

An aerial map of the MBTA service area is shown in the background, overlaid with a semi-transparent blue layer. On the right side, there is a photograph of a white MBTA bus with yellow accents, with the number 1040 visible on its side. The bus is parked in a lot.

# ***MBTA Bus Facility Modernization Program***

## **Bus Electrification Strategy + North Cambridge Bus Maintenance Facility Conversion**

February 15, 2022

# How to Participate in the Meeting

Virtual Public Meeting  
February 15, 2022  
6:00 p.m.

**Please use Zoom’s “Raise Hand” feature to indicate if you have a comment, then wait for the moderator to give you permission to speak.**

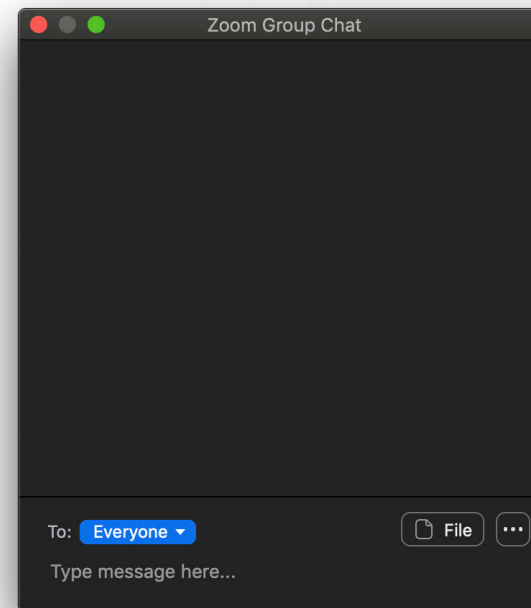
By default, all attendees are muted so that only the presenters can be heard. When you raise your hand, it alerts the moderator that you’d like to speak. The moderator will unmute attendees to ask questions in the order that they raised their hands.



To speak, click  
**“Participants”**  
then  
**“Raise hand”**



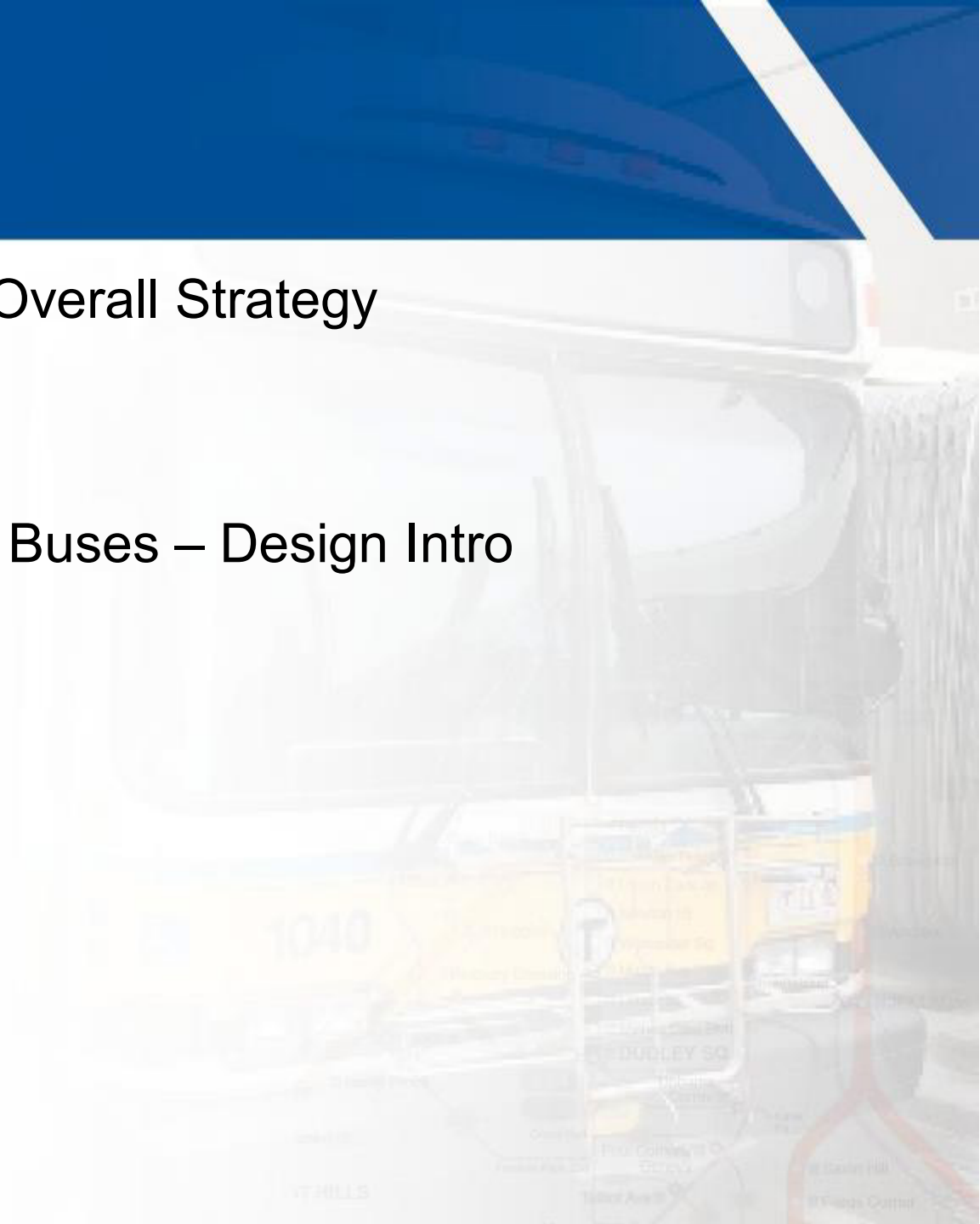
Send a chat  
to **“Questions +  
Comments”**



**\*9**  
**Raise Hand**

# Agenda

- MBTA Fleet and Facilities + Electrification – Overall Strategy
- Ongoing Initiatives – Quincy + Arborway
- Upcoming Initiatives
- North Cambridge Retrofit for Battery Electric Buses – Design Intro
- Q&A

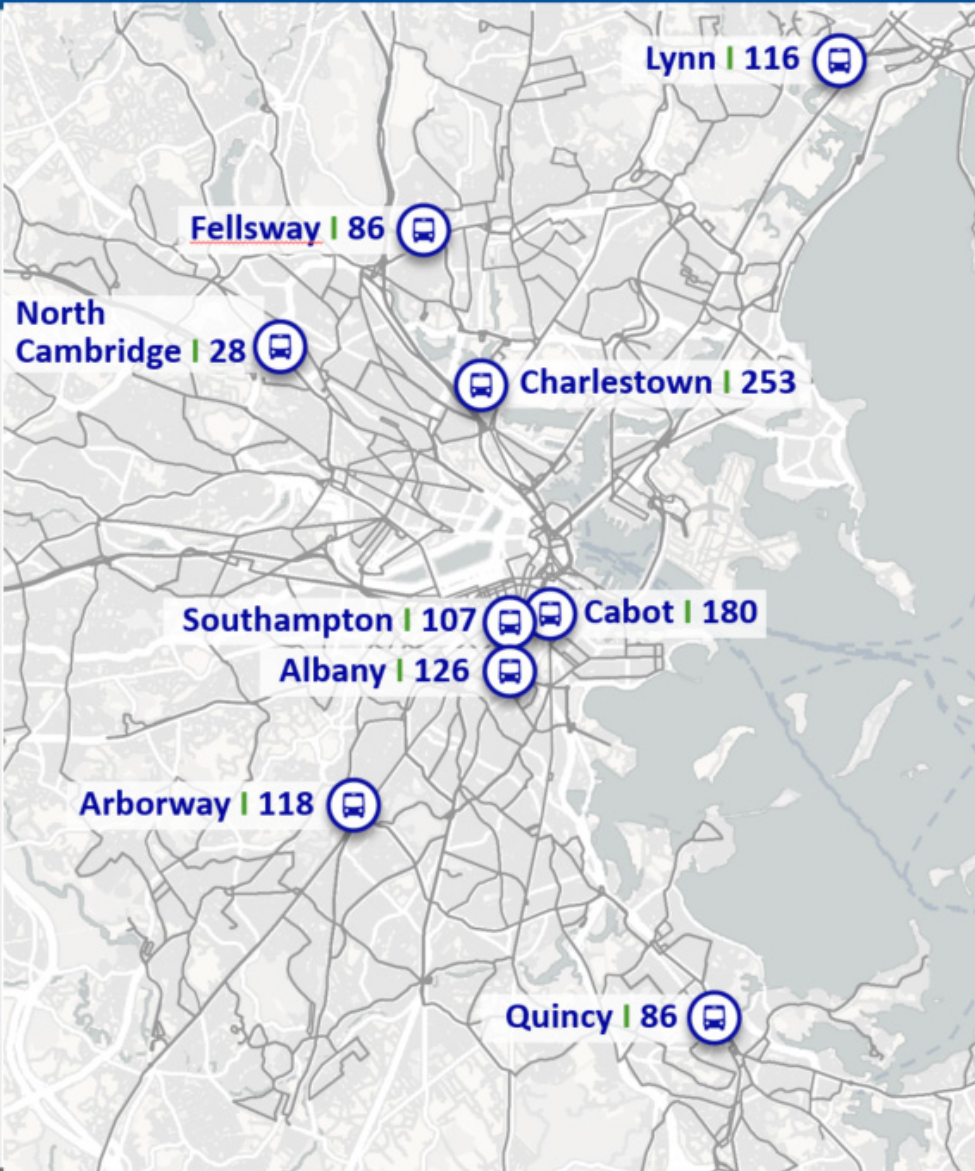


# MBTA Fleet and Facilities Goals

MBTA Fleet and Facilities goals aim to center rider benefits through focus on equity, service, reliability, and sustainability.

- **Convert the bus fleet to zero emissions technology** in support of Commonwealth's carbon reduction goals
- **Modernize all bus maintenance facilities** to improve conditions for our workforce to support their efforts to keep our service competitive for our passengers
- **Transition to a more uniform bus fleet replaced on a predictable, annual timetable** in support of fleet reliability for our passengers
- **Allow for an increase in fleet size** to position the MBTA's bus network redesign to meet the needs of growing ridership

# Existing Conditions – Facilities



- 9 Maintenance Facilities
- 1 Facility Capable of Housing All Electric Fleet
- 1,100 Number of Buses in 2022
- 3% Percentage of Electric Buses in 2022

 # Bus Capacity at Facility

# Existing Conditions – Fleet

- MBTA fleet strategy replaces 80 to 100 buses per year
- Reduced average age of fleet from 10 years in 2016 to 7 years today
- Ensures reliability for our passengers; as buses age, it becomes more challenging to keep them in service
- Results in a cleaner fleet each year; oldest diesel fleets have our highest emissions profile – 15 to 20% more GHG emissions than our newest hybrids
- Ensures consistency with FTA requirement to keep buses for 14 years



# Benefits of Battery Electric Buses

The MBTA, consistent with the industry nationally, is electrifying our bus fleet with **Battery Electric Buses (BEBs)**

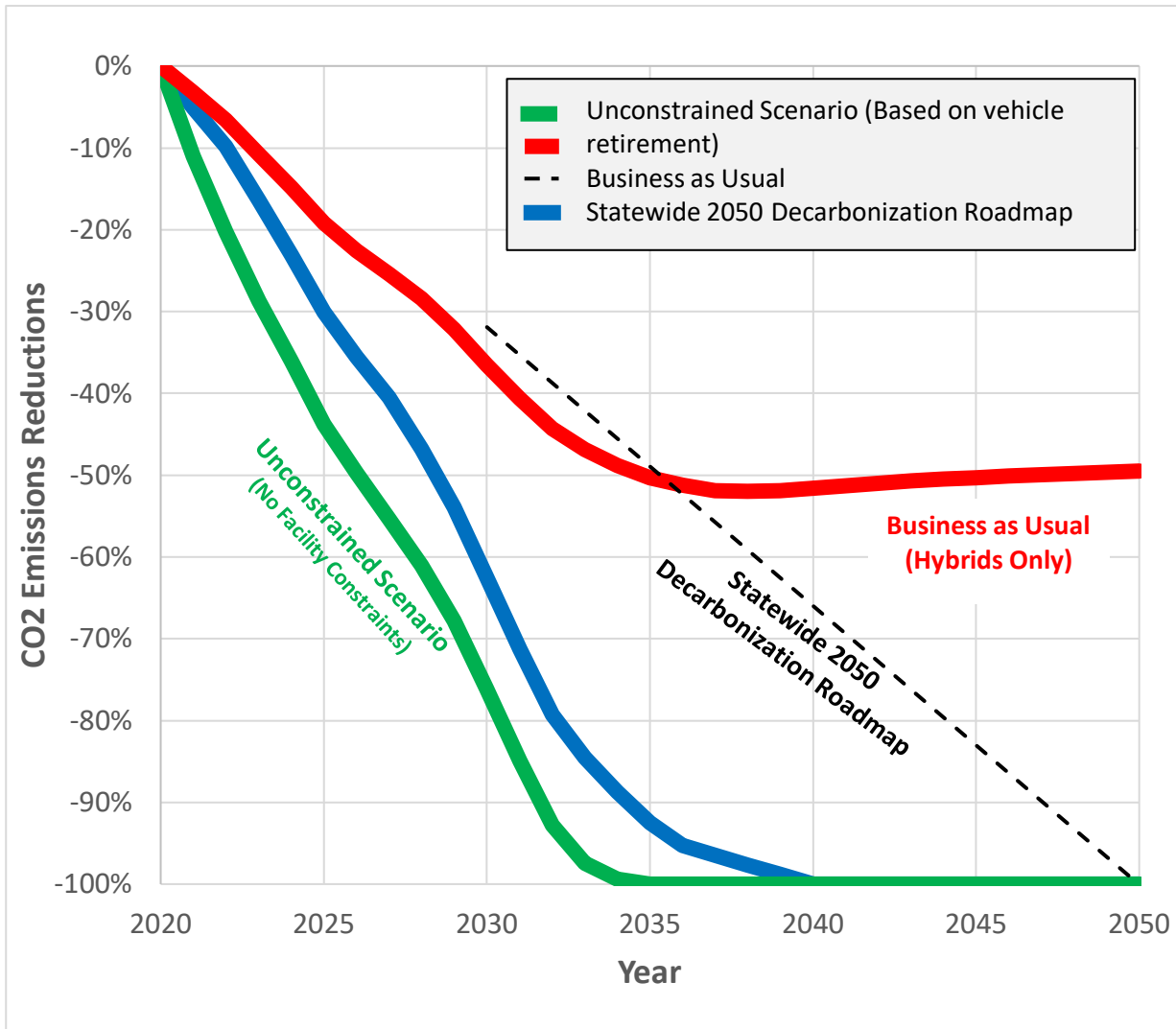
- BEBs have no tailpipe emissions, resulting in **better air quality in the communities** the MBTA serves compared to CNGs or diesel hybrids
- Just like electric cars, BEBs will be **quieter on the road** and when returning to maintenance facilities
- While current battery technology requires secondary diesel heating system on coldest days, **emissions are still reduced by more than 90%**



Photo by Caitsith810



# Bus Electrification Strategy

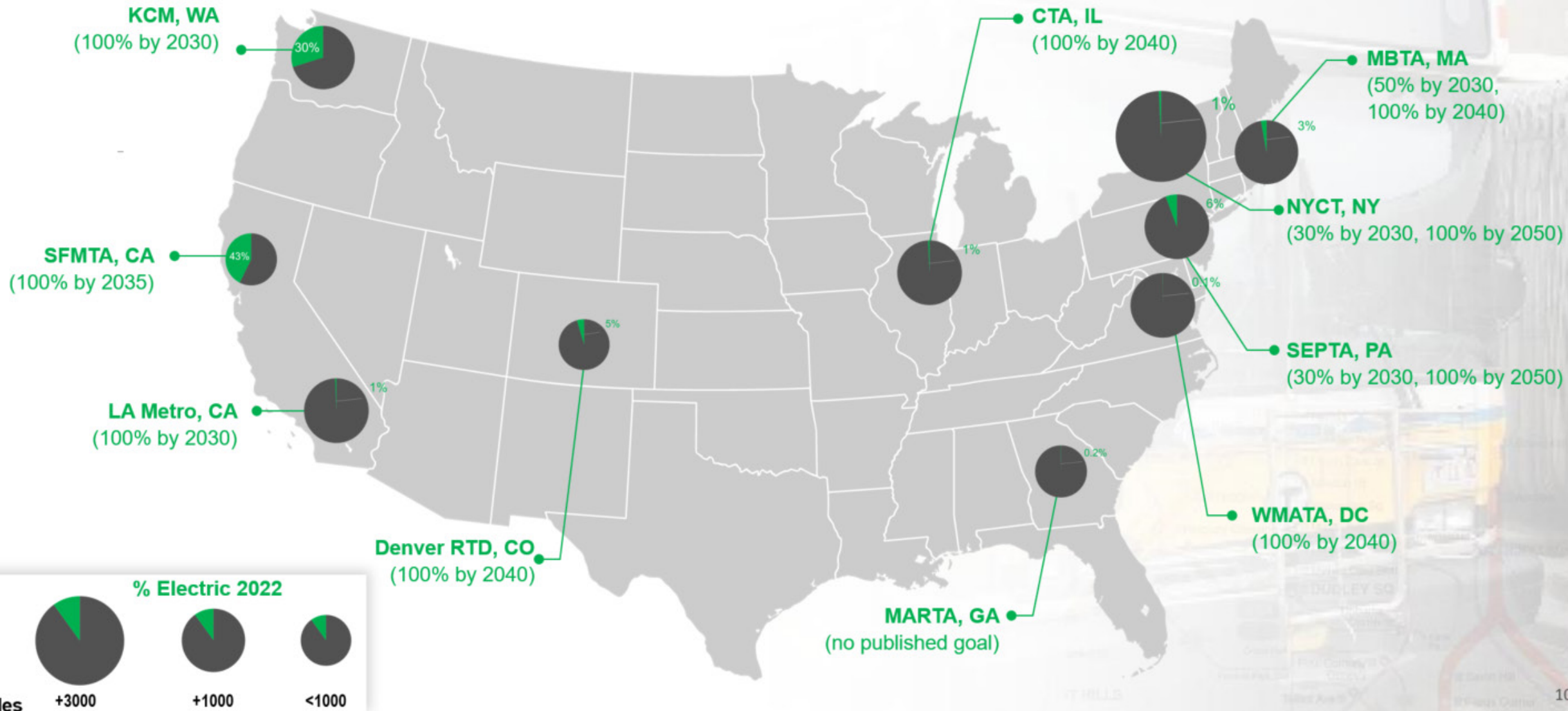


## Goal: Full bus electrification by 2040

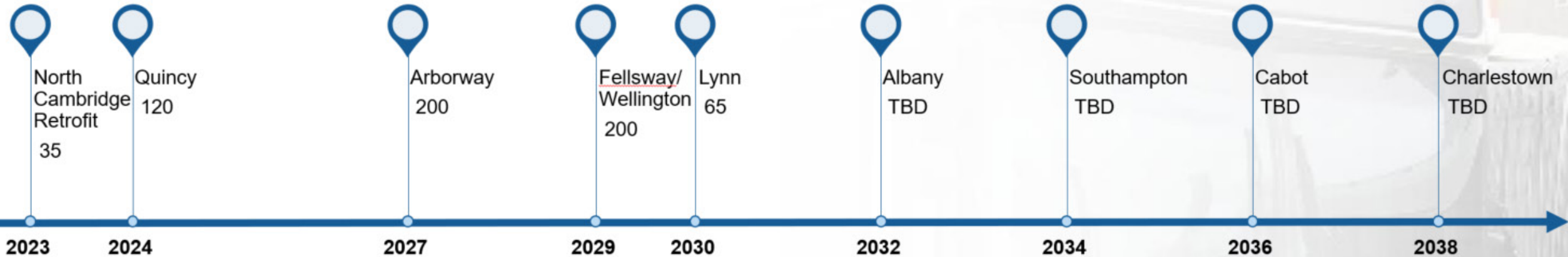
- Battery Electric Buses (BEBs) with Depot Charging – meets operational needs of first facilities while accomplishing broader program goals
- Parallel Electric + Hybrid bus procurements – allows for aggressive pace while meeting rider needs.
- 2027: Final hybrid purchase target (assumes facility modernization program advances on schedule)



# Bus Electrification Nationwide



# Plan for Facility Replacement + BEB Roll Out



Sequence and target facility capacities driven by:

- **Equity:** Operating zero emissions buses in **transit critical communities** and on routes with **high ridership**
- **Fleet Needs:** Lining up facility replacements with the **retirement of specialty bus fleets** (e.g. legacy diesel, trolleybus, CNG)
- **Systemwide Capacity:** Replacing facilities that could be **moved to a new location first**, to open up swing space

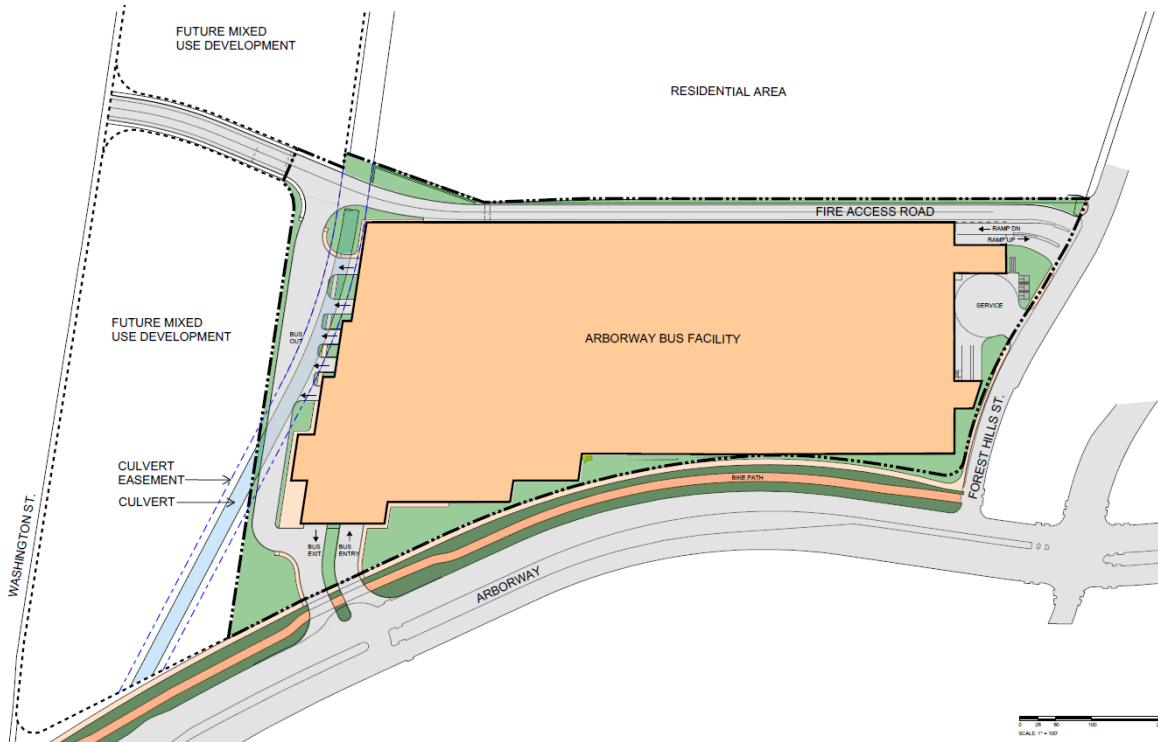
# First Priority: New Quincy

## **New, all indoor bus facility for 120 BEBs**

- Replaces existing facility that is **100+ years old**, can only accommodate **oldest diesel buses**, and provides **insufficient working conditions**
- Electrifies routes serving **Quincy, Dorchester, and all South Shore communities**
- **Groundbreaking February 14**
- **Project completion 2024**



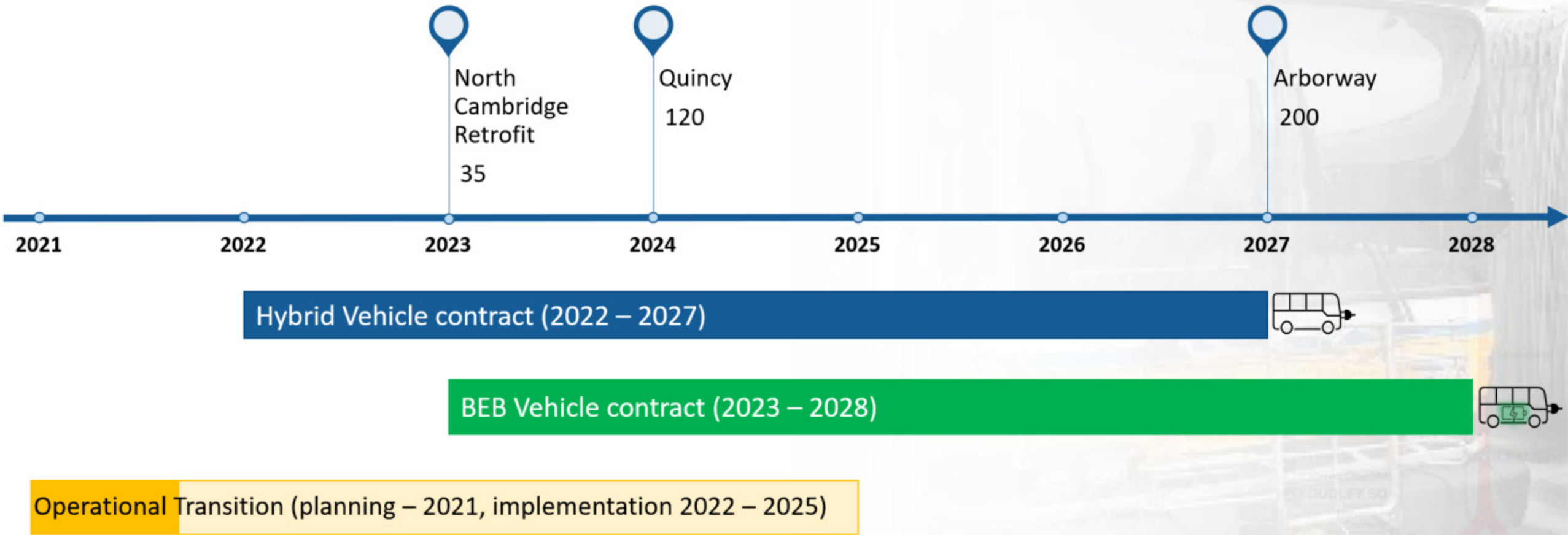
# Second Priority: New Arborway



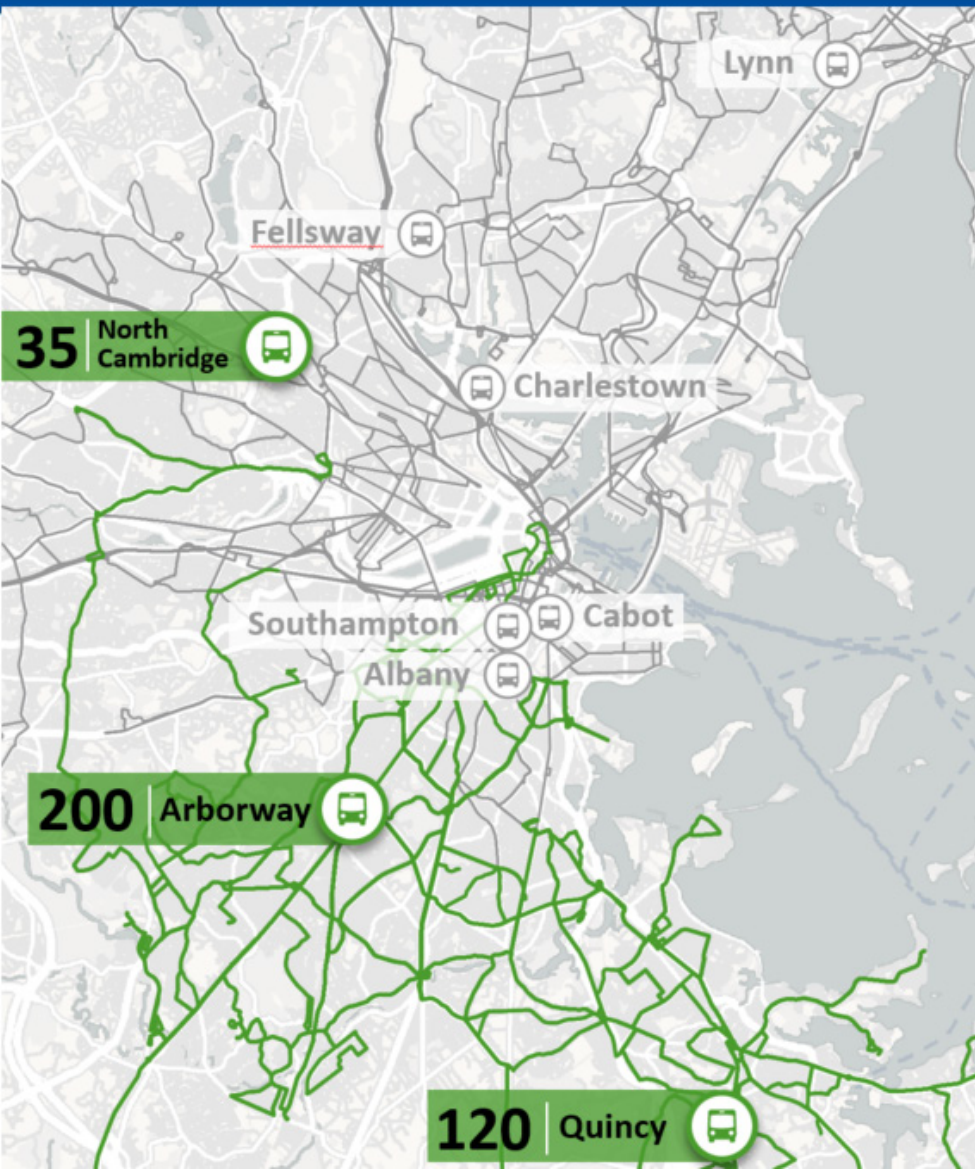
New, all indoor bus facility for **200 buses** and opens up **8 acres next to Forest Hills** for community uses

- Replaces existing temporary facility that has **insufficient working conditions** and only permits CNG buses (to retire 2028/2029)
- **Electrifies 40% local buses in Boston**, including all routes serving Jamaica Plain, Mattapan, and Hyde Park; as well as service in Roxbury/Dorchester
- Upgrades overcrowded routes to **higher capacity 60' buses**
- Preliminary design underway; construction targeted to begin 2024
- **Project target completion 2027**

# Fleet & Facility Near-term Timeline




# Fleet and Facilities in 2027

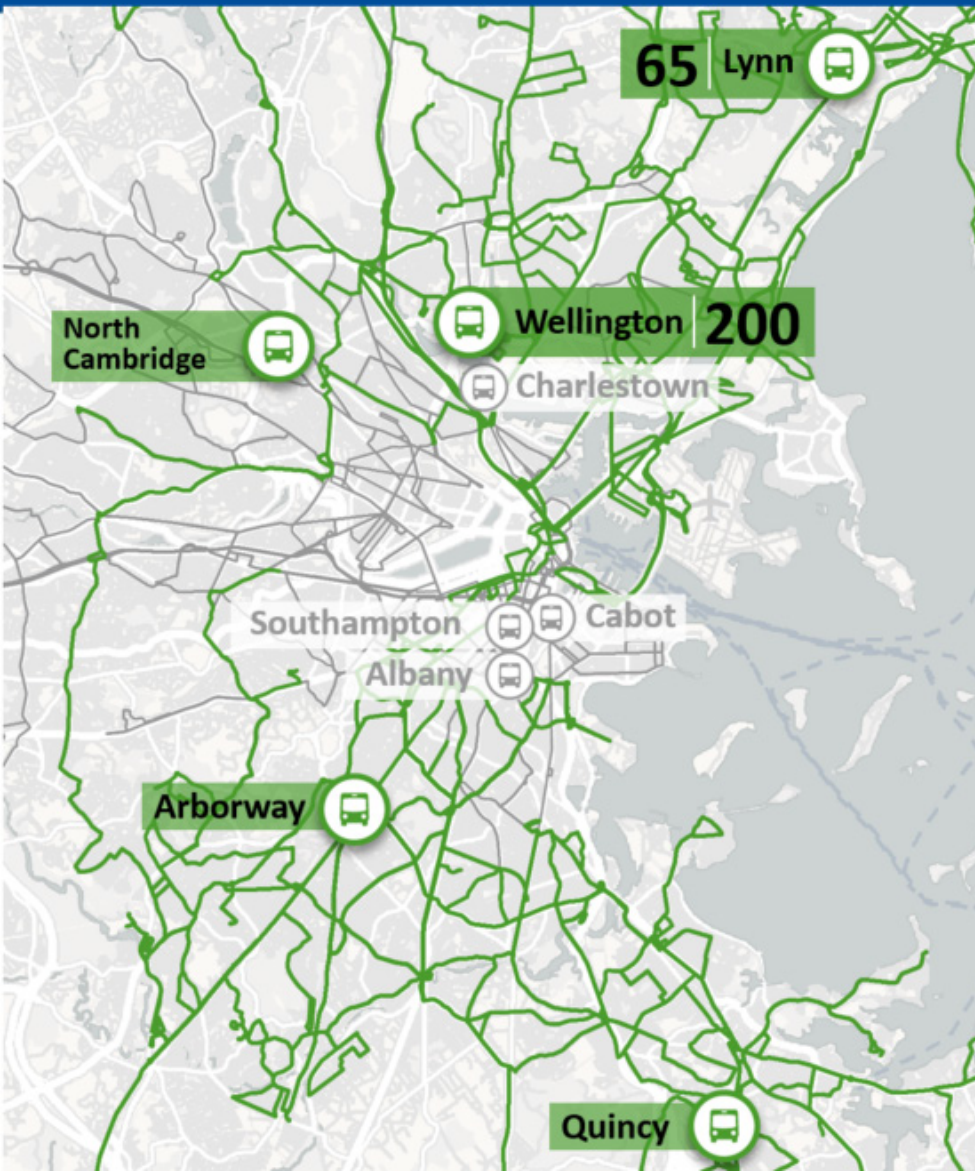


- 9 Maintenance Garages
- 3 Facilities Capable of Housing All Electric Fleet
- 1,223 Bus Capacity at Facilities in 2027
- 30% Percentage of Electric Buses in 2027\*

\* Arborway BEB capacity to be filled over two years

 # BEB Capacity at Facility

# Fleet and Facilities in 2030



**Wellington** – 200 BEB facility replaces Fellsway and absorbs six Chelsea/East Boston routes from Lynn + some Charlestown routes

- Next Step – Initiate design late 2022
- Goal – Open 2029

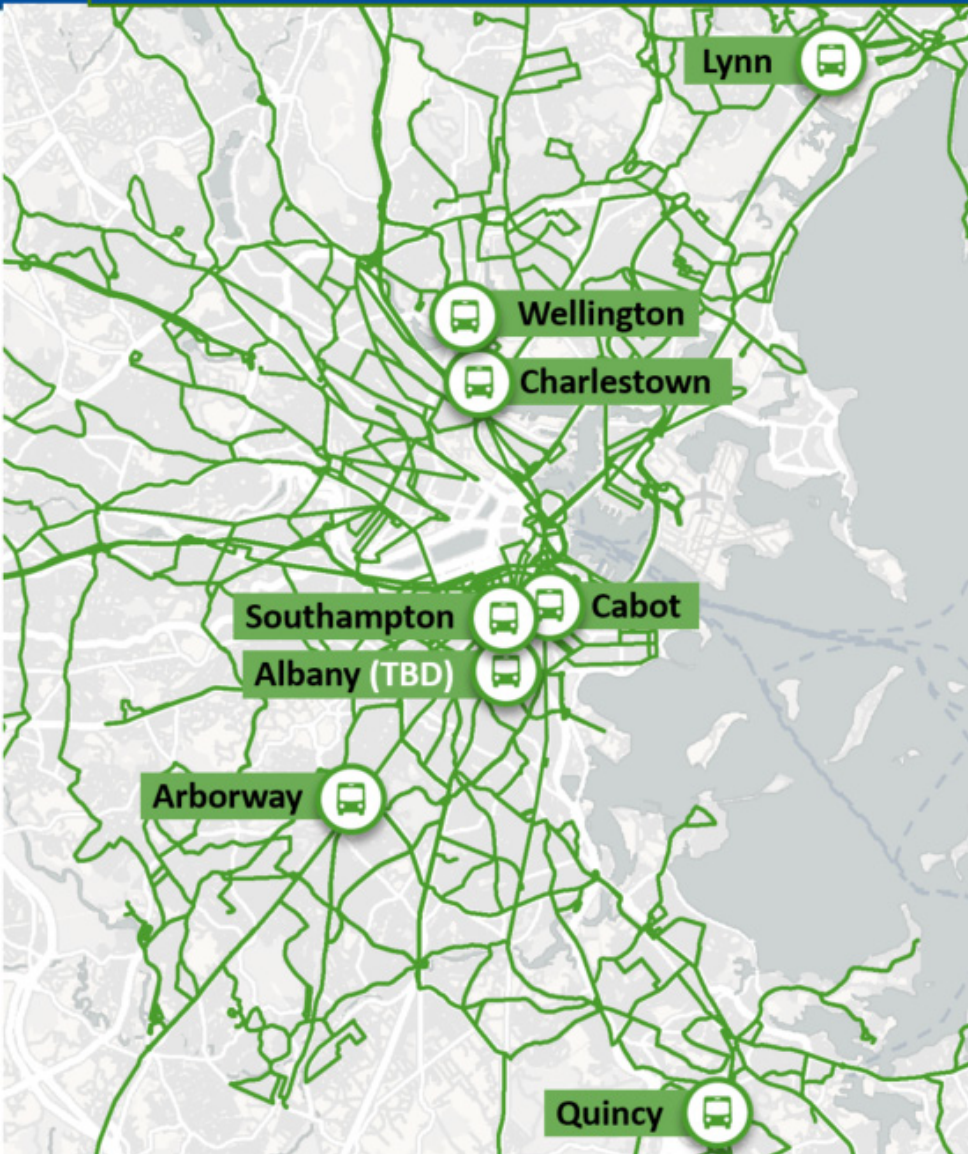
**Lynn** – 65 BEB facility serving the North Shore

- Next Step – Continue coordination with City of Lynn
- Goal – Open 2030

*Bus Procurements – after 2027 exclusively electric (40's and 60's)*

**>50% Percentage of Electric Buses in 2030**

# Fleet and Facilities in 2040



**Cabot, Charlestown and Southamton** - our largest, most centrally located facilities will be the last to upgrade and will be rebuilt in place

Target fleet size at these facilities to be determined

**Albany** – long-term future needs will depend on post-pandemic ridership trends and the Bus Network Redesign process

A new facility could be as well or better located a few miles to the west

**Goal:** Modernize one facility every two to three years

**100% Percentage of Electric Buses by 2040**



# North Cambridge BEB Conversion – Why?

Proposal: Retrofit our smallest facility to convert the 28 buses operated on 71 and 73 routes to BEBs.

## Benefits:

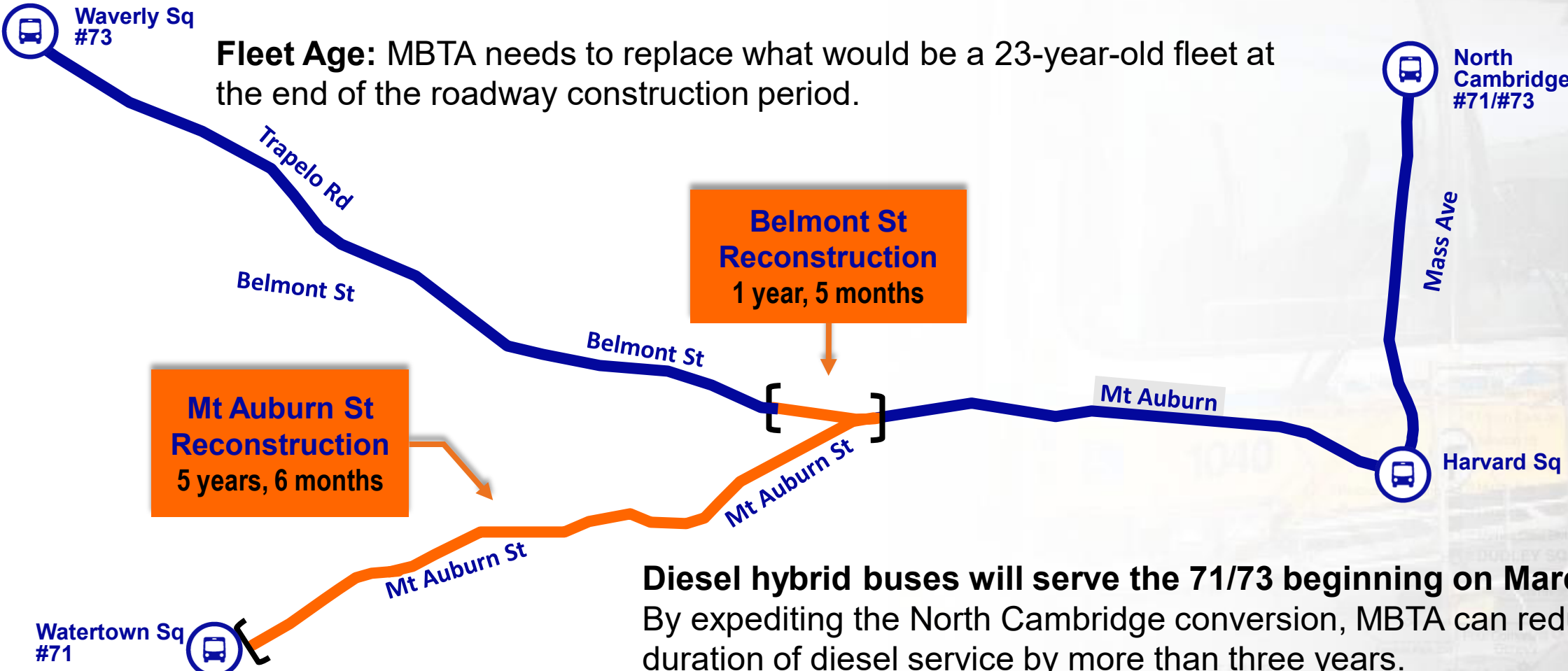
- More **equitable distribution** of bus resources
- **Reduced service disruptions** from roadwork and catenary failure and **emissions from replacement diesel hybrids**
- Improved flexibility to **support rapid transit shuttles** and manage bus fleet systemwide
- Increased efficiency in **purchasing and maintaining BEBs** by aligning MBTA's systemwide electrification strategy



# North Cambridge Conversion – Why Now?

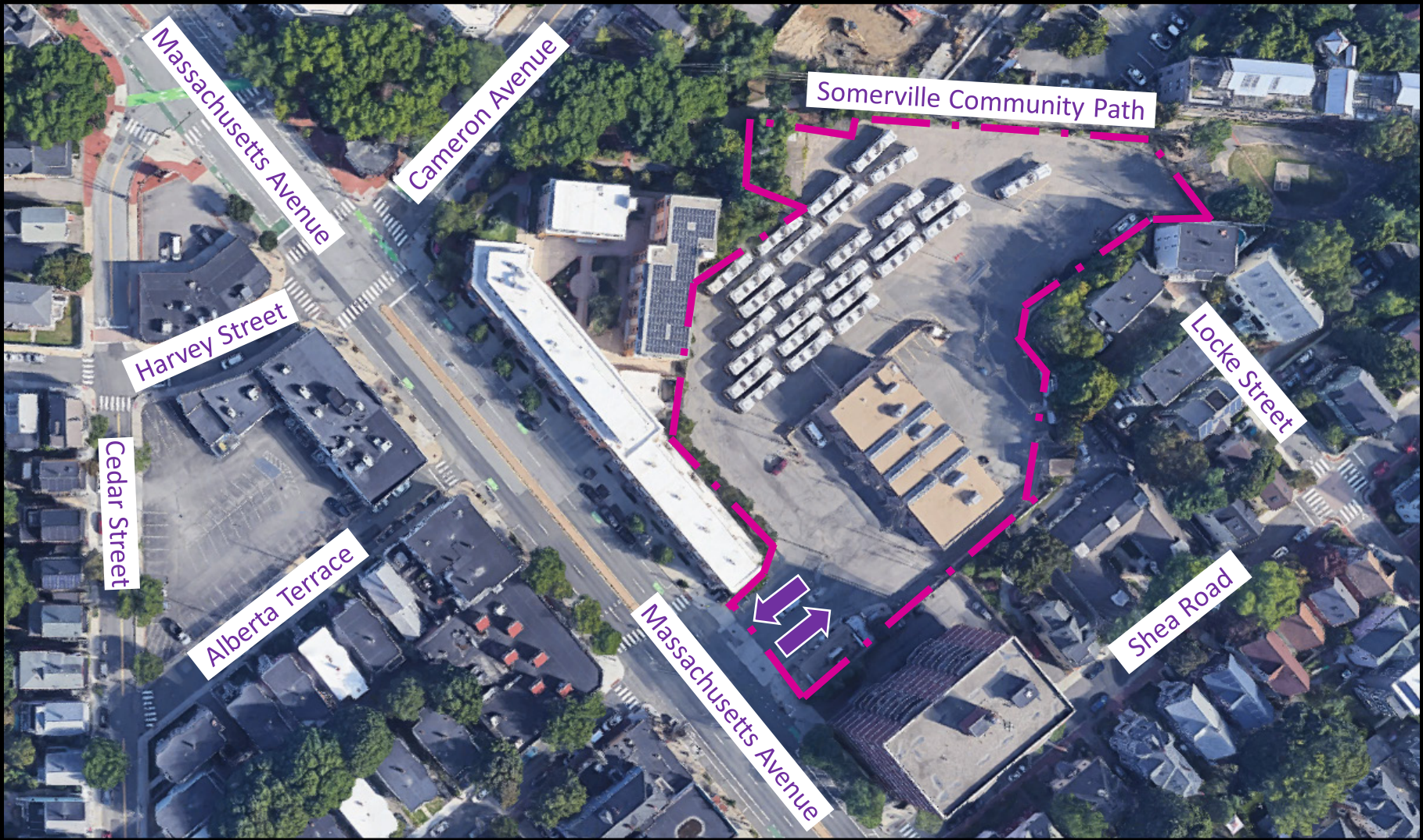
**Roadway Work:** Cambridge and Watertown roadway projects will require the MBTA to replace trolleybus service on the 71 and 73 with diesel buses from the Charlestown garage for 5.5 years.

**Fleet Age:** MBTA needs to replace what would be a 23-year-old fleet at the end of the roadway construction period.

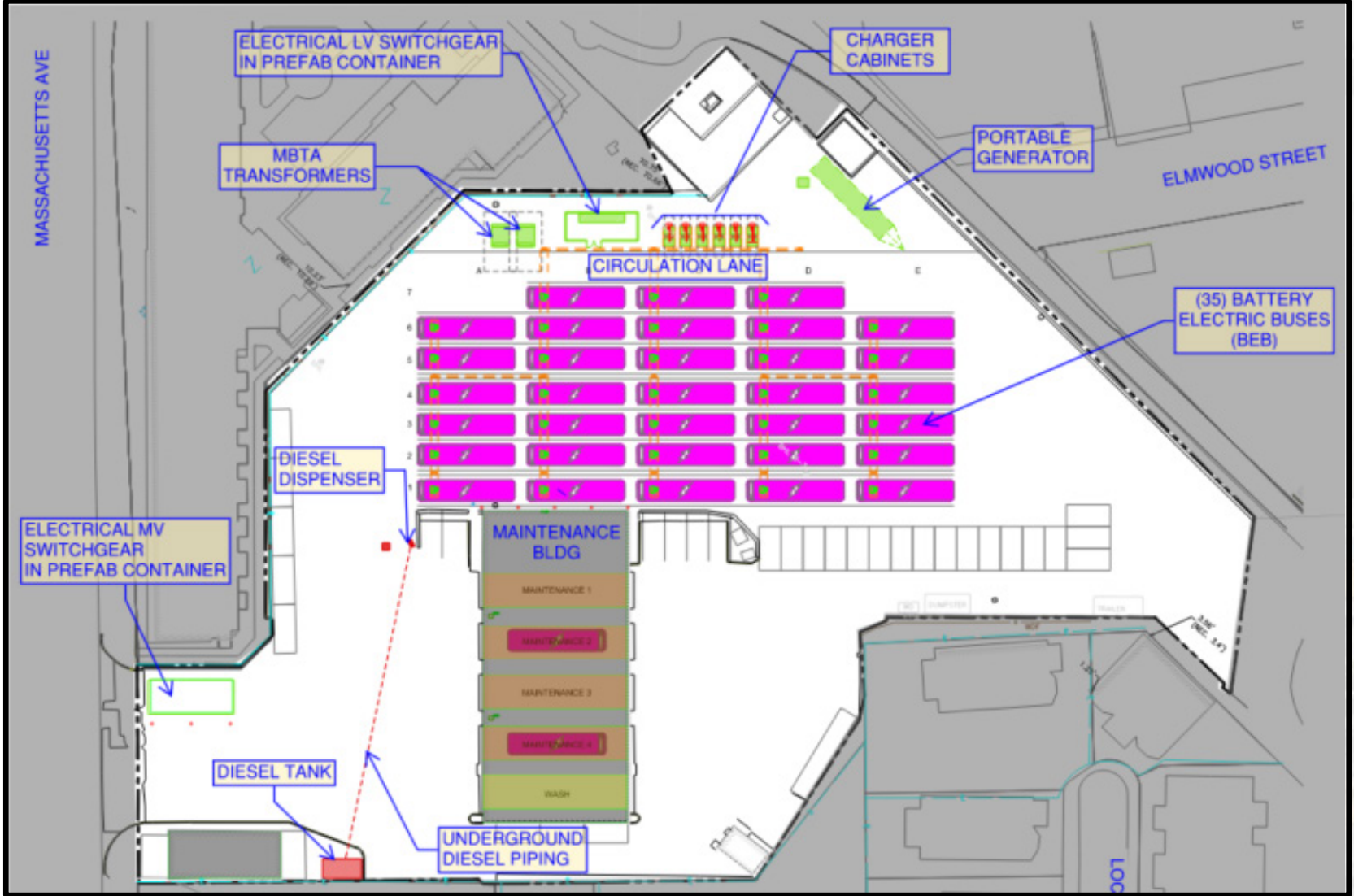


**Diesel hybrid buses will serve the 71/73 beginning on March 12.** By expediting the North Cambridge conversion, MBTA can reduce the duration of diesel service by more than three years.

# Existing Conditions



# Proposed Project Layout



# Proposed Project Rendering – View 1



# Proposed Project Rendering – View 2



# North Cambridge Bus Facility - Existing



# North Cambridge Bus Facility Site - Proposed





# Cambridge Common – Before/After



# Watertown Square – Before/After



# Project Timeline

**Design Process**  
through  
Summer 2022

**Advertise for  
Construction**  
Fall 2022

**Construction  
Start**  
Winter 2023

**Construction  
Complete**  
Winter 2024

**BEB Service  
Starts**  
March 2024

Check [www.mbta.com/buselectrification](http://www.mbta.com/buselectrification) for updates.

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