



MASSACHUSETTS
**DEPARTMENT OF
ENERGY RESOURCES**

Fiscal Year 2021 Annual Progress Report

Leading by Example (LBE) Division,
Department of Energy Resources



Table of Contents

MA Leading by Example Program Overview

LBE Executive Order 594 Overview

EO594 Target: Onsite Fossil Fuel Emissions

EO594 Target: Fuel Oil Use & Energy Use Intensity

EO594 Target: Fleet Electrification

EO594 Target: EV Charging Deployment

EO594 Additional Progress: LEED & Solar

LBE Key Accomplishments & LBE Awards

MA Department of Energy Resources Leading by Example (LBE)

LBE works with state agencies, quasi-public authorities, and public colleges and universities to advance clean energy and sustainable practices that reduce the environmental impacts of state government operations.

LBE State Portfolio

19 Executive Branch Agencies

15 Community Colleges

9 State Universities

5 UMass Campuses

2 Quasi-Public Authorities



89.2 million sq. ft. of buildings



13,446 vehicles

(includes 9,425 non-emergency and 4,021 exempt emergency vehicles)



16 million MMBtus annual energy usage



499,909 MTCO₂e onsite fossil fuel emissions

LBE Executive Order 594 Overview

EO594, “Decarbonizing and Minimizing Environmental Impacts of State Government,” applies to all executive branch agencies and institutions of public higher education.

Objective	Executive Order 594 Targets			
	2025	2030	2040	2050
Reduce emissions from onsite fossil fuels*	-20%	-35%	-60%	-95%
Zero emission vehicles (ZEVs) in light-duty state fleet	5% of fleet	20% of fleet	75% of fleet	100% of fleet
Reduce fuel oil use*	-90%	-95%	TBD	TBD
Energy use intensity (site EUI) reduction*	-20%	-25%	TBD	TBD
EV charging stations at state facilities	350 stations	500 stations	TBD	TBD

**Over a Fiscal Year 2004 (FY04) baseline*

New light-duty vehicles: In FY23, all acquisitions of vehicles with a Gross Vehicle Weight Rating (GVWR) of 8,500 pounds or less must be ZEVs. Starting in FY25, all acquisitions of vehicles with a GVWR of 14,000 pounds or less must be ZEVs.

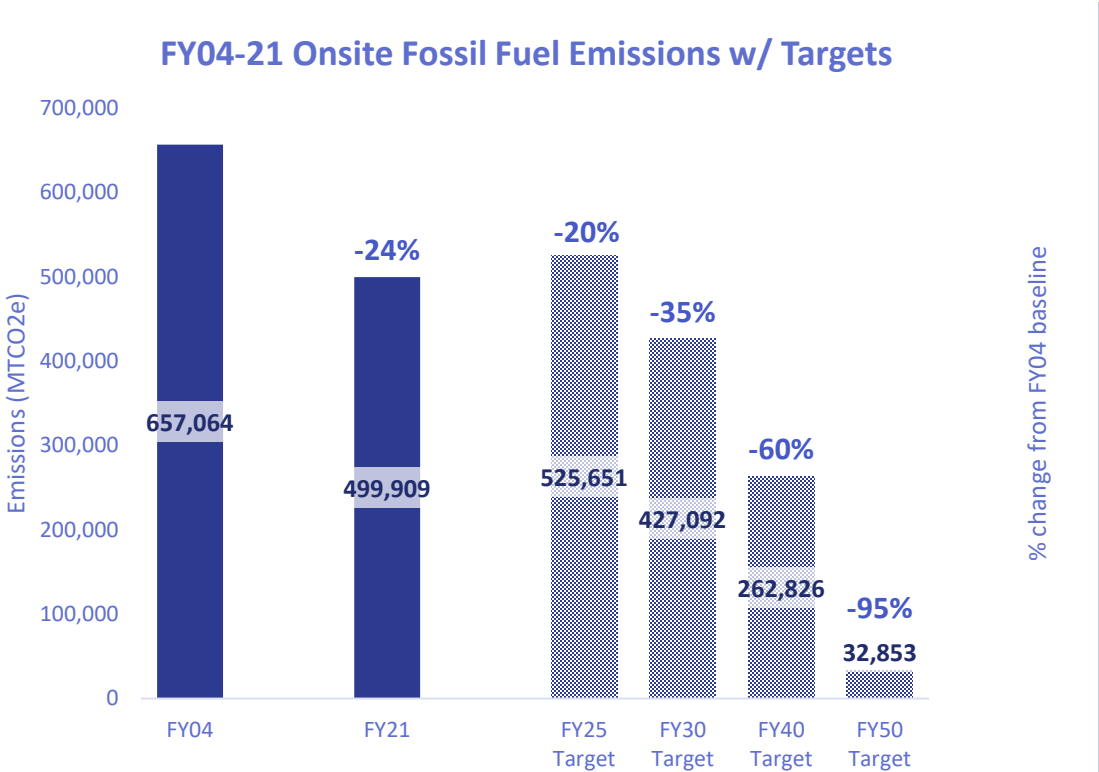
New heavy-duty vehicles: Starting in FY30, all acquisitions of vehicles with a GVWR of more than 14,000 pounds must be ZEVs.

EO594 targets and directives relate to:

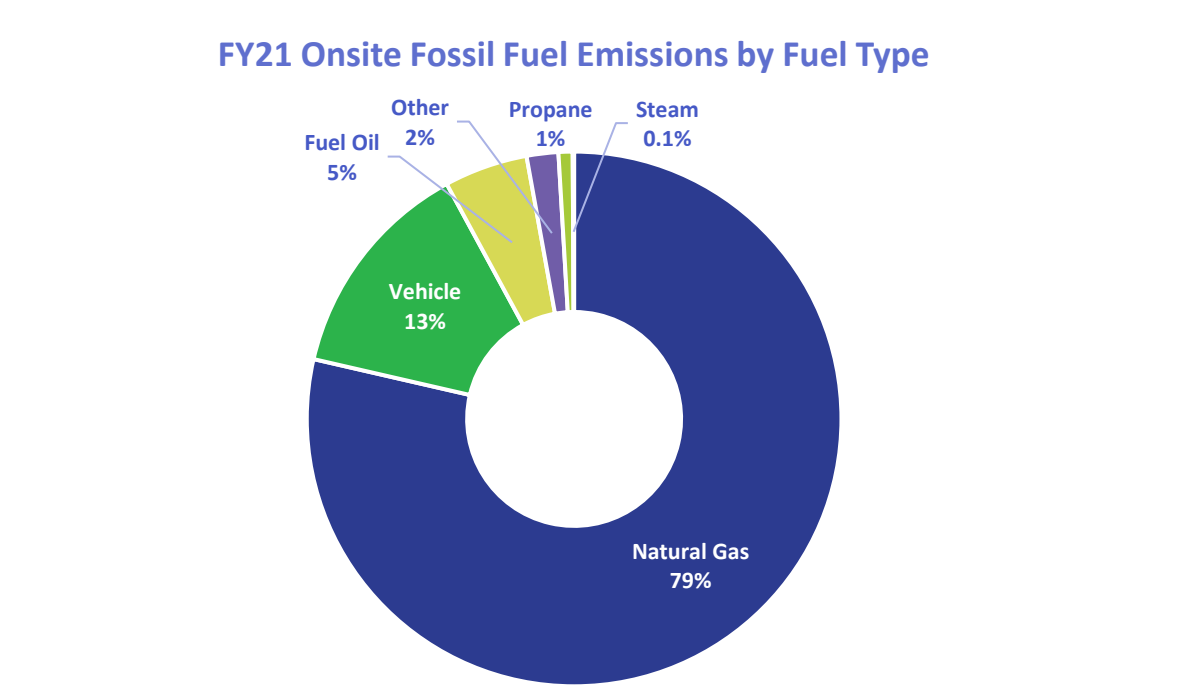
- ☐ Onsite fossil fuel emissions
- ☐ Fuel oil usage
- ☐ Buildings & energy performance
- ☐ Renewable energy deployment
- ☐ Fleet electrification & EV charging
- ☐ Budgeting & planning
- ☐ Data tracking & reporting

EO594 Target: Onsite Fossil Fuel Emissions

Target: Reduce onsite fossil fuel emissions by 20% in FY25, by 35% in FY30, by 60% in FY40, by 95% in FY50.



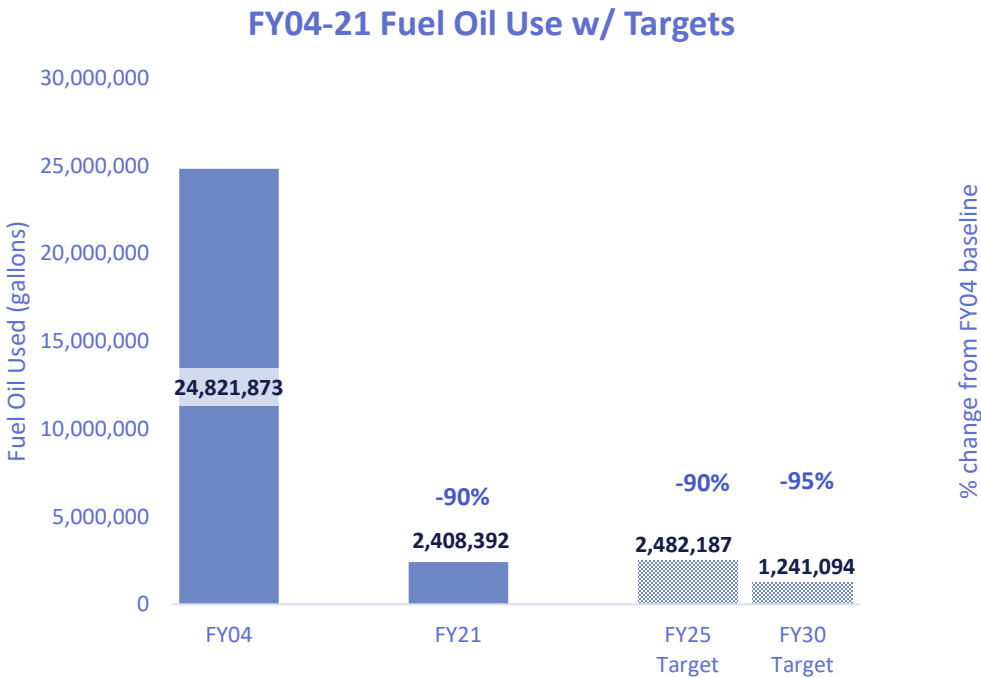
As of FY21, the state portfolio has reduced onsite fossil fuel emissions by 24% from the FY04 baseline, surpassing the FY25 target. Some of the emissions reduction progress in FY21 is likely due, in part, to operational changes during the COVID-19 pandemic.



In FY21, natural gas emissions accounted for the largest share of onsite fossil fuel emissions (79%). Emissions from vehicle fuels accounted for 13% of onsite fossil emissions and fuel oil for 5%. The “Other” category includes fuel used for emergency generation and uses not directly related to standard operations as well as vehicle fuels used for non-car purposes such as jet fuel or marine fuel.

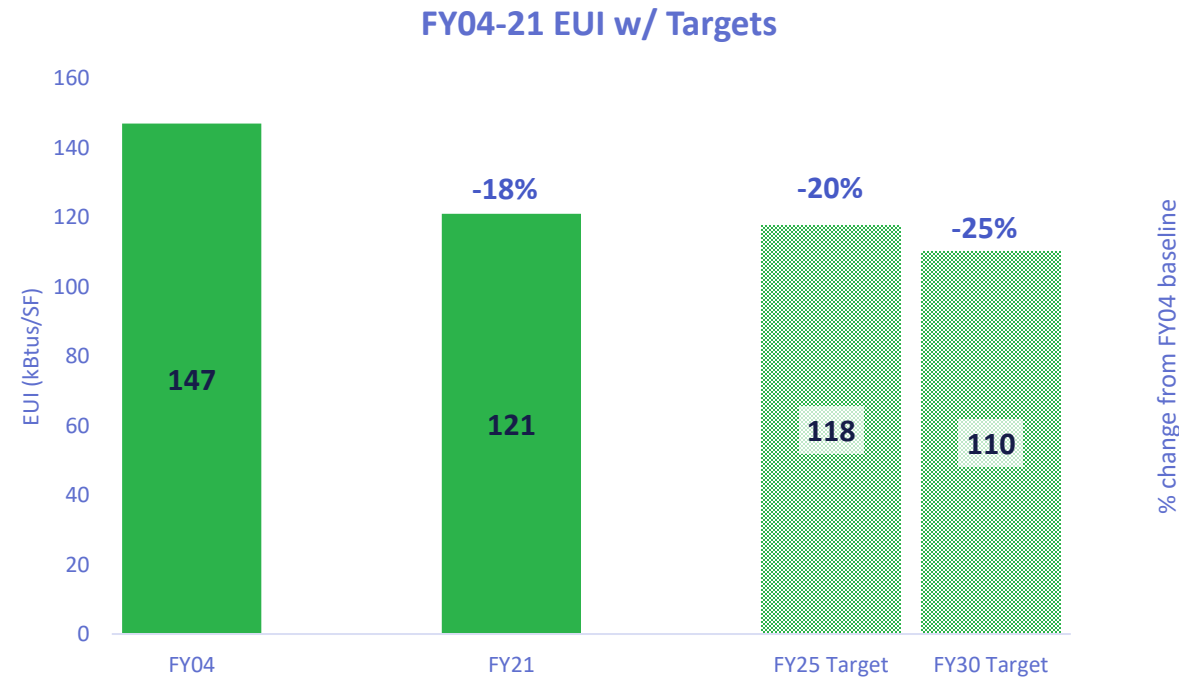
EO594 Targets: Fuel Oil Use & Energy Use Intensity (EUI)

Target: Reduce non-vehicle, petroleum-based oil consumption used to satisfy thermal loads for building and non-building uses by 90% in FY25 and 95% in FY30.



As of FY21, the state portfolio has reduced fuel oil usage by 90% from the FY04 baseline, meeting the FY25 target.

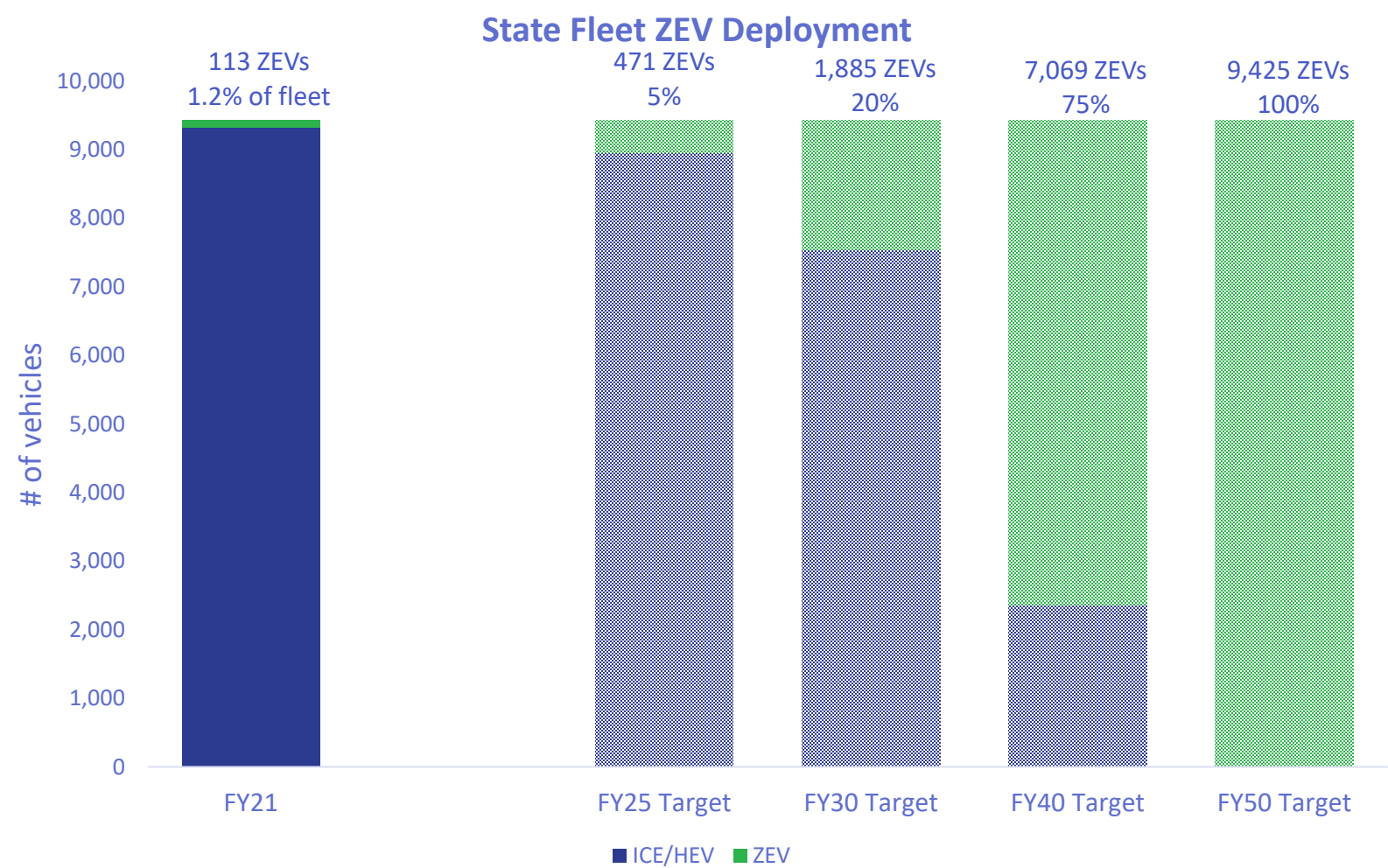
Target: Reduce EUI by 20% in FY25 and by 25% in FY30.



As of FY21, the state portfolio has reduced weather-normalized energy use intensity (EUI) by 18% from the FY04 baseline. EUI progress in FY21 is likely due, in part, to operational changes during the COVID-19 pandemic.

EO594 Target: State Fleet Electrification

Target: Transition 5% of entire state fleet to electric in FY25, 20% in FY30, 75% in FY40, 100% in FY50.



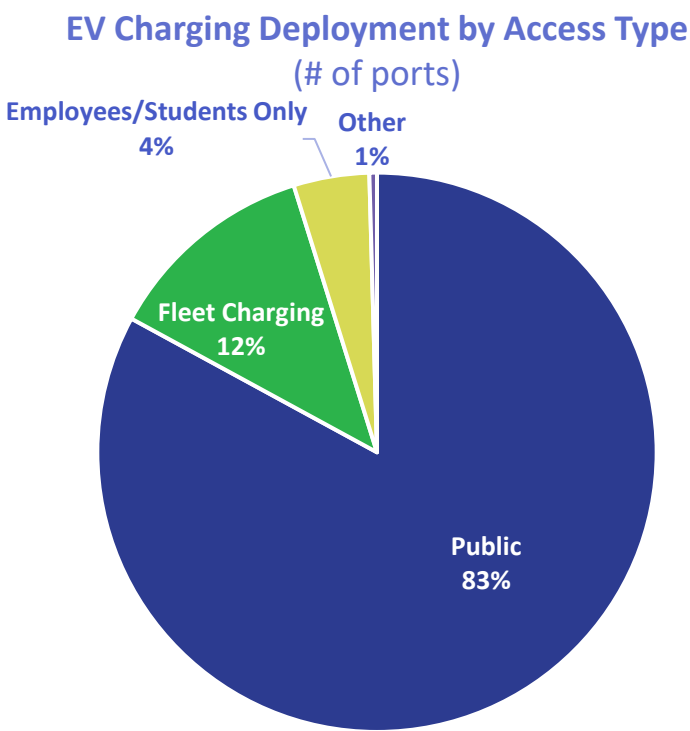
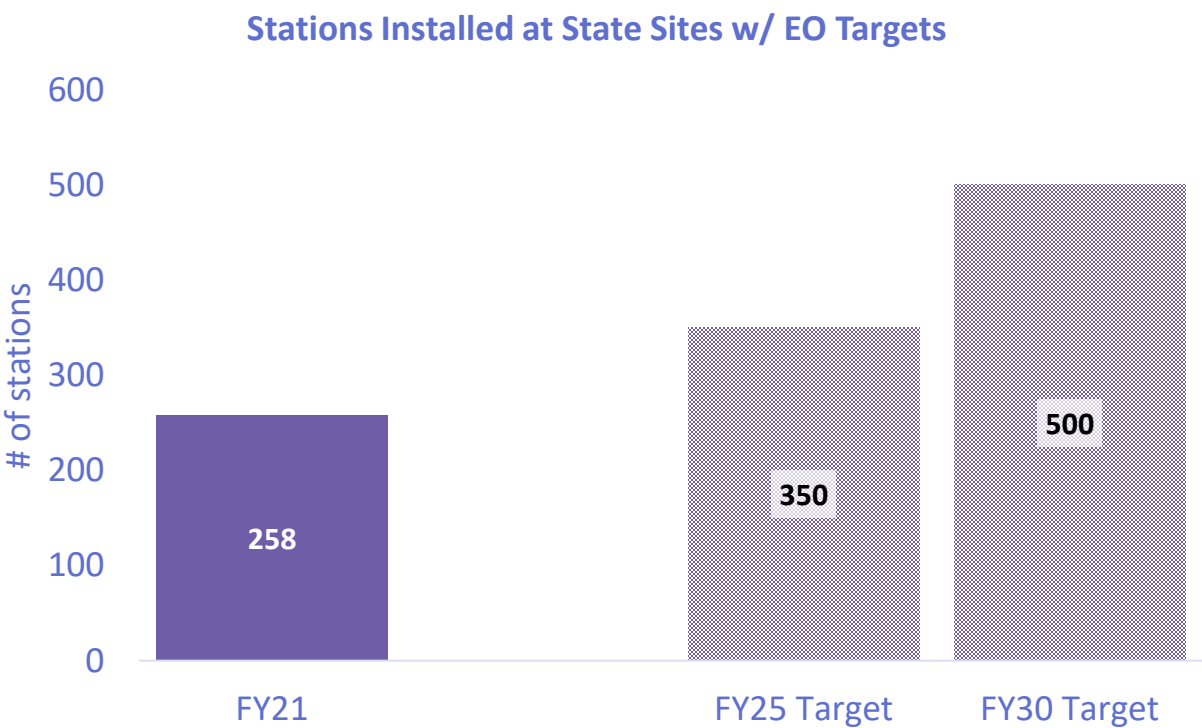
As of FY21, **about 1.2% of the state fleet is electric**. This includes battery electric and plug-in hybrid vehicles, as well as electric neighborhood and utility vehicles.

To meet the FY25 fleet electrification target set in EO594, the state fleet must transition about 358 additional vehicles to electric.

*ZEV (zero-emission vehicle) includes battery electric, plug-in hybrid electric, and neighborhood and utility electric vehicles

EO594 Target: EV Charging Deployment

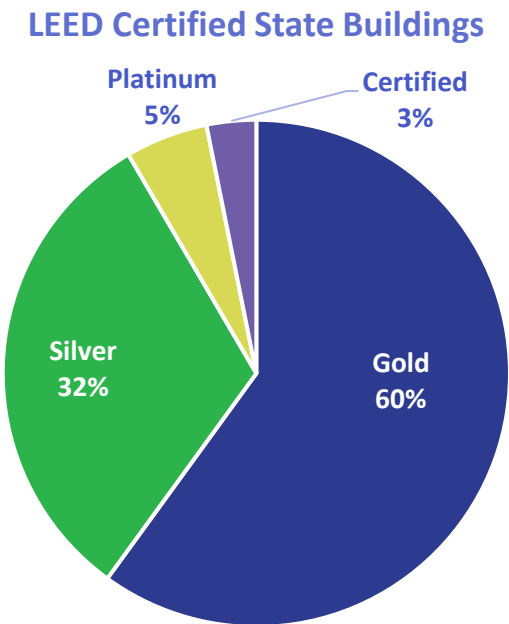
Target: Reach 350 EV charging stations deployed at state sites in FY25 and 500 in FY30.



As of FY21, there are 258 active and installed EV charging stations (457 charging ports) at state sites. To meet the FY25 target set in EO594, an additional 92 stations must be installed at state sites. Of the 457 ports, 83% are for public use, 12% for state fleet use, 4% for employee or student use, and about 1% for other or more restricted access uses.

EO594 Additional Progress

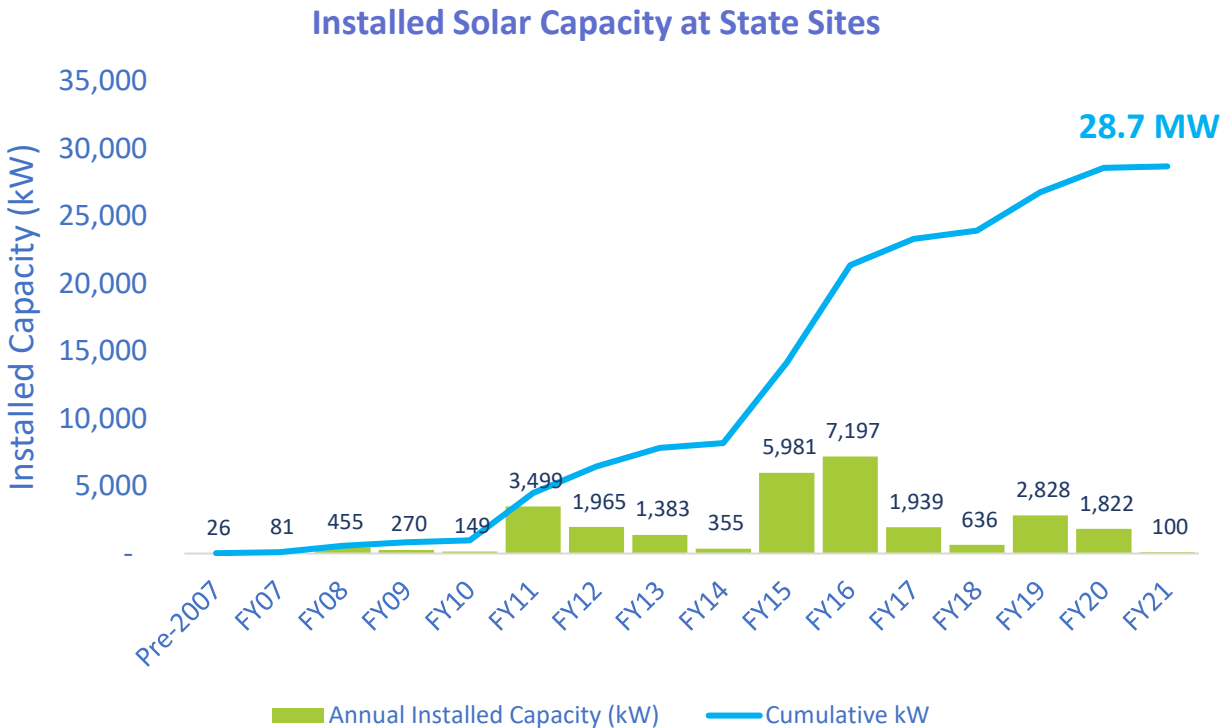
State LEED Buildings



As of FY21, there are **95 LEED certified buildings** in the state portfolio, accounting for over 11.7 million square feet of space. Of these 95 buildings, 65% are at the 2 highest levels of Platinum and Gold, 32% at silver, and 3% are certified. These LEED building locations are distributed across 35 state entities and represent a variety of sectors, including transportation, higher education, public safety, and others.

In FY21, 4 state buildings became LEED certified (448,000 SF).

On-site Solar Deployment



As of FY21, there are 28.7 MW of solar capacity installed at state sites. Solar canopies make up almost half of the capacity (49%) while ground-mounted and rooftop systems make up 26% and 25%, respectively.

LBE Key Accomplishments & LBE Awards

Campus Decarbonization Roadmaps

As state agencies continue to work to reduce their emissions and decarbonize their facilities and operations, in 2021, four campuses worked collaboratively to undertake comprehensive decarbonization planning studies.

- [Salem State University](#)
- [UMass Amherst](#)
- UMass Dartmouth
- [UMass Lowell](#)

Together, these four campuses account for a fifth of the state government portfolio's total greenhouse emissions

The leadership teams at these campuses recognized their collective responsibility to fully decarbonize and eliminate the use of fossil fuels for heating and cooling their facilities to achieve net zero GHG emissions by 2050 or even sooner. These campuses are already incorporating some of the recommended strategies into current projects to ensure that future opportunities for decarbonization are bolstered and not impeded. An effort of this scale was the first of its kind in Massachusetts state government.



2021 LBE Awards Recipients by Category

Category	Award Recipients	
Agency	Board of Library Commissioners Public Library Construction Program	DCR Waquoit Bay National Estuarine Research Reserve
Public Higher Education	Decarbonization Roadmap Teams from Salem State University, UMass Amherst, Dartmouth, and Lowell	Bridgewater State University
Municipality	City of Greenfield	Town of Acton
Individual	Sean Donaghy, MBTA	Ed Vitone, Town of Ashburnham