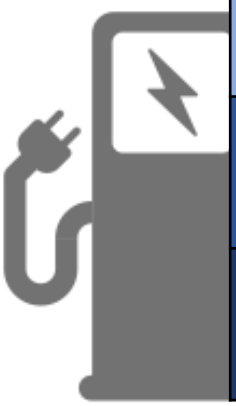
LBE Quick Guide to EV Charging Infrastructure

Technologies, use cases, incentive programs, and procurement

Types of Electric Vehicle Supply Equipment (EVSE) for Charging

EVSE is classified by the speed at which the units can charge vehicle batteries:



		Charging Impacts
Level 1 Charging	Level 1 chargers require a 120V AC supplied by any standard electrical outlet. This type of charging is most convenient for residential and some workplace applications, is relatively easy and inexpensive to install, but provides the slowest charge.	Adds 4-5 miles of range per hour
Level 2 Charging	Level 2 chargers require 240V or 208V AC and may need to be installed by a certified electrician. This type of charging is the most versatile and appropriate for various use cases, provides a faster charge than Level 1 units, but can be more expensive.	Adds 20-60 miles of range per hour
Level 3 / DC Fast Charging (DCFC)	DC fast chargers require 208V/408V three-phase input and generally involve an electric utility for installation. DCFC provides rapid charging compared to Level 1 and Level 2 units but is considerably more expensive to install and operate. Not every EV is capable of DC fast charging.	Adds 25-175 miles of range per 15 minutes

General Charging Use Cases and Considerations

Fleet Charging

- Chargers reserved solely for fleet EVs.
- Ideal for centralized fleet vehicle parking; EVs may be charged overnight or for extended periods of time during the day depending on travel needs.
- Level 1 or 2 charging recommended.
- Depending on data collection needs, chargers may be non-networked and reduce O&M costs.

Workplace / Employee Charging

- Amenity that can be offered to staff for their personal vehicles; host site determines fee structure.
- Level 2 chargers will typically afford enough charge during the workday to support an average commute distance.
- Well-suited for employee-only parking lots; fleet charging may be possible overnight.

Public Charging

- Only for sites with parking areas that are publicly-accessible most or all the time.
- Public chargers are typically networked and require users to pay a fee to charge; host site determines the fee structure for public usage.
- Stations will appear on EV charging maps as being publicly available.

Additional EVSE Elements and Costs to Consider

Charging station models may come with options for one or two plugs (ports), retractable cords or standard, networked solutions or non-networked; selection of these and other elements will vary depending on the intended charging use and operating budget. While actual features and price will vary based on vendor, it's important to understand the range of ongoing costs that may be associated with each type of EVSE and factor this into the decision-making process.

- Charging stations will require maintenance from time to time, with annual maintenance costs averaging $400 per charger.
- Standard manufacturer warranties for EVSE usually apply; in addition to regular coverage, vendors often offer extended warranties (e.g., 2 years) and some offer specific, supplemental options such as cord management maintenance pricing. A two-year extended warranty can range from $200-$4,000 for a single charger and vary depending on vendor and equipment.
- EVSE may incur demand charges depending on factors such as the electric utility's rate structure and the charger type; these added demand charges can be as little as no cost up to thousands of dollars per year.
- Networked EVSE with usage data collection, remote management and diagnostic capabilities, and/or a payment interface require a recurring fee; typical annual fees can range from $200-$1,500 or more depending on the vendor and network plan.

Procurement Resources

State entities can work with vendors on the current Massachusetts statewide contract *VEH102: Advanced Vehicle Technology Equipment, Supplies, and Services* to purchase EVSE and related equipment. The VEH102 contract user guide includes vendor information and details about currently available products and services.

Highlight: New and Unique EVSE Technologies

Beam's EV ARC™ is a renewable, off-grid, and transportable charging solution. The EV Arc™ fits into a standard parking space, offers various charging options and can support emergency power needs.

Freewire's Mobi® EV Charger is a mobile charging solution that can be quickly deployed without the need for fixed infrastructure, permitting or parking reconfiguration.

EVSE Incentive Opportunities for State Entities

EV charging stations can and will play an important role for state fleets and facilities as more electric vehicles hit the road in Massachusetts. To kickstart the rollout of critical charging infrastructure, funding for equipment and installation are currently available from MassDEP, Eversource, and National Grid; combined incentives from both programs cannot exceed 100% of total EVSE costs.

High-level Summary of Funding Programs

There may be opportunities to bundle multiple incentives and minimize host site costs; contact LBE to discuss.

MassDEP - MassEVIP Charging Station Incentives

Service territories: All electric utilities, including municipal light plants (MLPs).

EVSE types: Level 1, Level 2, DCFC

Incentive structure: Up to 60-100% of eligible equipment costs; some installation costs may be covered in cases where the applicant is not receiving other installation cost coverage.

Charging station program categories: Fleet and workplace; educational campus; public access; DC fast charging.

Utility Make-Ready Program

Service territories: Eversource and National Grid only.

EVSE types: Level 2 or DCFC

Incentive structure: Up to 100% of electrical infrastructure costs with added benefits for EJ Communities; in some cases, equipment costs may be covered.

Unsure which MassEVIP Charging Station Program to Pursue?

The decisions made now about charging station types and placement should be part of a broader, long-term strategy that takes into account the unique needs and objectives of the site and/or agency. While the MassEVIP grants cover a range of charging infrastructure, it is important to understand the benefits and constraints of each program and use case. The prompts below may help guide an initial discussion; a full MassEVIP program matrix can be found on the following page.

We are interested in adding EVs to our fleet in the next few years; we may be able to centralize overnight fleet parking.

MassEVIP Workplace and Fleet Charging (*rolling application*)
- Provides incentives for Level 1 and Level 2 EV charging stations.
- Applicants with 15+ employees in non-residential places of business are eligible.
- MassDEP provides up to 60% of the funding to a maximum of $50,000 per street address for hardware and eligible installation costs.

Our site serves the public or offers public access in areas where we don't keep our fleet vehicles.

MassEVIP Public Access Charging (*rolling application*)
- Provides incentives for Level 1 and Level 2 charging stations.
- Non-residential locations with publicly accessible parking are eligible; chargers must be available 12+ hours per day.
- Government-owned locations: MassDEP funds up to 100% of the hardware and eligible installation costs to a maximum of $50,000 per street address.

We'd like to offer EV charging to our students or residents.

MassEVIP Educational Campus and Multi-Unit Dwelling Charging (*rolling application*)
- Provides incentives to acquire and install Level 1 and Level 2 EV charging stations.
- Multi-unit dwellings with five or more residential units and educational campuses with at least 15 students onsite are eligible.
- MassDEP funds up to 60% of the hardware and eligible installation costs to a maximum of $50,000 per street address.

Our site is located along a major highway corridor and has publicly accessible parking; or, we have unique fleet needs that would benefit from fast charging.

MassEVIP DC Fast Charging (*competitive grant; applications due March 19, 2021*)
- Provides incentives for DC fast Charging; host site responsible for ongoing maintenance.
- Sites with publicly accessible parking, including educational campuses with 15+ students onsite, are eligible; stations must be available 24/7.
- MassDEP funds up to 100% of the hardware and installation costs for government-owned locations (up to 60% for educational campuses), to a maximum of $50,000 per charging station.

Contact LBE for technical assistance regarding EVSE strategies, incentive programs, and procurement.

MassEVIP Program Matrix

Updated 3/18/2021

MassEVIP Program	Deadline	Equipment	Incentive Amounts	Applicant Eligibility
Direct Current (DC) Fast Charging	3/19/21	DC fast chargers	Up to 80% of hardware and installation (up to 100% for public facilities and up to 60% for educational campuses). Maximum of $50,000 per station.	Property owners with publicly accessible parking; educational campuses with 15+ students.
Public Access Charging	Rolling	Level 1 + 2 chargers	Up to 80% of hardware and installation (100% for public facilities). Maximum of $50,000 per street address.	Property owners or managers with publicly accessible parking; public must have access for a minimum of 12 hours per day, 7 days a week.
Workplace and Fleet Charging	Rolling	Level 1 + 2 chargers	Up to 60% of hardware and installation. Maximum of $50,000 per street address.	Employers and fleet operators with 15+ employees in non-residential places of business.
Multi-Unit Dwelling and Campus Charging	Rolling	Level 1 + 2 chargers	Up to 60% of hardware and installation. Maximum of $50,000 per street address.	Multi-unit dwellings with five or more residential units and educational campuses with 15+ students.
Fleet EV Incentives	Rolling	BEV, PHEV, and ZEM (motorcycles)	BEV: $7,500 PHEV: $5,000 ZEM: $750	Municipalities, state agencies, and public colleges and universities; no EV charging stations required.

For the most up to date program information, visit https://www.mass.gov/service-details/massdep-air-quality-grants-assistance