



# **New Arborway Bus Maintenance Facility and MBTA Bus Electrification Project**

## ***15% Design Public Meeting***

**June 22, 2023**

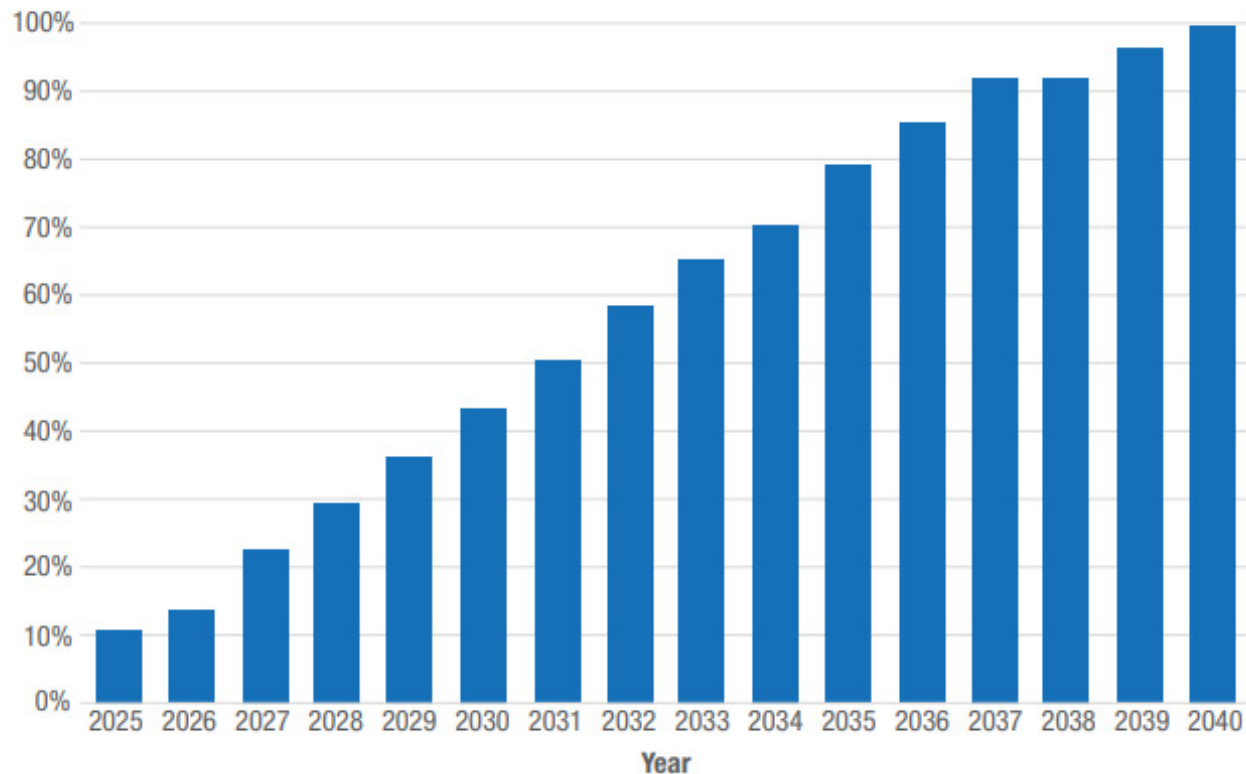
# Agenda

- Ice Breaker!
- Bus Electrification at the MBTA
- Project Purpose and Benefits
- Project Overview
- Project Cost Estimate and Schedule



# Bus Electrification Plan

Percent Bus Fleet Electric



**The MBTA aims to fully electrify its bus fleet by 2040** – one of the most aggressive electrification timelines in the United States – using battery electric buses (BEBs)

- Construct new facility with charging equipment every 2-3 years – \$4.5B investment
- Parallel Electric + Hybrid bus procurements – allows for aggressive pace while meeting rider needs
- Massachusetts Climate Law requires MBTA to purchase solely zero emission buses after 2029 and fully electrify fleet by 2040



# Arborway Project Drivers

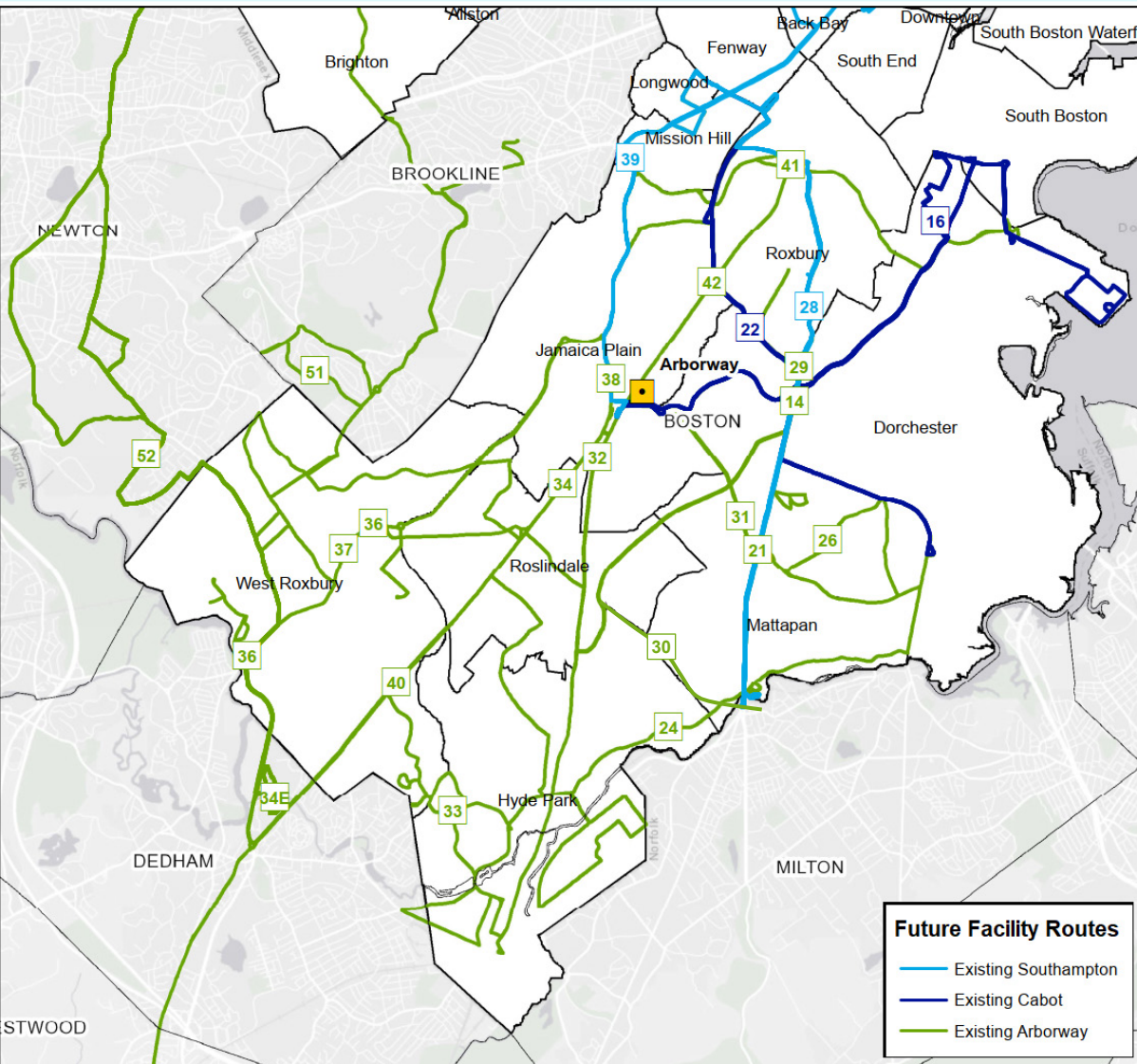


The Bus Modernization team identified Arborway as the program's next priority after Quincy, due to the following factors:

- **Fleet:** Project must be complete ahead of 2028/29 replacements of 118 CNG buses in existing facility
- **Equity:** Number of routes serving communities with high proportions of low income and POC households
- **Condition:** Temporary, inadequate, outdoor condition of facility



# Bus Electrification with New Arborway



- Expands fleet from **118 CNG buses to 200 battery electric buses** to transition both existing routes and additional routes in transit critical communities in Roxbury/Dorchester/Mattapan
- **Expanded capacity** for 60' buses
  - Route 32 to be upgraded to larger buses
  - Existing 60' routes – #28 on Blue Hill Ave and #39 on Centre Street – shifted to Arborway and provided with battery electric buses
  - **40% of local buses in Boston** will be electric upon completion – including all bus service in Jamaica Plain, Mattapan, Roslindale, and Hyde Park

# Public Engagement Overview

Date	Meeting
9/28/21	Jamaica Plain Neighborhood Council (JPNC) Update
<b>12/9/21</b>	<b>MBTA Kick-off Public Meeting</b>
2/7/22	Greater Mattapan Neighborhood Council Update
3/2/22	Greater Ashmont Main Streets Update
3/14/22	Stonybrook Neighborhood Association Update
3/30/22	Emerald Necklace Conservancy Update
5/9/22	Emerald Necklace Conservancy Update
5/17/22	WalkUP Roslindale Update
6/23/22	Emerald Necklace Conservancy Update
6/28/22	JPNC Update
9/27/22	JPNC Update
1/9/23	Stonybrook Neighborhood Association Update
2/10/23	Emerald Necklace Conservancy Update
4/6/23	Emerald Necklace Conservancy Update
5/22/23	JPNC – Arborway Yard Committee Update

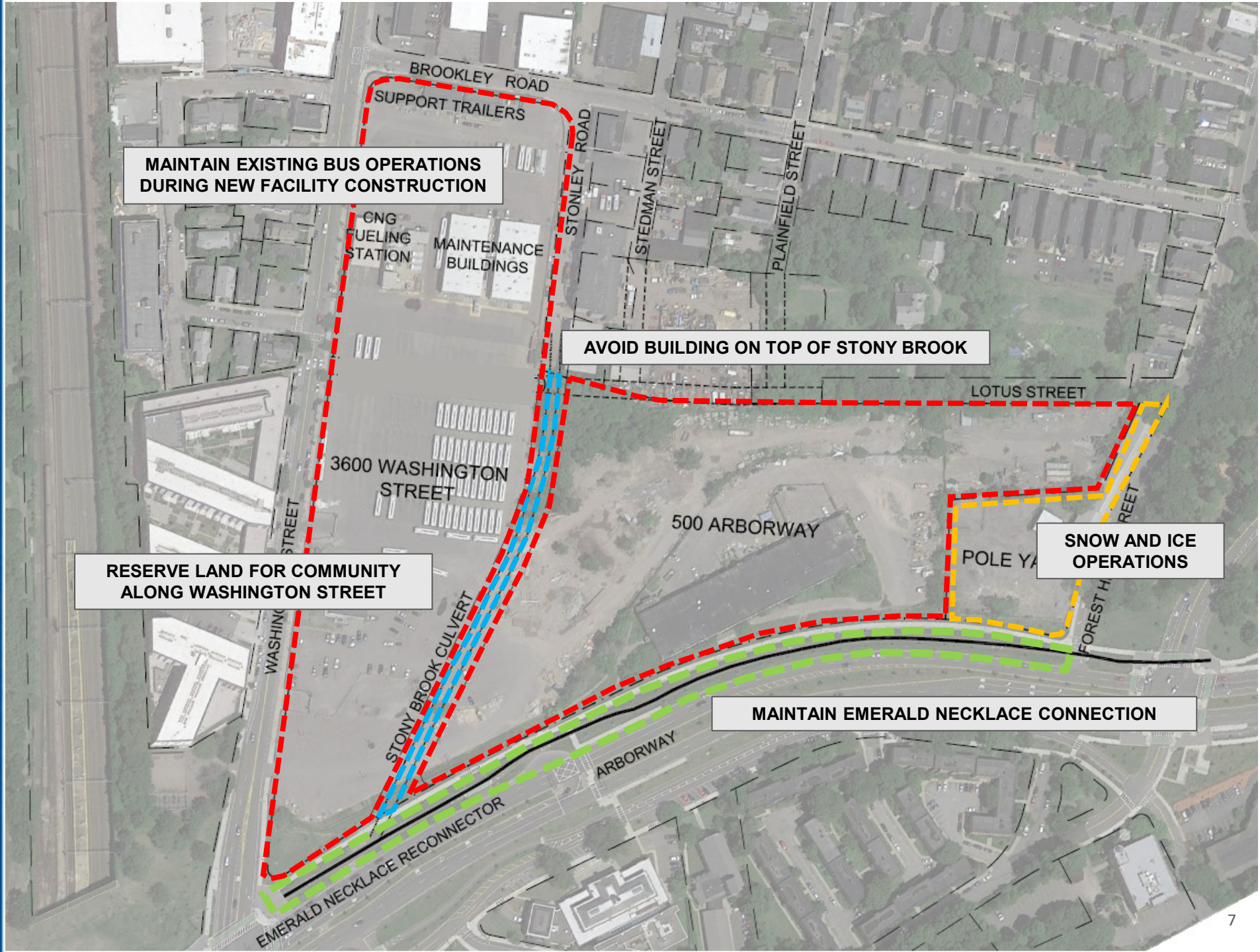
## Summary of issues raised to date:

- Acreage for affordable housing
- Maintenance of critical City of Boston functions
- Site design/Landscape plan and additional green space
- Building design's responsiveness to surrounding environment
- Fleet size/traffic impacts/parking
- Pedestrian/bicycle safety across Emerald Necklace Connector
- Community involvement/feedback



# Existing Site Constraints

- Modern, all indoor facilities require large, rectangular shaped footprints
- Stony Brook culvert bisects site
- Washington Street parcel contains existing operations and is preferred for community uses
- City of Boston DPW functions need to be accommodated





# Project Overview

- Two level all-indoor storage and maintenance capacity for **200 battery electric buses**
- Modern and safe working conditions
- **6.82 acres** dedicated to community uses – similar parcel to 2006 plan
- Maintains **1.3 acres** for **DPW** functions
- Maintains 1.2 acres Emerald Necklace Connection













Current view from Arborway















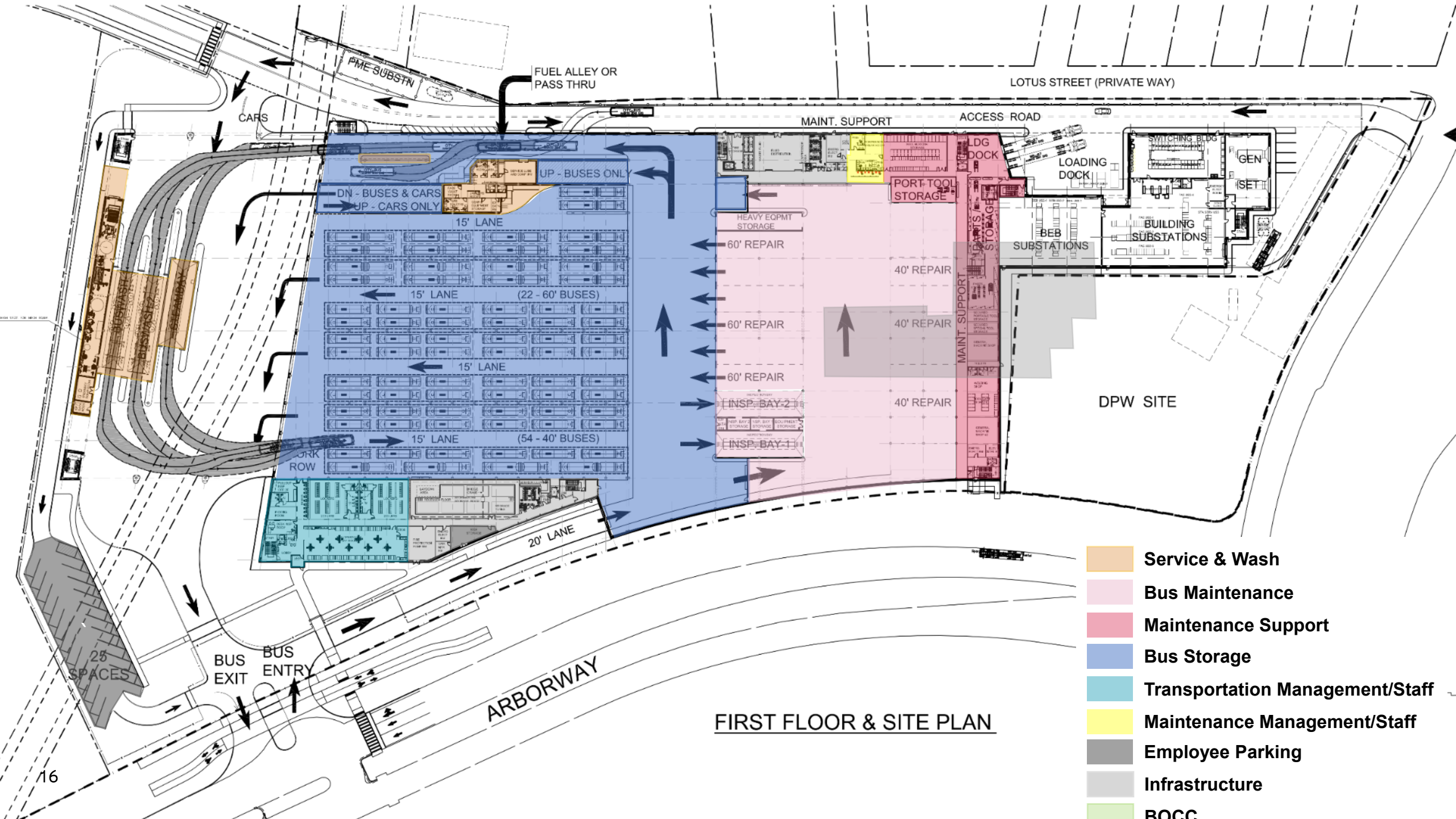


# CONCEPTUAL ONLY – VIEW OF WASHINGTON STREET WITH TEST FIT FOR FUTURE DEVELOPMENT REPRESENTATION ONLY\*



\*Note that any future development would be led by the City of Boston and informed by past and future community process





PME SUBSTN

FUEL ALLEY OR PASS THRU

LOTUS STREET (PRIVATE WAY)

MAINT. SUPPORT

ACCESS ROAD

UP - BUSES ONLY

DN - BUSES & CARS

UP - CARS ONLY

15' LANE

15' LANE

15' LANE

15' LANE

(22 - 60' BUSES)

(54 - 40' BUSES)

20' LANE

HEAVY EQPMT STORAGE

60' REPAIR

60' REPAIR

60' REPAIR

INSP. BAY-2

INSP. BAY-1

PORT TOOL STORAGE

40' REPAIR

40' REPAIR

40' REPAIR

40' REPAIR

DG DOCK

LOADING DOCK

BEB SUBSTATIONS

BUILDING SUBSTATIONS

SWITCHING BLDG

GEN

SET

DPW SITE

BUS EXIT

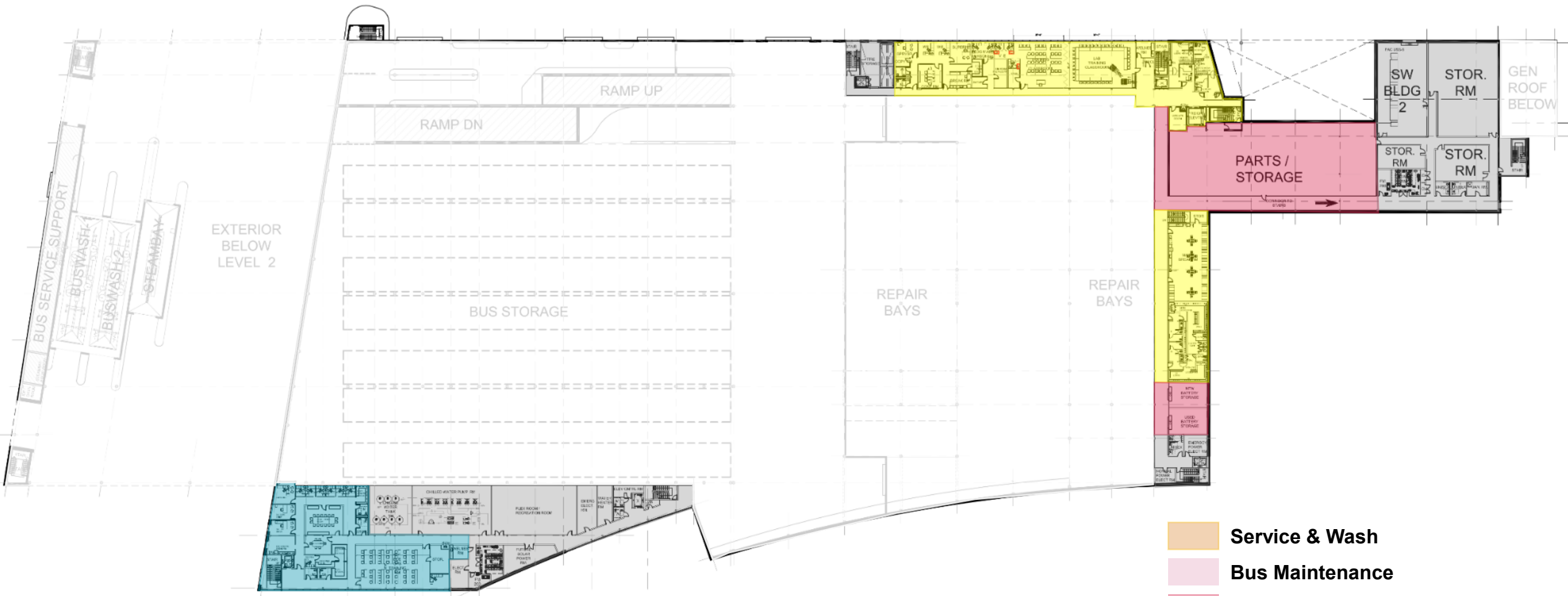
BUS ENTRY

ARBORWAY

FIRST FLOOR & SITE PLAN

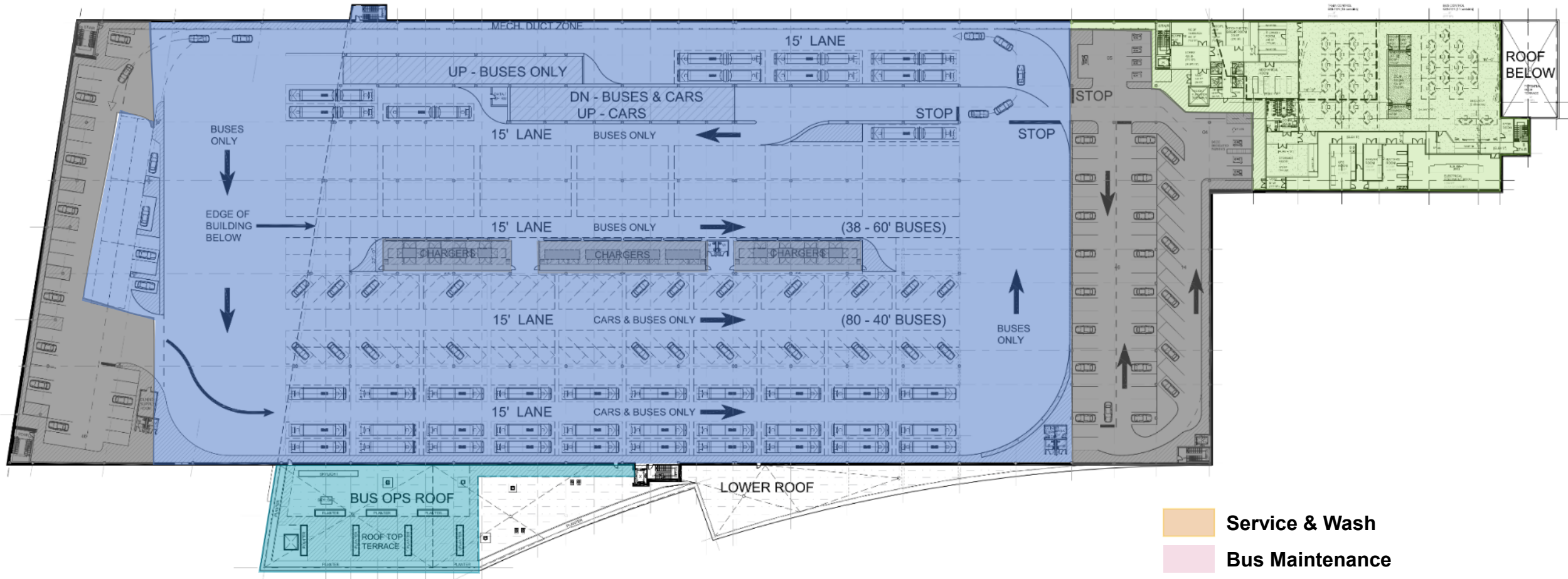
- Service & Wash
- Bus Maintenance
- Maintenance Support
- Bus Storage
- Transportation Management/Staff
- Maintenance Management/Staff
- Employee Parking
- Infrastructure
- BOCC





**FIRST FLOOR MEZZANINE**

- Service & Wash
- Bus Maintenance
- Maintenance Support
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- BOCC



**SECOND FLOOR & BOCC PLAN**



# Site Access

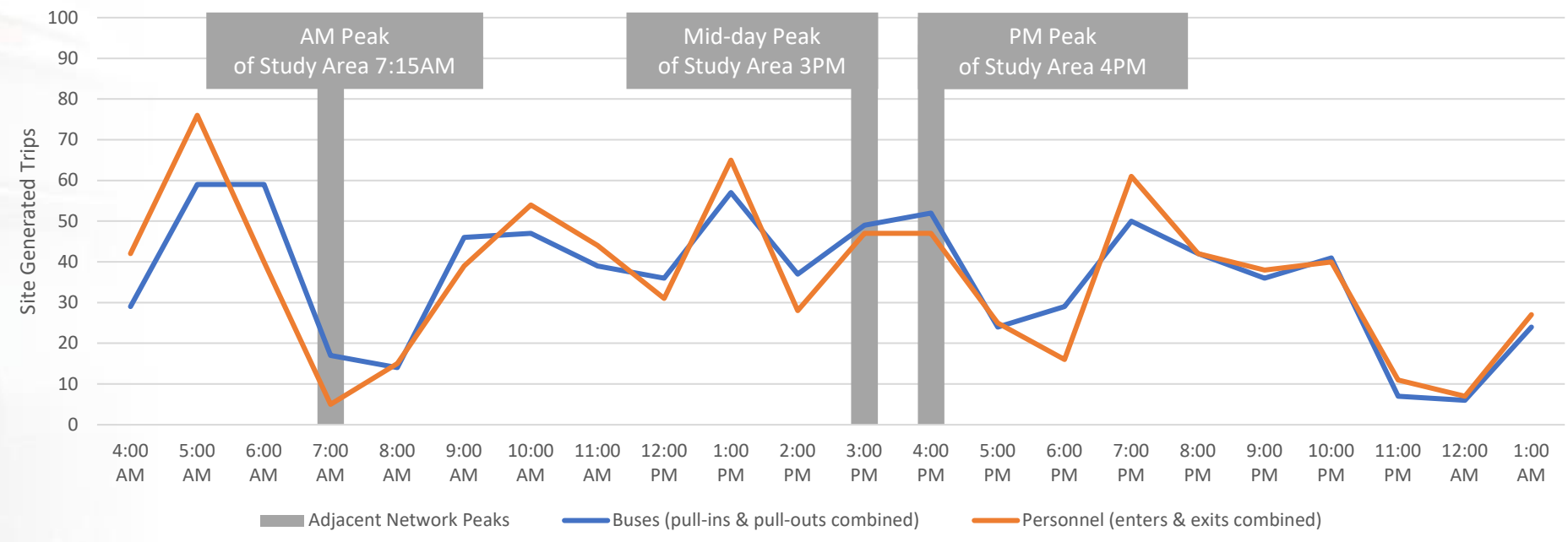
- Narrowed drive aisles to increase green space
- Minimized employee parking spaces to the extent possible
- DCR Construction and Access permit
- Access Option: buses exiting via Washington St.



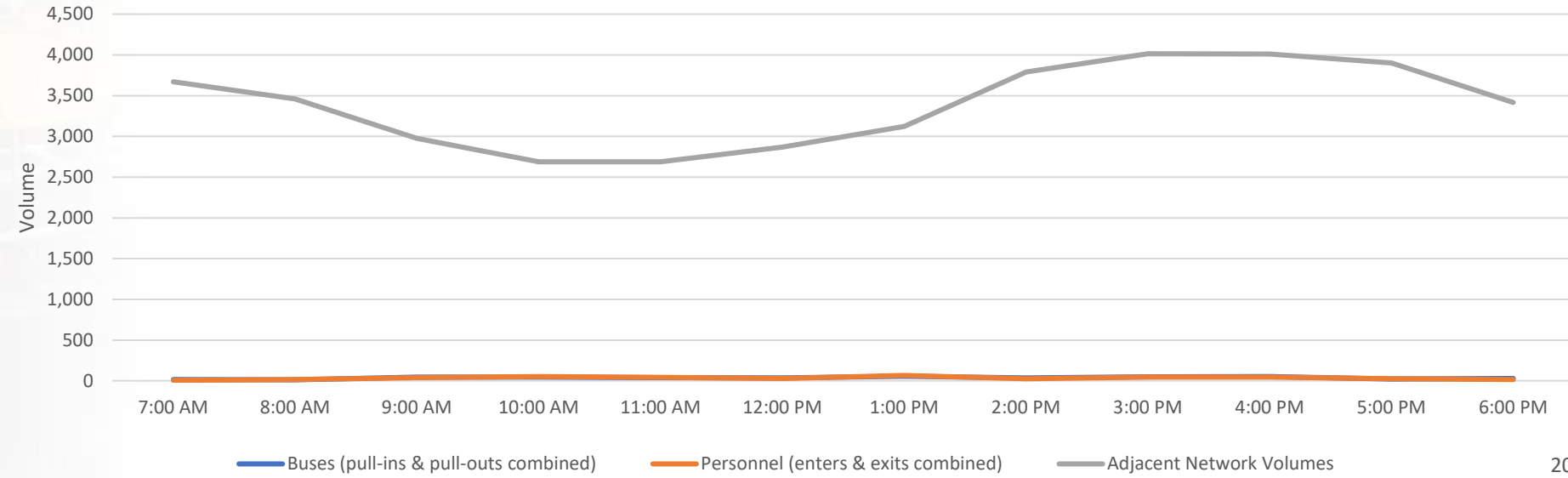
# Site Access – Traffic Impacts

- Increase bus fleet from 118 to 200 buses, including spares
- Approx. 200 employee parking spaces
- Peak access times for facility occurs outside peak traffic times
  - Approximately 12 buses enter or exit the facility ion morning peak for Study Area – 0.2% vehicles on the road at the time
  - Approximately 30 employees and other vehicles enter or exit in that same time period - 0.3% of trips on the road at the time

Trip Generation-Future Fleet



Volume of Washington Street/Arborway Intersection Compared to Future Site Trip Volume





# Concept – Bus Charging

- **Overhead charging** using pantograph system
- **Software** will help orchestrate bus charging and dispatch
- **Utility coordination** to support increased power load
- Evaluate opportunities for **supplemental charging along routes**



Edmonton Transit Service (ETS) battery electric buses charging by overhead pantograph charger.

# Sustainable and Resilient Building Systems

## Heating/Cooling

- All electric system meets latest building code standards and carbon reduction strategies
- Sized for future cooling needs based on climate projections

## Power

- Building load and bus charging requires significant power infrastructure and coordination with Eversource
- Redundant power feeds from separate substations support resiliency

## Water

- Water reclamation system designed to reuse up to 63% of water in bus wash, with an additional rainwater harvesting system for added benefit
- Conducted extensive modeling to size stormwater systems based on future, heavier precipitation expected with climate change



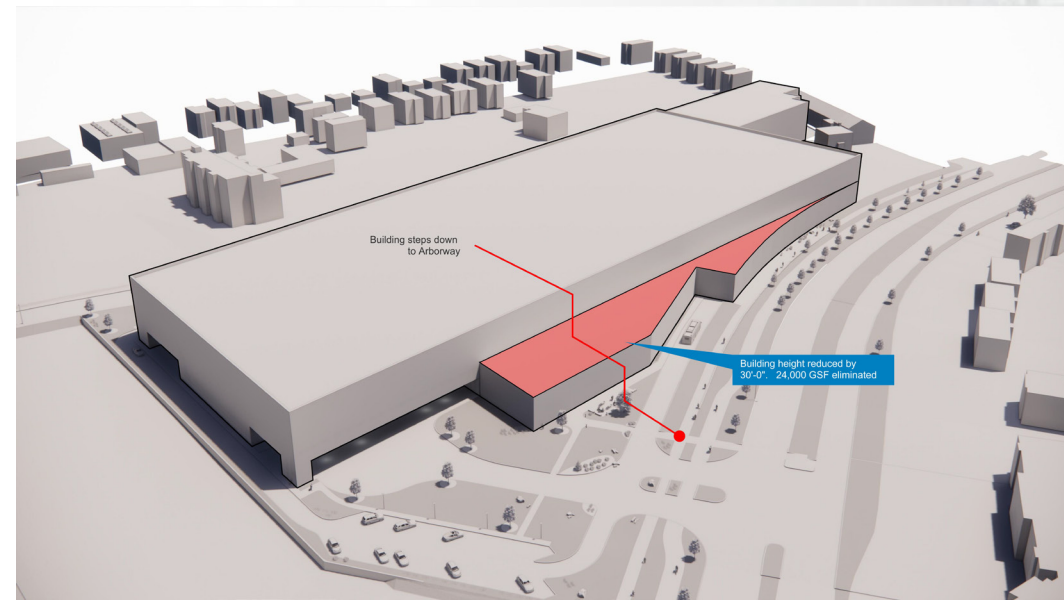
# Recent Modifications + Future Considerations

## Change Based on Stakeholder Feedback

- Reduced height of 2<sup>nd</sup> level (above front space, Back-up OCC)
- Reduced height by two feet
- Reduced footprint of surface parking lot and adjusted circulation
- Narrowed drive-access along Arborway/increased green space
- Added delivery truck exit at Forest Hills Street
- Refined façade design

## Future Considerations

- Location of surface parking
- Façade design
- Standard operating procedures for bus exits
- Landscaping



# Preliminary Cost Estimate

- Project budget will be set at 30% design in alignment with Federal Transit Administration Guidelines
- Construction cost estimate does not include all project costs – professional services, utility service upgrade, MBTA internal costs, project contingency
- \$36M in funding already available for professional services
- Construction funding to be requested in Fall 2025

Description	Cost
Bus Facility	\$296M
Back Up OCC (equipment only)	\$14M
<i>Direct Construction</i>	<i>\$310M</i>
Contingency (30%)	\$93M
<i>Construction with Contingency</i>	<i>\$403M</i>
Escalation (18.7% - mid-point 2027)	\$75M
CM Fee (est. 3.5%)	\$16M
<b>Construction Total</b>	<b>\$495M</b>



# Timeline / Public Process and Next Steps

- **Preliminary Design – Now– July 2023**
  - Coordination with City of Boston, BWSC, Eversource, and DCR (mid-June)
  - 15% public meeting (today)
  - Open House at Forest Hills Station – 6/28
  - MEPA Notice of Project Change Publication – 7/10
  - Incorporate feedback from internal and external stakeholders
- **Final Design Phase – Summer 2023 – 2025**
  - Award contract at July 27 Board Meeting
  - Continued stakeholder and public engagement
- **Targeted Construction Start – 2025**
- **Targeted Completion – end of 2028**





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

Email [ArborwayBus@mbta.com](mailto:ArborwayBus@mbta.com) to get on our list!

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