDED LANGUAGE:

It is strongly encouraged, but not required under these bylaws, that a minimum of one accessible EV Charging Station be provided. Accessible EV Charging Stations should have a barrier-free route of travel and be in close proximity to the building. It is not necessary to designate the accessible EV Charging Station exclusively for disabled users. Separate from these regulations, the Americans with Disabilities Act (ADA) may require EV Charging Stations to meet accessibility requirements.

For additional guidance related to accessibility related to EV charging, please see the US Access Board source, in the Resources section of this document. This technical resource provides guidance which includes EV charging stations that must be accessible and requirements that apply to EV charging stations.

4.5. Principal Uses and Defined Uses

In rare cases, a site that offers electric vehicle charging as its primary purpose would function as a principal fueling station use, or service station. Local definition for a fueling station and any associated performance standards may need to be modified to allow fueling for internal combustion *and* electric vehicles. As EV markets and technologies progress, fast-charge electric fueling stations may function like today's typical gas stations, where vehicles re-fuel within minutes at a service area or bay, instead of an approved parking space.

RECOMMENDED LANGUAGE:

Fueling station means a specialized establishment for selling gasoline or other liquid or gaseous vehicle fuels. (Fueling station definitions often allow this use to be combined with a carwash or convenience store use).

4.6. Permitting Processes

Regulations that work well for permit applicants and reviewers alike consider the review process in relation to a project's impacts. Special consideration should be given to the level of review required

for different development scenarios to ensure that the developer's and municipal resources are managed efficiently

RECOMMENDED LANGUAGE:

Landowners do not need to obtain a zoning permit for:

- Interior alterations to an existing structure for electric vehicle charging stations that do not change any of the structure's exterior dimensions.
- The installation of Electric Vehicle Charging Stations within a public right-of-way, although other permitting processes may apply in this case.

4.7. Signage

Because EV Charging Stations should include signage and may have pavement markings, bylaws related to signage should also address EV Charging Stations. It should be clarified that EV Charging Station signage be considered and handled in the same manner as small regulation signs (e.g. No Parking).

In some cases, Signage may be addressed in a separate ordinance. In these cases, language exempting EV Charging Station signage from additional permitting requirements should be included in this ordinance.

For additional guidance, examples, and options related to EV signage, please see the sources within the Signage category of the Resources section of this document.

RECOMMENDED LANGUAGE:

Each location offering electric vehicle charging stations should include general service signage compliant with the Manual on Uniform Traffic Control Devices (MUTCD) identifying spaces designated for EV charging (Figure 1 below), supplemented with restricted parking signage designating charging spaces as no parking "EXCEPT FOR ELECTRIC VEHICLE CHARGING" (Figure 2 below). For purposes of this section, "charging" means an electric vehicle is parked at an electric vehicle charging station and is connected to the electric vehicle supply equipment port. If time limits or vehicle removal provisions are to be enforced, regulatory signage including parking restrictions shall be installed immediately adjacent to, and visible from the electric vehicle charging station. Pavement markings may also be used as an additional feature to guide EV drivers to designated EV charging parking spaces.

Separate from general service and parking regulatory signage, charging equipment should have contact information on display for users to provide feedback or make a support request.



Figure 1. MUTCD D9-11b EV Charging General Service Signage



Figure 2. MUTCD R7-2 Parking Restriction Signage Modified for EV Charging

The recommended language below should be considered for publicly available EV chargers, where towns and municipalities can consider requirements which discourage non-electric vehicles from parking in EV dedicated parking spaces. These types of requirements may avoid a negative charging experience for EV drivers who plan to charge their vehicle at a particular location, only to find a non-electric vehicle in the parking space. This language may need to be supplemented with corresponding language in related traffic ordinances to establish authority to enforce the penalty. Finally, site owners who host EV charging infrastructure should be encouraged to consider and implement parking management measures to discourage non-electric vehicles from parking in EV-designated parking spaces.

RECOMMENDED LANGUAGE:

Unauthorized vehicles not connected for electric charging purposes may be towed away at owner's expense.

4.8. Fee Collection

EV Charging Station owners should have the option to charge a fee to users to cover their capital and operating costs and potentially profit from providing this service. The following sample language is recommended to ensure property land use classifications will not change as a result of instituting a fee structure.

RECOMMENDED LANGUAGE:

The property owner is not restricted from collecting a service fee for the use of an electric vehicle charging station made available to residents, employees and visitors to the property. Collection of charging station fees shall not affect the zoning land use classification of properties where EV charging stations are installed as accessory uses.

4.9. Performance and Design Standards

Performance and design standards can communicate what your community values and expects to support the health, safety, and welfare of residents and visitors. Charging stations are designed to be safe and convenient.

RECOMMENDED LANGUAGE:

- Must construct with equipment and service facilities that are designed and/or located to prevent water from entering or accumulating within the components in river corridor areas;
- Must place charging equipment and manage cords to avoid tripping hazards in public locations;
- Must locate ancillary mechanical equipment and components (but not the charging station itself) so that they will be screened from view to the maximum extent feasible, and if adequate screening is not possible use materials and colors that will camouflage the ancillary equipment.
- Lighting should be required for EVSE available at night. The ordinance should reference the municipality's lighting ordinance.
- Raceways must be continuous from the branch circuit/feeder panel location and end at a point allowing convenient future installation of and access to EVSE. The raceway shall be sized and installed per the National Electrical Code; however, in no case shall the EVSE infrastructure be less than 1" (one inch) in size. The EVSE infrastructure raceway shall include a pull rope or line installed for future conductor installation, with the raceway sealed and labeled as "EV-Ready" for future use.
- The electrical equipment room must have a dedicated space for the future installation of electrical equipment to serve the EVSE. This space shall be identified on all construction documents submitted for review, and must be in compliance with the National Electrical Code prescriptive requirements. The space shall not be used for any other permanent purpose, so as not to restrict future installation of electrical equipment
- Site design and plans must include the location(s) and type of raceway method(s), wiring schematics (if any), and electrical calculations to verify that the electrical system has sufficient capacity to simultaneously support all future EVSE.

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- Raceway shall be wired through the ceiling if the site is located within a FEMA Flood Hazard Area⁹.

5. Resources

- Massachusetts Stretch Energy Code Development 2022 (landing page): <https://www.mass.gov/info-details/stretch-energy-code-development-2022>
- Massachusetts 2023 Residential Stretch code and Specialized Opt-in code DOER Final Draft 9-19-22 Redline: <https://www.mass.gov/doc/residential-low-rise-stretch-energy-code-and-specialized-opt-in-code-language-redline/download>
- Massachusetts 2023 Commercial Stretch code and Specialized Opt-in code DOER Final Draft 9-19-22 Redline: <https://www.mass.gov/doc/commercial-and-other-stretch-energy-code-and-specialized-opt-in-code-language-redline/download>
- Boston Electric Vehicle Readiness Policy for New Developments: <https://www.boston.gov/sites/default/files/file/2020/03/EV%20Readiness%20Policy%20For%20New%20Developments%20%287%29.pdf>
- US DOE – EERE – AFDC: Electricity Laws and Incentives in MA: <https://afdc.energy.gov/fuels/laws/ELEC?state=MA>
- 2022 California Green Building Standards Code, Title 24, Part 11 (CALGreen): <https://codes.iccsafe.org/content/CAGBC2022P1>
- 2020 Vermont Commercial Building Energy Standards: <https://publicservice.vermont.gov/sites/dps/files/documents/CBES%202023%20full-text%20redline%20incorporating%20proposed%20amendments%209232022.pdf>
- 2020 Vermont Residential Building Energy Standards: <https://codes.iccsafe.org/content/VTRES2020P1>
- 2020 Vermont Residential Building Standards (RBES) Energy Code Handbook: https://publicservice.vermont.gov/sites/dps/files/documents/2020-VT_Residential_Energy_Code_Handbook_v8.pdf
- Sustainable New Jersey Guidance for Creating Plug-In Electric Vehicle (PEV) Friendly Ordinances: https://www.sustainablejersey.com/fileadmin/media/Actions_and_Certification/Actions/Make_Your_Town_EV_Friendly/Guidance_for_Creating_EV_Friendly_Ordinance_V.1_April_2017_1_.pdf
- Southwest Energy Efficiency Project (SWEET) – EV Infrastructure Building Codes: Adoption Toolkit: <https://www.swenergy.org/transportation/electric-vehicles/building-codes>

⁹ <https://www.fema.gov/glossary/special-flood-hazard-area-sfha>

- Southwest Energy Efficiency Project (SWEEP) – EV Ready Parking Requirements Master List:
<https://docs.google.com/spreadsheets/d/1lgppSv7HvU4ExH8TJarE23o8-Y-q9oLV0TaBPBMKaiE/edit#gid=27292754>
- Franklin Regional Council of Governments – Evaluation of Demand for Electric Vehicle Charging Stations in Franklin County (2017):
<https://docs.google.com/spreadsheets/d/1lgppSv7HvU4ExH8TJarE23o8-Y-q9oLV0TaBPBMKaiE/edit#gid=27292754>
- Pioneer Valley Electric Vehicle (EV) Charging Station Plan/Guide (2017):
<https://www.pvpc.org/sites/default/files/doc-ev-charging-station-plan/guide3215.pdf>
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