

FY21 Sustainability Report

Focused on emissions & energy metrics

Board of Trustees - Administration & Finance Committee

April 6, 2022



University of Massachusetts

Amherst • Boston • Dartmouth • Lowell • Medical • Law • Online

Highlights

- ❑ Fifth year of reporting under the Board adopted Sustainability Policy
- ❑ Established key metrics for annual reporting and ongoing effort to refine the methodologies utilized and appropriate data sources
- ❑ In light of Executive Order 594, utilizing metrics from the Commonwealth reporting requirements to better streamline and ensure transparency among campus reporting through the Leading By Example program
- ❑ All five UMass campuses are undergoing energy and decarbonization planning with Amherst, Dartmouth, and Lowell having completed decarbonization plans. Boston and UMass Chan Medical are currently beginning the planning process
- ❑ Even as campus square footage has grown over time emissions have decreased demonstrating the success of energy efficiency projects and adoption of renewable energy across the campuses
- ❑ The University is nationally recognized as a leader in sustainability efforts including for individual campus rated by the Association for the Advancement of Sustainability in Higher Education (AASHE)



Executive Order 594



Executive Order 594 – Partnership in Decarbonization

UMass has been a partner to DOER in emissions reduction efforts and the largest state entity impacted by the new order

Objective	MA Leading by Example Targets			
	2025	2030	2040	2050
Reduce emissions from onsite fossil fuels*	-20%	-35%	-60%	-95%
Zero emission vehicles (ZEVs) in state fleet	5% of fleet (~325 vehicles)	20% of fleet (~1,625 vehicles)	75% of fleet (~3,250 vehicles)	100% of fleet (~6,500 vehicles)
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 2004 baseline

- Governor Baker signed Executive Order 594 in April 2021; directing state agencies to take more aggressive steps to reduce greenhouse gas emissions and improve energy efficiency:
 - Establishes new emission reduction targets for 2025, 2030, 2040 towards a net zero greenhouse gas emissions goal by 2050
 - Focus on decarbonizing existing state buildings by reducing onsite fossil fuel consumption and optimizing building performance through efficient operations

Executive Order 594 replaces Executive Order 484 issued in 2007 which created targets for energy and emissions reductions as well as a reporting framework across all state agencies

Addressing Challenges to Achieve New Targets

In simple terms, there is no way for the Commonwealth to meet its climate goals without UMass and no way for UMass to meet its climate goals without the Commonwealth

Campuses engaged in energy & sustainability master planning efforts informing compliance with the new executive order; coordinating with DOER to collaborate on strategies:

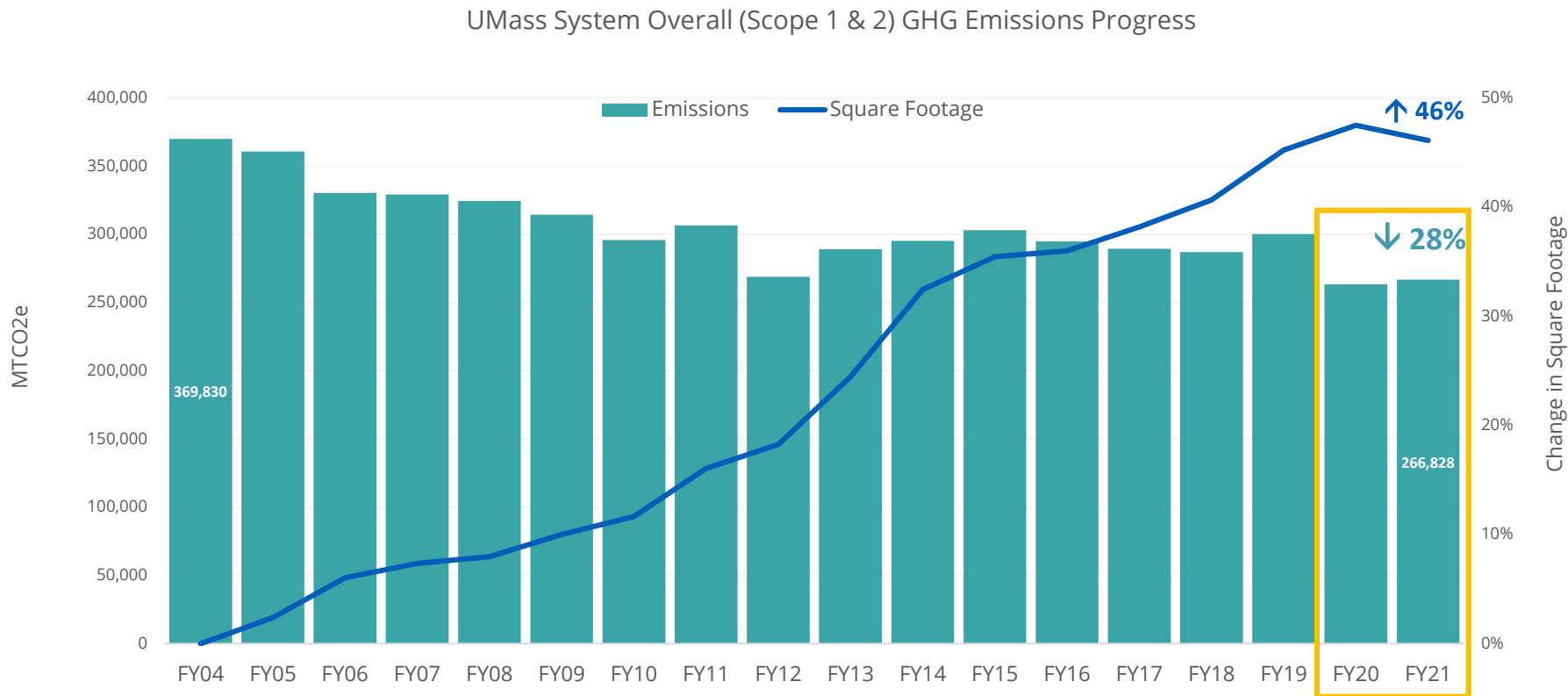
- **Funding**: will require state investment to enable the University to decarbonize campus energy infrastructure at the pace required to meet DOER's updated goals
 - For example, electrifying campus heating and cooling systems to meet emission goals requires investments in new utility infrastructure on all 5 campuses – estimated cost \$1 billion+
- **Infrastructure**: concerns on the ability of the ISO New England Grid to keep pace with demand while ensuring the reliability and resiliency for business continuity
- **Deferred Maintenance Needs**: significant backlog impacts energy efficiency; requires a partnership with DCAMM for funding to address building envelope and energy efficiency projects to reduce energy demand and address long-standing capital needs

University Metrics



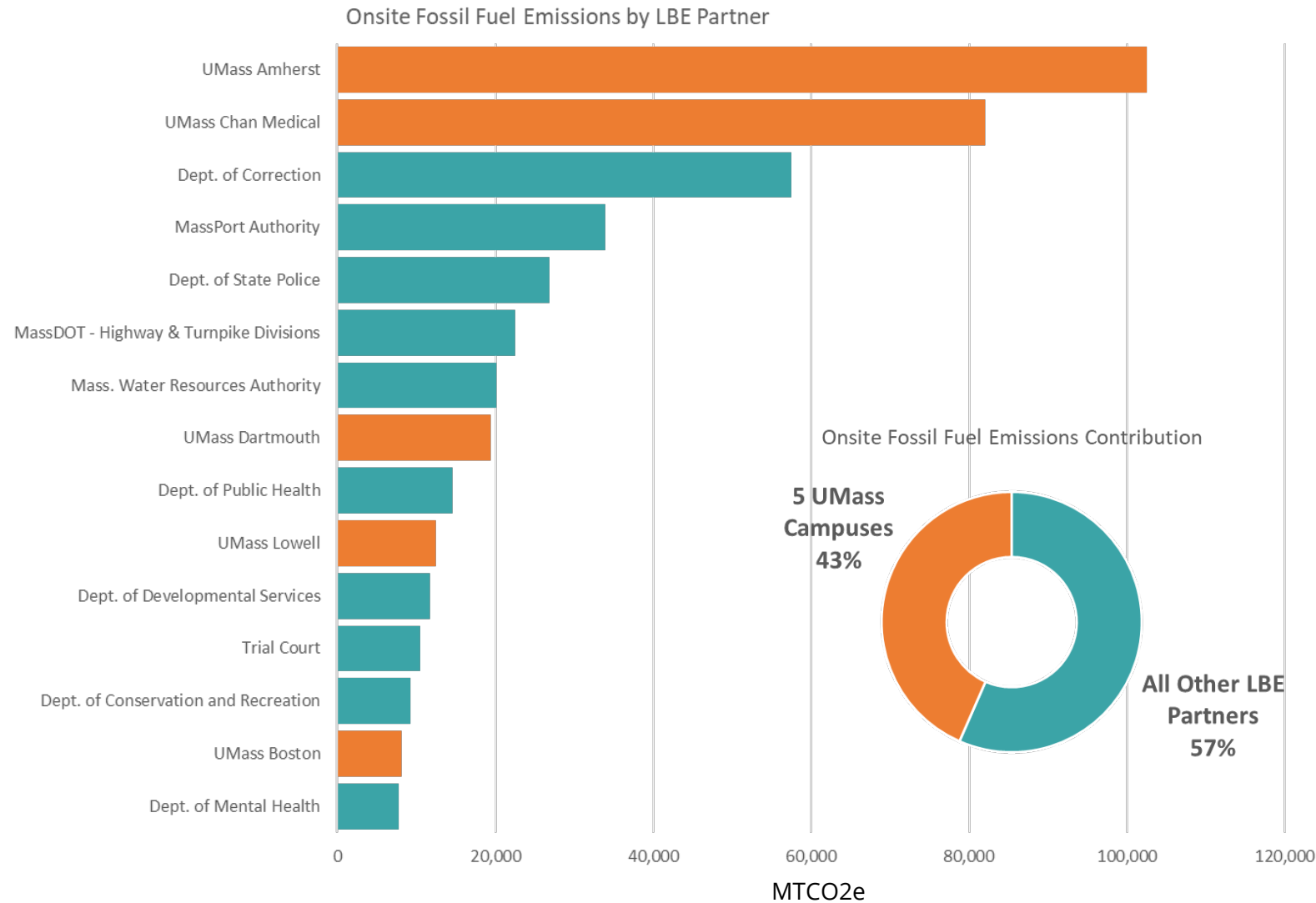
UMass Emissions Progress

Even as campus square footage has grown, emissions has decreased as a result of energy efficiency projects and adoption of renewable energy



- Overall emissions have declined by more than 100,000 metric tonnes of CO2e annually, since FY04 baseline, equivalent to a 28% reduction
- FY20 and FY21 emissions significantly lower than pre-COVID FY19 emissions, thus reductions may increase in near term years

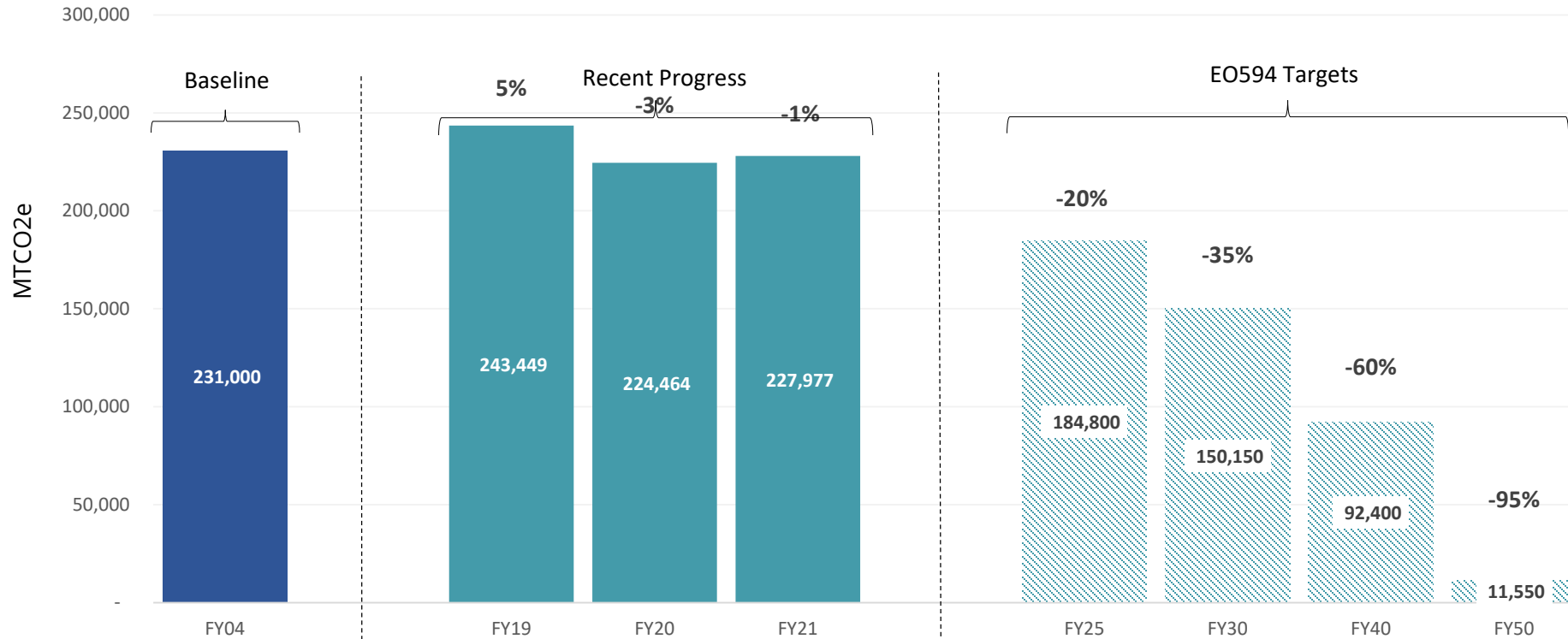
UMass partnership is essential to achieve EO 594 Targets



- **4 of the 5 UMass campuses fall within the top 10 onsite fossil fuel emitters** in the LBE portfolio
- UMA and UMCMS contribute 20% and 16%, respectively
- **The 5 UMass campuses together contribute 43% of total portfolio onsite fossil fuel emissions**, meaning these campuses play a significant factor in overall portfolio progress

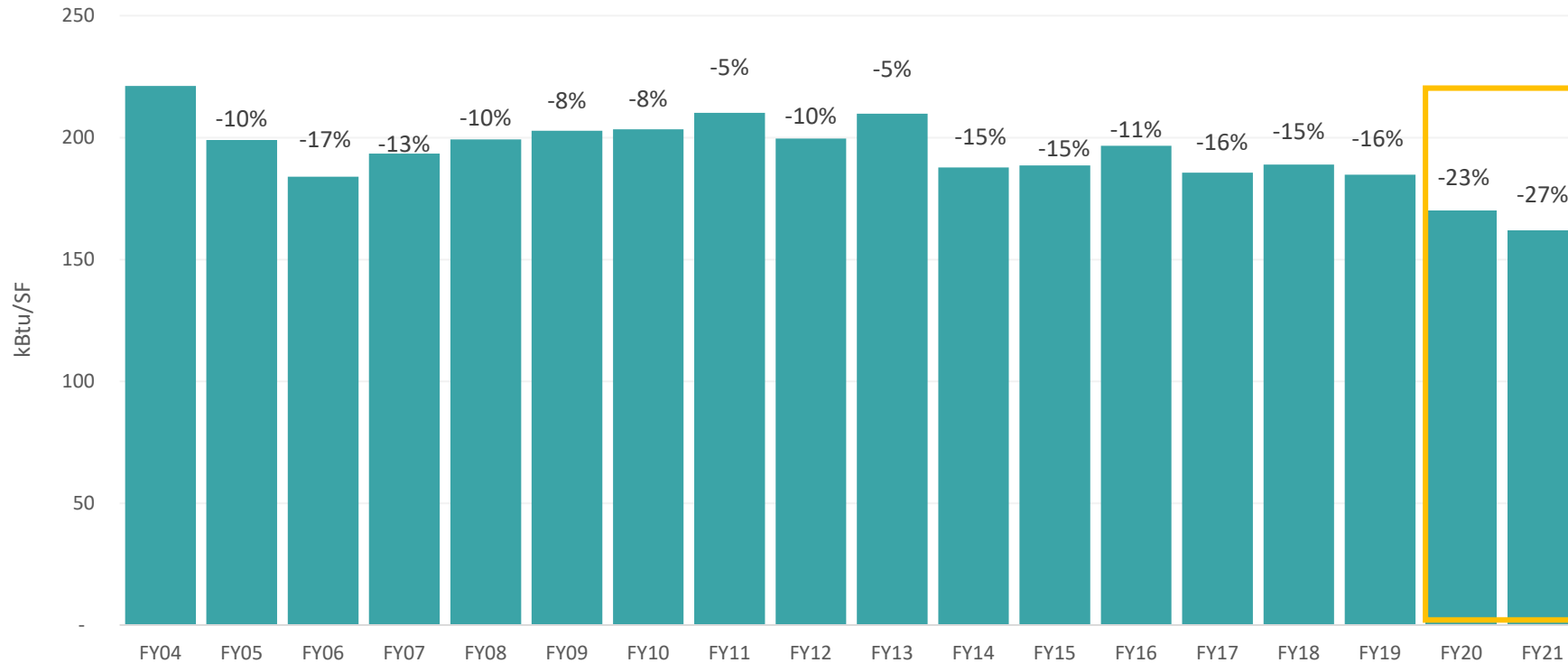
UMass Onsite Fossil Fuel Emissions Progress Towards EO 594 Targets

As of FY21, the UMass system has reduced onsite fossil fuel emissions by roughly 1%. To meet FY25 targets, UMass will need to reduce onsite fossil fuel emissions by ~43,000 MTCO₂e over FY21 values.



UMass Energy Use Intensity Progress

The University's commitment to energy efficiency efforts is vital, with data highlighting the success achieved to date

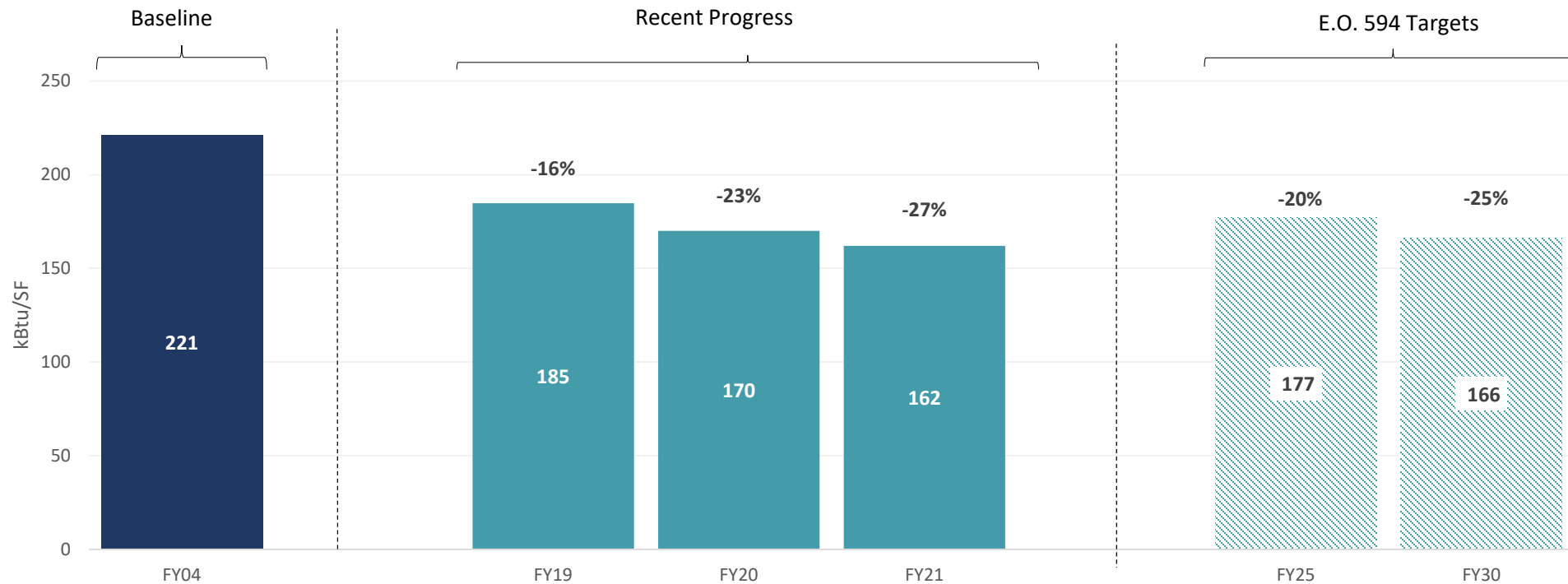


- Overall energy use intensity (kBtu/SF) for the 5 campuses has declined roughly 27% over FY04 baseline
- Building square footage has grown 46% since the FY04 baseline, demonstrating the impact of efficiency projects and new construction driving this measure

Energy Use Intensity (EUI) : an indicator of the energy efficiency of a building's design and/or operations based on energy used per square foot per year

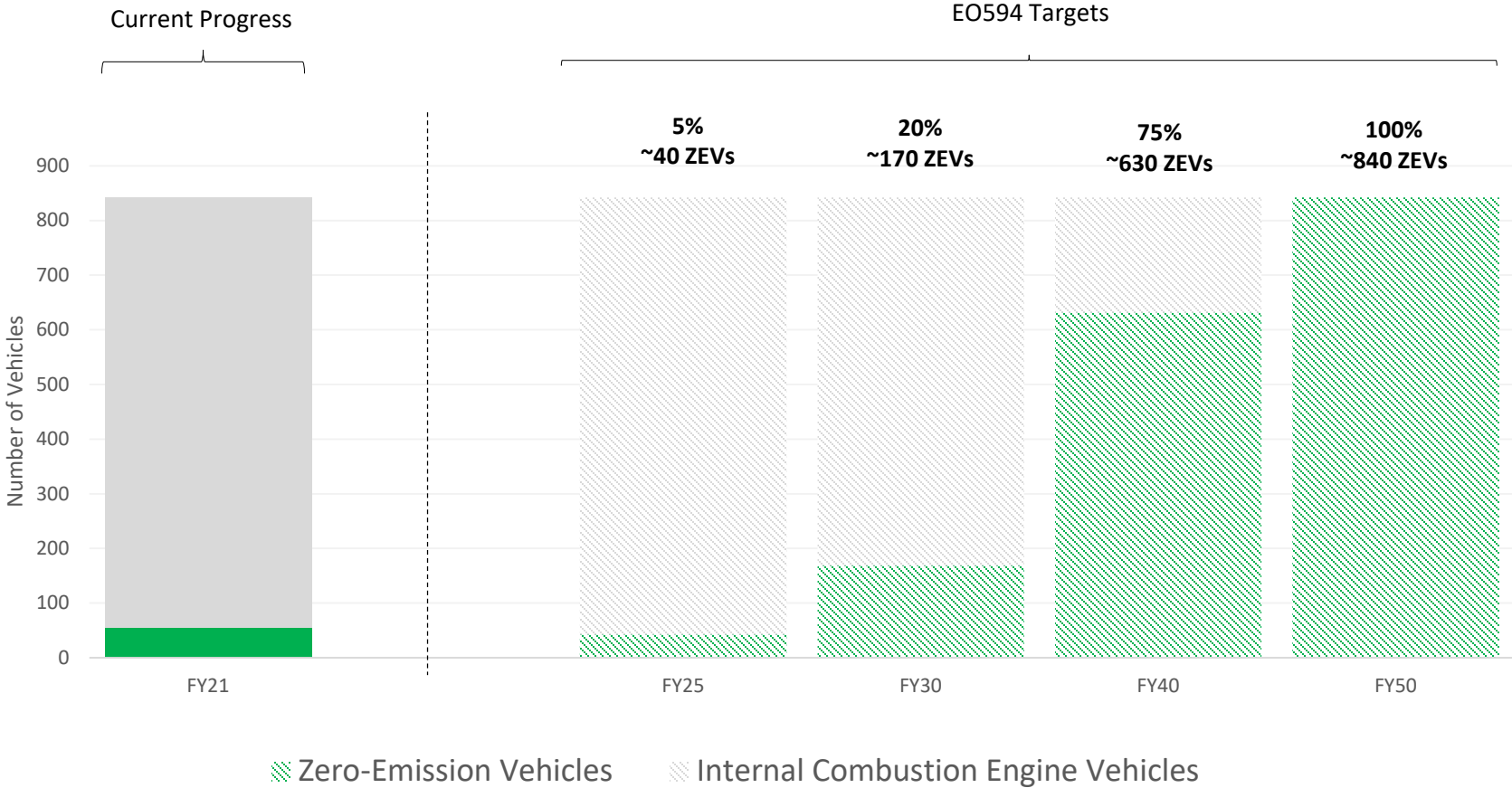
UMass Energy Use Intensity Progress & Targets

As of FY21, the UMass system has reduced energy use intensity by roughly 27%. FY19, the last pre-COVID year, shows a 16% reduction over the FY04 baseline.



UMass Zero-Emission Vehicles Progress & Targets

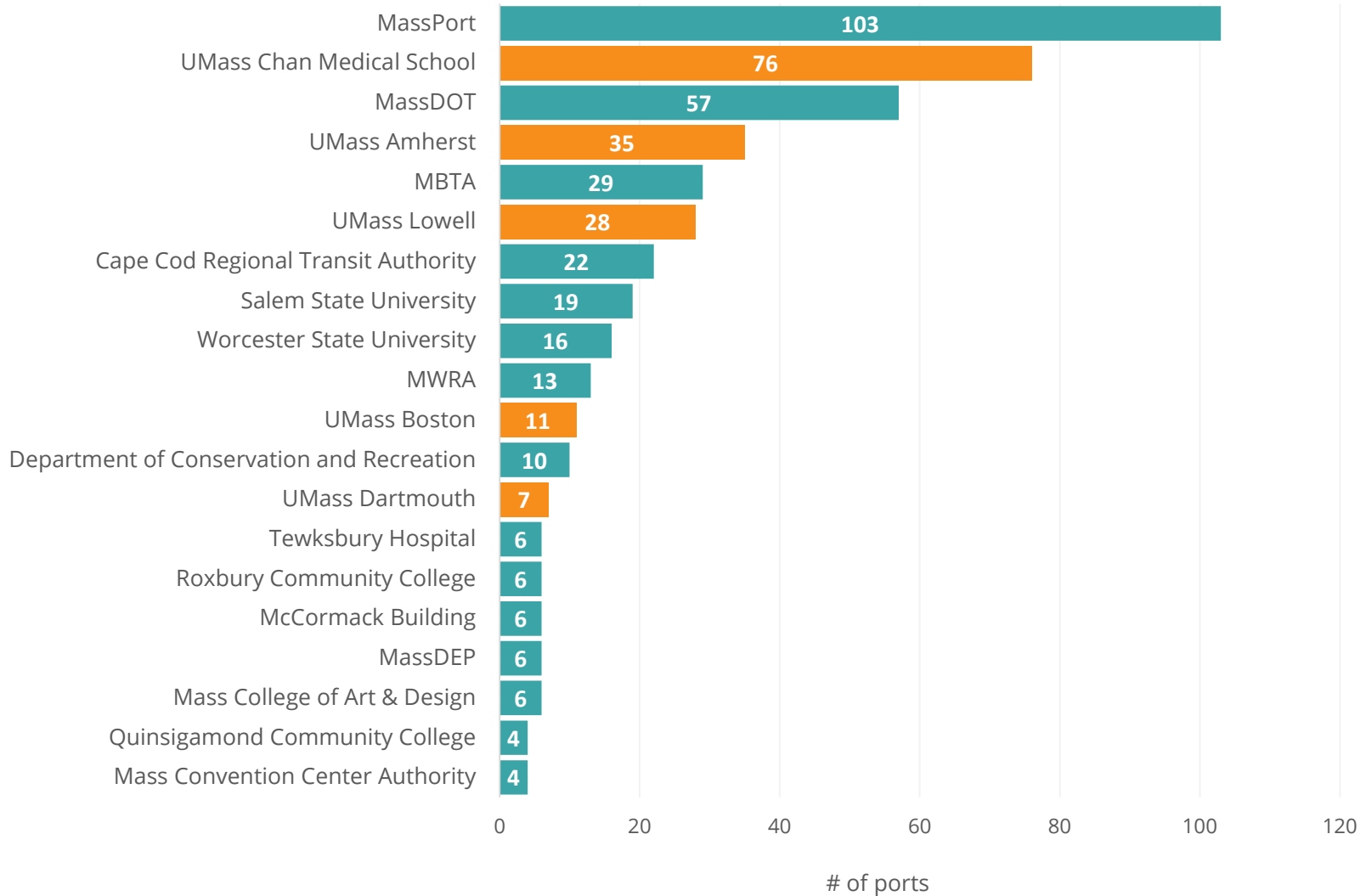
As of FY21, zero-emission vehicles (ZEVs) make up roughly 7% of the UMass system fleet. ZEVs include both on road and utility vehicles that are either battery electric or plug-in hybrid electric.



A zero-emission vehicle does not emit exhaust gas or other pollutants from the onboard source of power

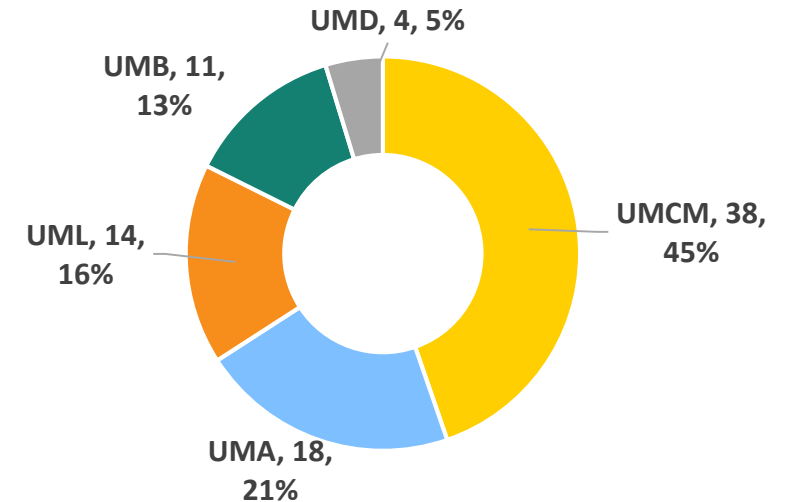
UMass has 35% of EV charging stations at state facilities

Current EV Charging Ports by Entity (Top 20)



- UMass system comprises 85 out of 288 (35%) of total EV charging stations deployed at state facilities, currently providing 157 charging ports
- UMass Chan comprises roughly 50% of total UMass system active ports

EV Station Distribution by Campus



Look Ahead

Coordination on reporting across the System

- Alignment to LBE reporting metrics under EO 594
 - Streamline reporting to focus on new priorities of EO 594 and data collection by Leading by Example Program
 - Provide consistent metrics with defined baselines, targets, and campus boundaries
- Review and updated to sustainability policy reporting standards to align with new executive order
 - Shift in focus towards reduction in fossil fuel consumption, decarbonizations planning, campus electrification, and ultra-low energy intense new construction
- STARS reporting – effort for consistent reporting to STARS across all campuses
 - Provide in-depth evaluation of campus sustainability program, including academics, engagement, operations, planning and administration, and innovation
 - Supported peer benchmarking and best practices in higher education sustainability programs
- Re-state commitment to new EO and partnership with Commonwealth to address the unmet need to reach targets
 - Campus commitments to decarbonization planning
 - Inclusion of DOER/Leading by Example in UMass Sustainability Council to foster collaborative partnership

Helpful Resources to Learn More

- MA Department of Energy Resources – Leading By Example Program
 - <https://www.mass.gov/orgs/leading-by-example>
- Association for the Advancement of Sustainability in Higher Education (AASHE)
 - <https://stars.aashe.org/>
- Campus Sustainability Efforts
 - Amherst: <https://www.umass.edu/sustainability/>
 - Boston: https://www.umb.edu/in_the_community/sustainability
 - Dartmouth: <https://www.umassd.edu/campussustainability/>
 - Lowell: <https://www.uml.edu/sustainability/>
 - Chan Medical School: <https://www.umassmed.edu/growinggreen/>