



**Massachusetts Bay  
Transportation Authority**

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## **MBTA Climate Change Strategy Overview**

**Presentation to MBTA Board of Directors  
Safety, Health & Environment Subcommittee**

**May 16, 2022**



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# MBTA's Climate Change Strategy Overview

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- *How does the MBTA prepare for the impacts of extreme storms that will result from climate change?*
- *What is the MBTA doing to address climate change by reducing its greenhouse gases?*



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## Vulnerability Assessments for Future Climate Conditions

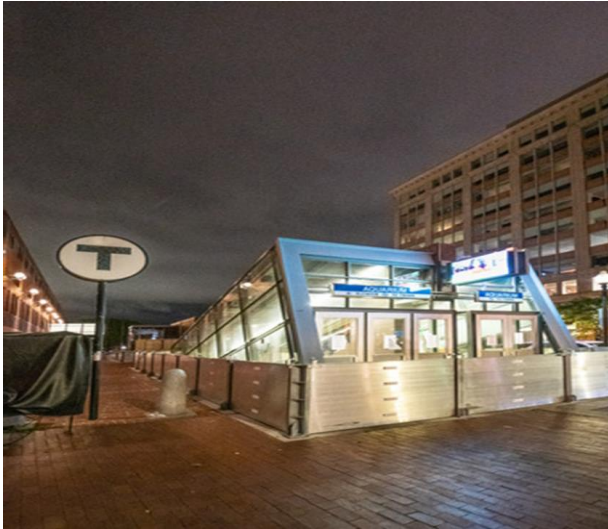
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**Vulnerability assessments** are being completed for the entire rapid transit system, key bus and commuter rail facilities and other locations.

- Facilities are being assessed for impacts from storm surge, flooding, wind, snow, ice and other conditions.
- Assessing for forecasted climate conditions in 2030, 2050 and 2070.
  - ❑ Findings and recommendations embed into MBTA policies and programs (*e.g.*, capital investment plan, transit asset management system, state of good repair, *etc.*) to institutionalize resiliency into infrastructure.
  - ❑ Working with OCE to develop design guidelines and design standards that address and include climate considerations
- MBTA is working with stakeholders to share data & knowledge, develop policies, and work on regional protection projects that provide benefits to the MBTA's system.
  - ❑ Working with the Climate Action teams in Boston, Cambridge, Somerville, and other municipalities we are located in.



# Status of Vulnerability Assessments for Future Climate Conditions



## Rapid Transit Lines:

- Blue Line – **Completed**
- Red Line – **Completed**
- Orange Line – **Completed**
- Green Line – Spring 2022

## Systemwide Assessments:

- Power, Signal & Communications – **Completed**
- Pump Stations – **Completed**
- Bus Maintenance Facilities – **Completed**
- Rapid Transit Vehicle Storage – **Completed**

## Critical Facilities:

- Cabot Yard – Summer 2022
- Commuter Rail Facilities – Summer 2022

## Commuter Rail:

- Network assessment will begin in late 2022 to be completed in late 2023.

## MIT Tunnel Study:

- Developed a model of the MBTA tunnel network that projects where would flood and at what rate under various storm conditions.

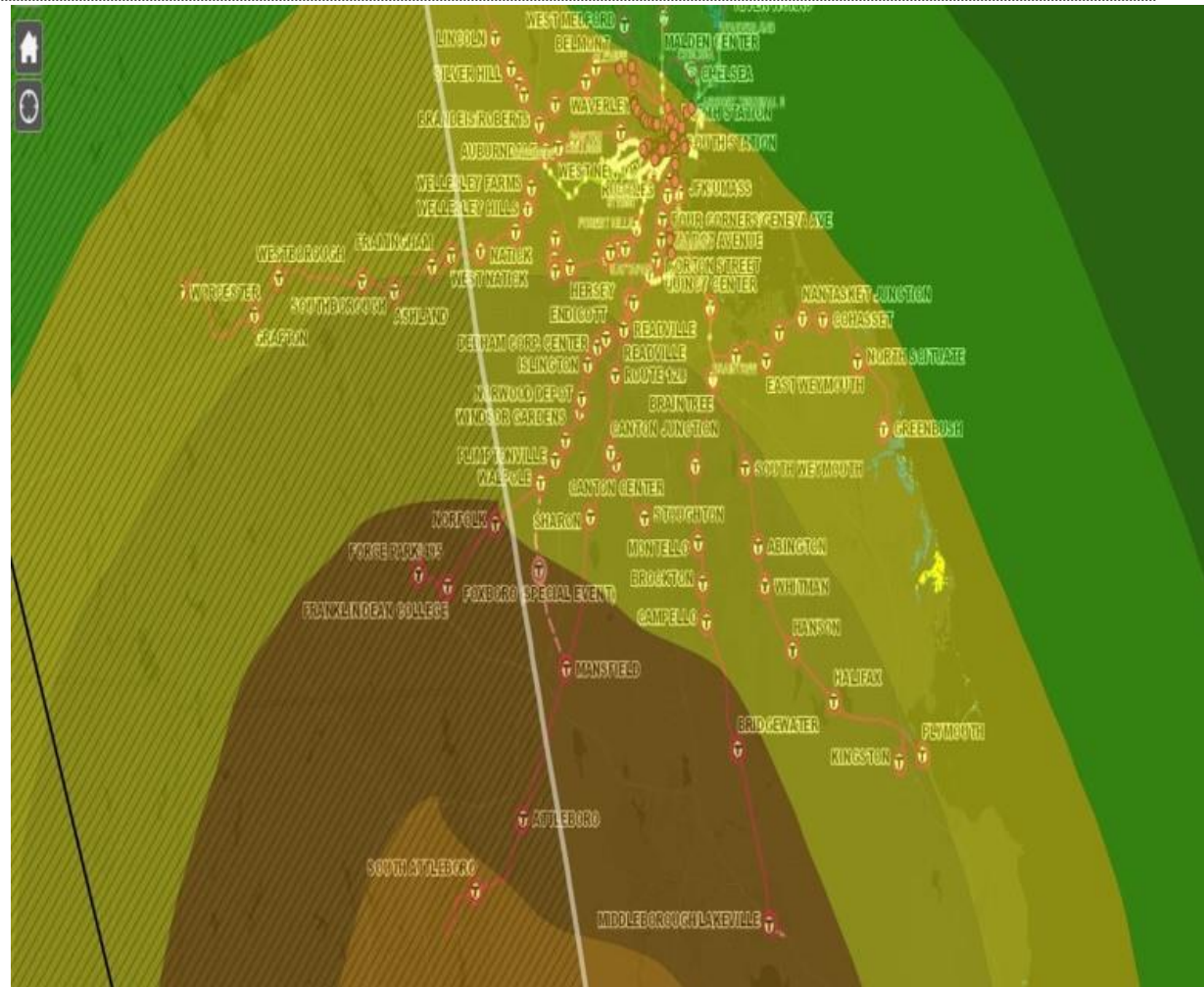


## Utilizing Real Time Storm Data to Locations Most at Risk

Real time storm mapping against MBTA assets initiated as part of the Storm Team.

The MBTA now maps the infrastructure against NWS mapping for storm elements such as:

- Storm Surge
- Extreme Winds
- Rising River and Streams
- Extreme Precipitation
- Tornado Watches
- Other storm elements as needed



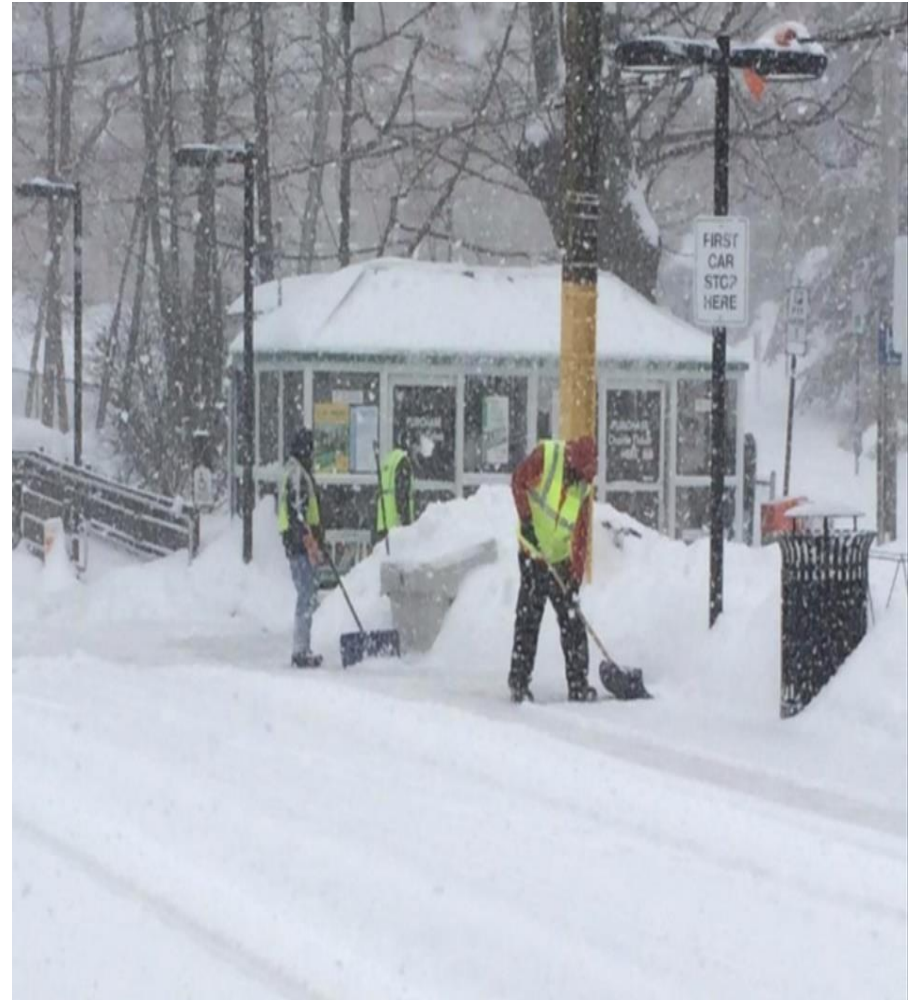


## Prioritize Resiliency in the Capital Plan

The Capital Investment Plan (CIP) project selection process prioritizes climate resiliency since it maintains and improves the overall reliability of the transportation system

Critical climate resiliency programs and projects currently in the CIP include:

- Systemwide Tunnel Flood Mitigation Program
- Blue Line Tunnel Improvements
- Fiber Optic Burial Project
- Courthouse Station Waterproofing Project
- Pump Improvements





## MBTA's Greenhouse Gas Reduction Goals



Governor Baker's Executive Order ("*Leading By Example*") sets goals for state agencies to reduce its greenhouse gases associated with the burning of onsite fossil fuels at buildings and in vehicles:

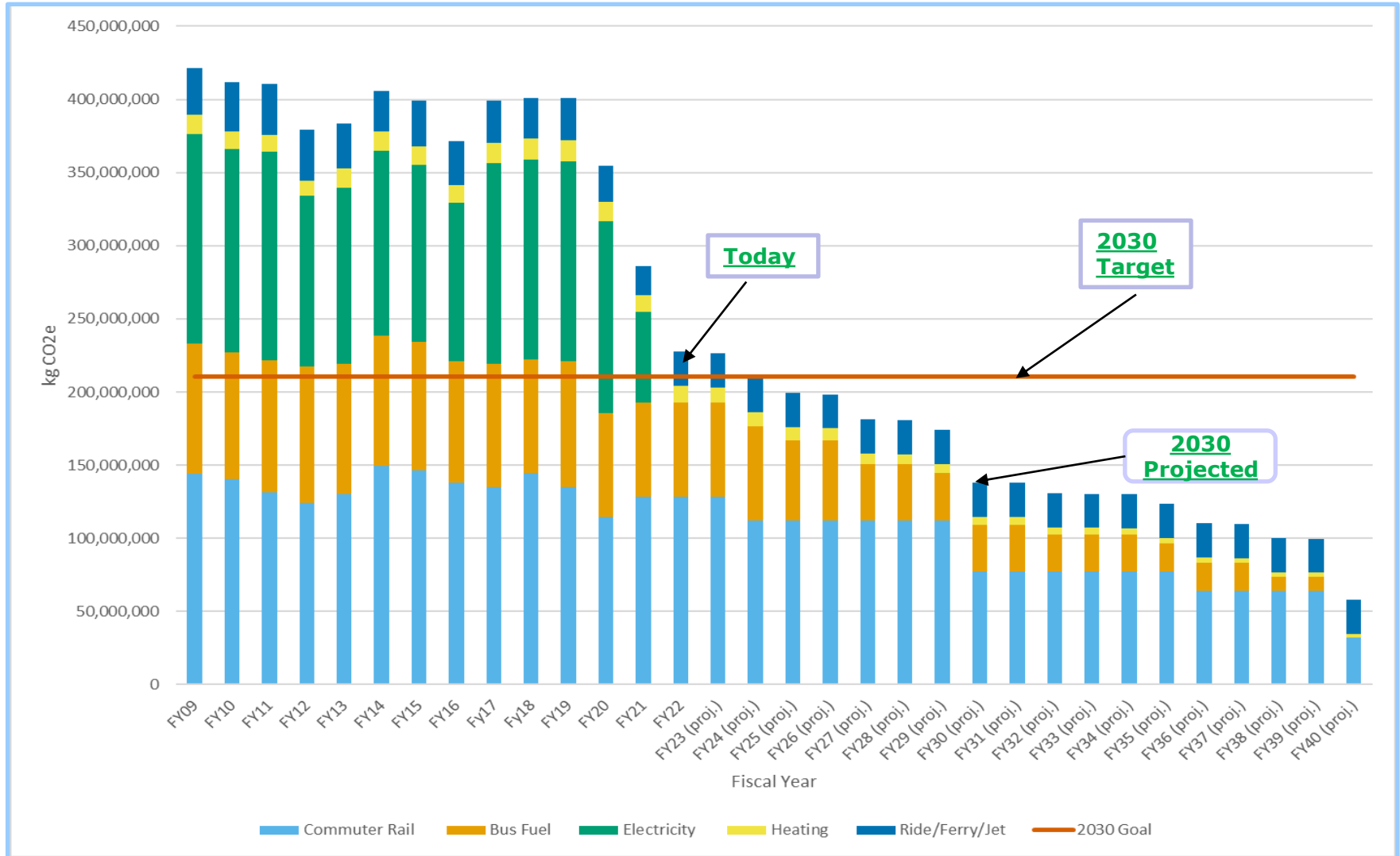
- ✓ 20% in 2025
- ✓ 35% in 2030
- ✓ 60% in 2040
- ✓ 95% in 2050

Commonwealth also has an overall reduction goal of:

- ✓ 50% by 2030
- ✓ 100% by 2050



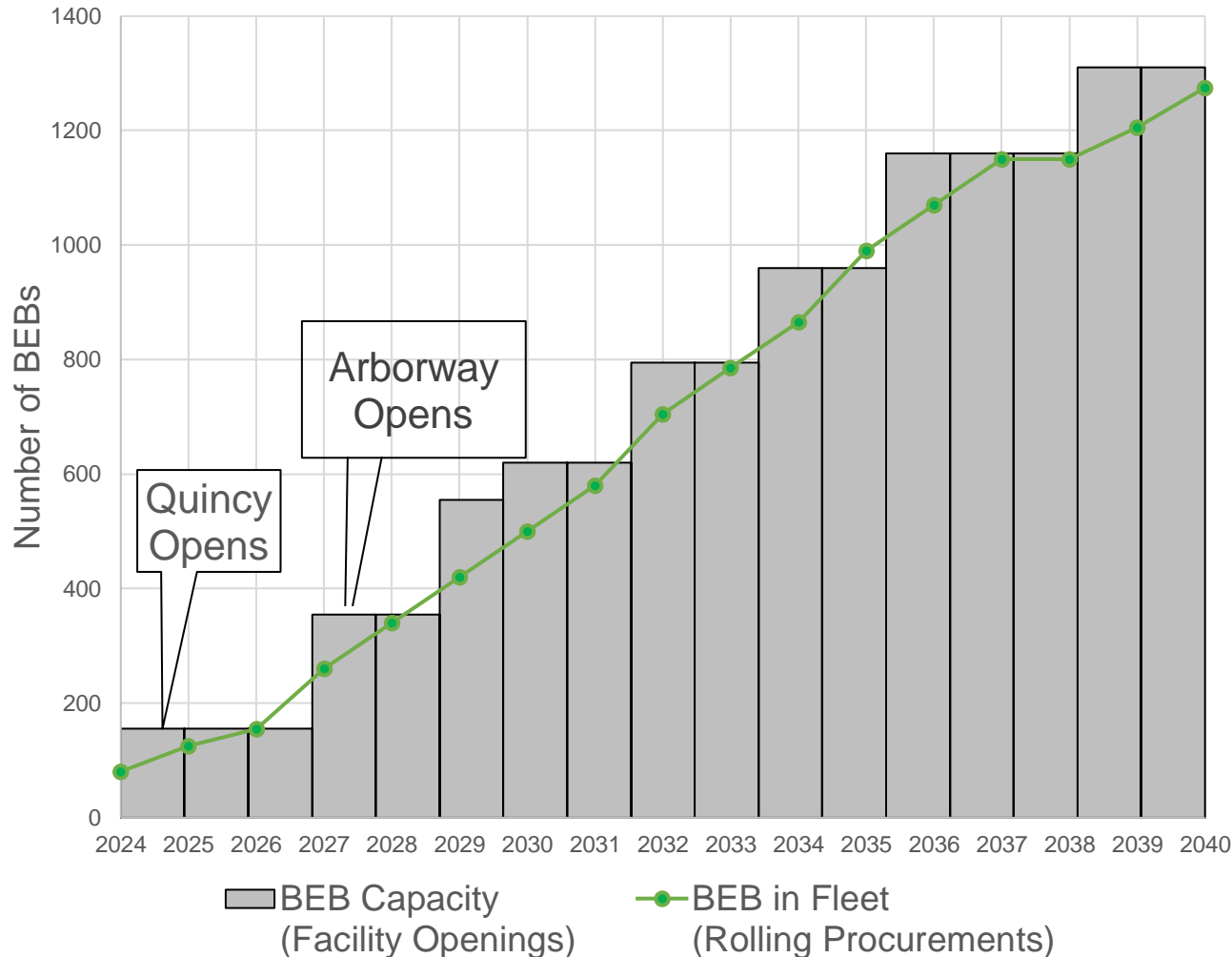
# Annual System-wide Greenhouse Gas Emissions (kg CO<sub>2</sub> equivalents) 2019 through 2040 (projected)







# Bus Fleet and Facility Modernization Goals



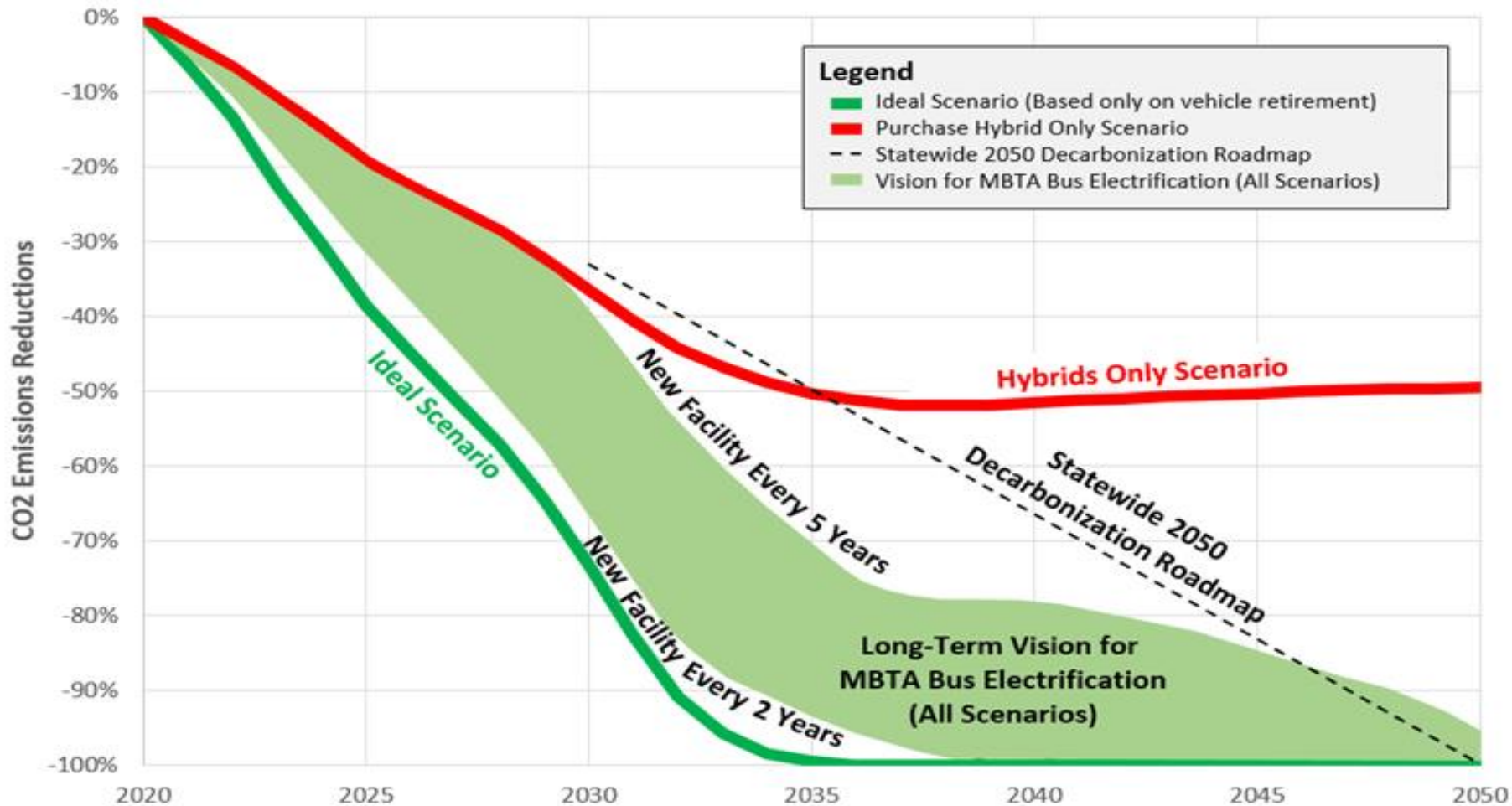
Convert the entire bus fleet to Battery Electric Bus technology by 2040

Build new state of the art facilities to house and maintain new buses





# MBTA Bus Emissions Projections – Path to De-Carbonization





# Energy Focus on Capital Projects & Asset Management

Incorporating sustainable and energy-focused elements into Capital Projects and Asset Management

## Capital Delivery

- New standards for lighting
- Building control and energy management systems
- High-efficiency systems

## Asset Management

- Focus on procurement of most efficient asset upgrades:
  - Compressors
  - HVAC Systems
- Upgrades to more energy efficient fixtures
  - Tunnel Lighting Project





## FY23-27 CIP | Sustainability & Resiliency (S&R) Spotlight

**130+** sustainability and resiliency related projects, accounting for roughly **\$3.7B** of programmed spending are part of the 5-year CIP. This includes but is not limited to:



**40+** resiliency and vulnerability projects and assessments to curb climate change and environmental impacts systemwide



**40+** projects related to assets, energy, waste management, and remediation to ensure efficiency and long-term sustainability and resiliency of service and facilities



**35+** projects to procure, overhaul, and upgrade fleet and facilities for bus electrification, vehicle efficiency, and reduction of carbon footprint

### CIP Requests

Requests for projects are evaluated using 8 scoring criteria, which include resiliency under the system preservation, environmental and health effects criteria.

#### Key S&R Projects:

##### Rapid Transit

- Fenway Portal Flood Protection (P0117)
- Blue Line Flood Protection (P0582)

##### Bus

- Procurement of 35 Battery Electric 40ft Buses and Related infrastructure (P0653)
- Arborway Bus Facility Design Funding (P0671b)
- Charlestown Seawall

##### Systemwide

- Climate Change Resiliency Vulnerability Assessment (P0680)
- Environmental Remediation and Compliance (P0435)
- 45 High Street Master Plan and Systems Resiliency (P0603)
- Pump Improvements
- Tunnel Flood Protection

