Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
DEPARTMENT OF ENERGY RESOURCES

Executive Order No. 594
LEADING BY EXAMPLE: DECARBONIZING AND MINIMIZING ENVIRONMENTAL IMPACTS OF STATE GOVERNMENT

Section 5C Guideline
Electric Vehicle Supply Equipment

Guideline Effective Date: April 28, 2022

Background and Purpose

On April 22, 2021 Governor Baker signed Leading by Example Executive Order 594, *Decarbonizing and Minimizing Environmental Impacts of State Government* (the "Order").

The Order sets forth targets and establishes policies, programs, and strategies to substantially reduce greenhouse gas emissions from state government operations at state owned and managed buildings, facilities, and campuses, as well as enhance their resilience. This will be achieved by advancing high performance buildings for new construction; expanding energy efficiency and decarbonizing fuels in existing buildings; acquiring fuel efficient and zero emission vehicles and continuing the deployment of new renewable energy.

This document provides guidance regarding the terms of significance and directives of Section 5C of the Order that specifically relate to electric vehicle supply equipment (EVSE) for state fleets. Additional Executive Order 594 guideline documents can be downloaded from the Leading by Example (LBE) web page at https://www.mass.gov/info-details/leading-by-example-executive-order-594-decarbonizing-and-minimizing-environmental-impacts-of-state-government.

Scope

Section 5 of the Order applies to executive branch agencies, public institutions of higher education, and the Massachusetts Bay Transportation Authority (MBTA). According to the Order, Marked and unmarked police cruisers are exempt from the requirements of Sections 5, but public safety agencies are encouraged to meet any or all of the vehicle-related requirements of the Order whenever possible.

Definitions

a) **Agency** – Although the language of the Order in section 5C uses the term "agency", the requirements still apply to the full range of state entities enumerated in the scope, including public institutions of higher education and the MBTA non-revenue fleet.

b) **DC fast charging (DCFC)** – Typically requires 480V three-phase input, provides a maximum current of 80 or 400 amps, a maximum output power of 80 kW or 400 kW, and involves an electric utility for installation. DCFC provides rapid charging compared to AC Level 1 and Level 2 units but is considerably more expensive to install and operate. Not every EV can utilize DC fast charging.

c) **Electric vehicle (EV)** – A vehicle fully or partially powered by electricity that can plug in to charge from an off-board electric power source. This distinguishes them from hybrid electric vehicles, which supplement an internal combustion engine with battery power but cannot be plugged in. There are two basic types of EVs: all-electric vehicles and plug-in hybrid electric vehicles (PHEVs). All-electric vehicles include battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs). In addition to charging from the electrical grid, both types are charged in part by regenerative braking, which generates electricity from some of the energy normally lost when braking.

d) **Electric vehicle charging port / EV charging port** – Provides power to charge only one vehicle at a time even though it may have multiple connectors. The unit that houses EV charging ports is sometimes called a charging station, which can have one or more ports.

e) **Electric vehicle charging station or electric vehicle supply equipment (EVSE)** – An electric component assembly or cluster of component assemblies designed specifically to charge batteries within electric vehicles by permitting the transfer of electric energy to a battery or other storage device in an electric vehicle.

f) **Employee or workplace electric vehicle charging**[1] – EV charging station(s) intended for use by employees' personal vehicles; all employees should have practical access to such charging stations.

g) **EV-capable parking space** – Parking space prepared for a future EV charging station, intended to save time and installation costs or enable a phased approach to installing EVSE in a parking area. Relevant strategies may include electrical panel capacity upgrade(s) plus a branch circuit and constructed raceway or the installation of a standard 240-volt ground fault circuit interrupter (GFCI/GFI) outlet that can enable immediate trickle charging opportunities with the ability to upgrade to Level 2 or more advanced charging infrastructure in the future.

[1] MassEVIP is a MassDEP rolling grant program aimed at making EVs and charging infrastructure more widely available throughout the Commonwealth; to be eligible for MassEVIP workplace charging incentives, there must be 15 or more employees on site at the location.

h) **EV-ready parking space** – Parking space that is both EV-capable *and* includes all necessary conduit and wiring ending with a terminal junction at the space (i.e., a 240-volt outlet accessible to the parking space and the branch circuit identified as "EV READY"). For state new construction projects, if this definition differs from the current Massachusetts Building Energy Code (Chapter C405.10), the Building Energy Code definition shall take precedence.

i) **Fleet electric vehicle charging**[2] – In the context of this Guideline, EV charging station(s) intended for use by state fleet vehicles; applicable charging spaces should be reserved for fleet EVs only.

j) **Fleet vehicles** – In the context of this Guideline, refers to vehicle assets owned or leased and operated by Commonwealth entities.

k) **Green Fleet Committee (GFC)** – The Operational Services Division (OSD) and DOER co-chair the GFC, which includes representatives from the Massachusetts Department of Environmental Protection (MassDEP) and other agencies as applicable. The GFC is responsible for overseeing implementation of the Fuel Efficiency Standard, which includes vehicle mile per gallon efficiency and EV requirements for executive branch agencies.

l) **Hydrogen refueling stations (for fuel cell electric vehicles)**[3] – Hydrogen refueling stations typically function like a typical gas station; hydrogen storage and dispensing equipment is above ground, and hydrogen is dispensed as a compressed gas. Some stations make the hydrogen onsite; others have hydrogen delivered as a liquid, and others receive hydrogen as a compressed gas. The manner of delivery dictates the equipment at the station.

m) **Level 1 AC electric vehicle charging** – Requires a standard 120V AC supplied by any standard electrical outlet and typically provides a maximum current of 15 amps and a maximum output power of 3.3 kW. This type of charging is relatively easy and inexpensive to install but provides the slowest charge. Level 1 chargers may be configured as a standalone station or as a plug with a Level 1 charging cable.

n) **Level 2 AC electric vehicle charging** – Requires a 208V or 240V AC input, which may need to be installed by a licensed electrician, and typically provides a maximum current of 80 amps and a maximum output power of 14.4 kW. This type of charging is the most versatile and appropriate for various use cases, provides a faster charge than Level 1 units,

[2] To be eligible for MassEVIP fleet charging incentives, charging stations must be intended for use by fleet vehicles only; applicants must commit to having at least one EV in their fleet that will be able to use the fleet charging station(s).

[3] Hydrogen refueling is not included within the scope of this guideline at present, but it will be updated in conjunction with future advances in technology and relative applicability to the state fleet.

but can be more expensive. Level 2 chargers may be configured as a standalone station or as a Level 2 plug with an updated outlet.

o) **MBTA non-revenue fleet** – Vehicles owned or leased by the MBTA that are used for authority operational purposes; vehicles used to transport the public are not included.

p) **Parking area** – Includes both open and covered parking lots as well as parking garages owned by the Commonwealth.

q) **Public access electric vehicle charging** – Charging station(s) for which the general public has practical access to, and use of, the parking space and the EV charging station for a minimum of 12 hours per day, seven days per week, preferably up to 24 hours a day.

r) **Zero-emission vehicle (ZEV)** – Zero emission vehicles include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles; if the current definition of ZEVs per the Massachusetts Zero Emission Vehicle Commission diverges from this scope, the Commission definition shall take precedence.

Electric Vehicle Charging: Guidance on Requirements of Section 5C of the Order

Language from the Order is italicized below.

Electric Vehicle Supply Equipment (EVSE)

Agencies shall also support the installation of EVSE, commonly known as electric vehicle charging stations, at state facilities for state vehicles, employee-owned vehicles, and those driven by the public, where such installations are appropriate and applicable.

Agencies shall work with all appropriate funding, contracting and oversight agencies to identify locations and strategies for deployment of EVSE.

Agencies shall ensure that EVSE stations are considered and prioritized during relevant construction.

Massachusetts is pursuing a nation-leading clean energy agenda, as evidenced by the number of pioneering policies that are putting climate change action at the forefront, particularly for the transportation sector. State entities have a role to play in statewide transportation electrification by providing EV charging infrastructure necessary to support the electrification of its fleets, as well as for employees and the general public as applicable and (prudent/reasonable/feasible/sensible). The Order directs state entities to target greenhouse gas (GHG) emission reductions by substantially reducing or eliminating emissions from fossil fuels in vehicles, prioritizing the transition to ZEVs in the state fleet, and increasing the number of EV charging stations at state

facilities.[4] To the greatest extent possible, state facilities should install and pre-wire for EV charging stations (making parking areas EV-ready), especially during any relevant construction.[5]

Part I: Prioritization of EVSE for State Fleets

The planning for, and installation and upkeep of EVSE that will support charging for state fleet vehicles is a key component of the strategies necessary to meet the ZEV and EVSE targets of the Order. Given that decisions about the number and location of fleet charging stations will vary site-to-site, based on the location, specific fleet needs, and vehicle asset usage, there are no specific requirements or guideline contained herein. However, fleet charging infrastructure should be considered an utmost priority for state entities that own and/or operate vehicles as they prepare for the transition to zero emission vehicles.

In particular, fleet EVSE installation should be prioritized in the near-term by state facilities and agencies with the most opportunity for near-term fleet electrification. This could include fleets with the largest potential to transition to zero emission models in the near future, along with sites that are well-suited for centralized fleet parking and/or shared multi-agency charging.

There are various resources available to support EVSE site prioritization and deployment that can be found in Part IV of this document. For more specific guidance, especially for those entities that are looking to deploy fleet EVSE for the first time, executive branch agencies should reach out to their fleet administrator at the Office of Vehicle Management (OVM). All other non-executive branch entities should reach out to LBE staff at the Department of Energy Resources; OVM and/or LBE can set up an initial conversation to help address key considerations and best practices for deploying fleet EVSE at state facilities.

Part II: Recommended Number of Public Access and/or Workplace Charging Stations, EV-Ready Parking Spaces, and EV-Capable Parking Spaces

For public access[6] and/or workplace (employee) EV charging, the guidelines in this section should be adhered to wherever possible, even when they exceed the minimum requirements of the Executive Order. The number of installed stations and EV-ready/EV-capable parking spaces at a specific parking area will largely depend on such factors as existing infrastructure, future site plans, parking area size, and usage; this Guideline aims to provide a starting point to inform decision-

[4] The Order sets state-sited EV charging station targets: 350 stations by 2025 and 500 stations by 2030. Note that these goals are based on number of stations, and each station may include one or multiple EV charging ports.

[5] LBE provides a guidance resource titled Considerations to Inform EV Charging Station Decision-Making that includes topics and recommended state entity tasks for identifying station sites, use cases, charger types, accessibility, and more.

[6] See the LBE Guidance for Publicly Accessible EV Charging Infrastructure at Massachusetts State-Owned Facilities for more information on how to calculate and collect usage fees for EVSE available to the public.

making. State entities and project proponents are encouraged to collaborate with DCAMM and LBE staff in developing site-specific strategies.

See Part III of this Guideline for more information on funding and procurement.

New Parking Area Construction

For new parking lots or parking structures that are part of a new building construction or major renovation project, the minimum number of ports and EV-ready parking spaces must follow the directives of the Massachusetts LEED Plus 2.0 Standard[7], which states:

> *…Install at least one electric vehicle supply equipment (EVSE) charging port in parking areas up to 25 spaces, with at least two EVSE charging ports to be installed in parking areas greater than 25 spaces. In parking areas with more than 10 spaces, at least twenty percent (20%) of the spaces must be "EV-ready" as defined by the current Massachusetts Building Energy Code.*

While the Standard outlines the minimum requirements for EV charging infrastructure and make-ready spaces, state facilities are strongly advised to go beyond this threshold given the rapidly changing technological landscape and ever-increasing consumer adoption of EVs.

In general, parking area designs should achieve a balance between planning effectively for an EV future while not over-committing to costly infrastructure in such a way that it could result in having the stations become obsolete before being widely utilized. For new parking area construction, it is recommended that state facilities utilize the following guidelines:

- 20-40% of total spaces are EV-capable.
- 20% of total spaces are EV-ready.
- 5% of total spaces have a dedicated EV charging port, with a minimum of 2 charging ports for every lot over 25 spaces.

When applied, these recommendations will result in having between 45% and 65% of spaces[8] that either have installed or have the potential to seamlessly add future EV charging stations, while keeping costs reasonable and allowing for flexibility in adapting to new technologies in the future.

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[7] For the most up-to-date information on state new construction requirements, please see the Section 3 Guideline on New Construction and Substantial Renovations. In the event that the current Massachusetts building energy code is more stringent than these minimum specifications, the energy code shall take precedence.

[8] These recommended parameters are based off proposals assembled by the Electrification Coalition, the range dependent on the length of the planning horizon: the lower end based on projected 2030 EV adoption, and the higher end for 2040 adoption. According to Bloomberg New Energy Finance, by 2025 EVs will hit 10% of global passenger vehicle sales, rising to 28% in 2030 and 58% in 2040.

Existing Parking Area Reconstruction

During significant parking area reconstruction at existing state facilities that is not part of broader new construction or major renovation projects (i.e., not just repaving), it is recommended that project proponents follow the New Parking Area Construction guidance above to the greatest degree possible; this is the preferred option in cases where the parking area is to be fully reconstructed, including electrical work, to reduce future costs and enable future charging infrastructure expansion.

In instances when existing parking area reconstruction work is more limited in scope, state entities should still seek to optimize opportunities for near-, medium-, and long-term growth by increasing the number of installed stations and integrating EV-capable and EV ready-parking spaces.

Existing Facilities

State facilities should strive to install EV charging stations and create EV-capable or EV-ready parking spaces where appropriate at existing parking facilities[9] apart from any planned new construction or major parking lot reconstruction projects. This particularly applies to sites that have large numbers of employees that park on a daily basis or substantial numbers of visitors going to the site on a regular basis for most if not all months of the year; adding EVSE in these instances will be critical to supporting statewide access to charging goals.

While the most cost-effective way of installing a substantial number of charging stations will be in conjunction with new development or major parking area reconstruction, there may still be opportunities to increase charging infrastructure at existing facilities. When major construction work is not being conducted or is on an extended planning horizon, LBE encourages agencies to identify and prioritize parking areas using two primary metrics:

1. Ease of build-out: sites where electrical service is accessible, has sufficient capacity, and where installation costs would most likely be minimal (e.g., no or minimum trenching, no necessary electrical upgrades, etc.)
2. Parking area use: sites that have a large number of employees and/or visitors that park on a daily basis for most if not all months of the year, or sites where fleet vehicles are parked regularly and where potential fleet electrification is likely to occur in the near future.

In these cases, state facilities can seek to leverage applicable grant or incentive programs and begin building out charging infrastructure where stations are most appropriate

The recommendations for new parking area construction may be used as a baseline for determining a target number of installed stations and EV-ready and EV-capable spaces at existing facilities. For facilities with multiple parking areas, it is suggested that the recommendations be applied on an individual parking area basis whenever possible.

[9] Assessing the appropriateness of adding EV charging stations can be aided by the content presented in the LBE Considerations to Inform EV Charging Station Decision-Making resource.

Leased Sites

Section 4 of the Order states:

> *DCAMM and other agencies responsible for leasing space shall evaluate such space for agency use by including the following elements in the selection criteria…[including] access to electric vehicle charging stations.*

This directive is most applicable during new lease solicitations and during renegotiations or renewals of existing leases. Depending on the site characteristics, occupants, facility use, and other site-specific factors, EV charging may be desirable for any one or combination of charging use cases: fleets, employees, and the public. When there are opportunities to incorporate EV charging infrastructure into lease agreements, DCAMM or other leasing counterparts should work to ensure that EV charging provisions are included wherever possible.

Part III: Funding and Procurement

Coordination with Appropriate Agencies

There are several state agencies that play a role in the funding, contracting, and oversight of the installation of EVSE at state sites. It is valuable for state entities to understand the roles played by these partners to ensure they are being involved at the right time.

- Massachusetts Department of Environmental Protection: Oversight of the MassEVIP incentive programs; can provide program guidance and information about grant funding availability.
- Operational Services Division: Oversight of, and assistance with, statewide contracts for goods and services including procurement guidelines and contract user guides.
- State construction and management agencies[10]: Confirmation whether sites are appropriate for EVSE installation considering long-term capital or master plans; these entities are further directed to include EVSE in any new construction projects per the Order.
- Office of Vehicle Management: Administration of state fleet telematics program, which can aid in identifying potential EVSE locations and vehicle electrification opportunities.

Incentive and Technical Assistance Programs

Depending on the location, type of charging, and charging use case, partial and full funding for infrastructure upgrades, hardware and installation may be available, so it is important that state entities access and leverage available funding wherever applicable and appropriate. Potential EVSE funding sources include:

[10] Namely the Division of Capital Asset Management and Maintenance, UMass Building Authority, and Massachusetts State College Building Authority.

- MassDEP Electric Vehicle Incentive Program[11] - MassEVIP
- Utility Make Ready Programs - National Grid and Eversource

In addition, Eversource and National Grid may offer fleet advisory services that can help state entities identify and plan for EVSE installations as well as support efforts to transition fleets to zero emission vehicles. Visit the mass.gov electric vehicle charging webpage for links and updates.

More information and resources can be found on the LBE Clean Transportation webpage; there are some complexities with bundling incentives that will vary by site, but LBE staff are available to work with state entities on an individual basis to navigate this process.

EVSE Acquisitions

State entities should be aware of the various procurement laws related to the acquisition and installation of EV charging stations and should always consult with the appropriate procurement and legal staff before proceeding with a project.[12,13,14]

To acquire EVSE, state entities can work with vendors on the current Massachusetts statewide contract *VEH102: Advanced Vehicle Technology Equipment, Supplies, and Services* (VEH102). The VEH102 contract user guide includes vendor information and details about currently available products and services. Regardless of procurement method, MassDEP and the LBE Program recommend purchasing only ENERGY STAR®-certified EV charging stations.

Part IV: LBE Program Resources for State Facilities

The LBE Program offers a range of resources related to various EVSE topics including:

- Technology and siting information, e.g., a quick guide to charging equipment basics and use cases and considerations to inform EV charging station decision-making.
- Relevant funding and technical assistance programs, e.g., MassEVIP and utility make ready programs.
- Procurement, e.g., procurement guidance and a template scope of services to aid state entities in developing bid documents for desired equipment.

Visit the LBE Clean Transportation webpage for these and other tools and resources.

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[11] More information on MassDEP grant programs can be found here.

[12] Executive branch departments are required to make acquisitions from statewide contracts or otherwise follow the guidance outlined in 801 CMR 21.00; see the OSD *Conducting Best Value Procurements* handbook for more information regarding policy requirements and best practices established pursuant to this regulation.

[13] Executive branch goods and services, MGL c. 7, § 22 and MGL c. 30, § 51, § 52.

[14] Construction materials and services, G.L. c. 149, § 44A; G.L. c. 149, § 29; G.L. c. 30, § 39M.