AGENDA

01 | Project Overview

02 | Evaluation Framework

03 | Potential Alignments

This presentation provides a general overview of the study including the purpose, need, evaluation framework and potential alignments identified by the project team.
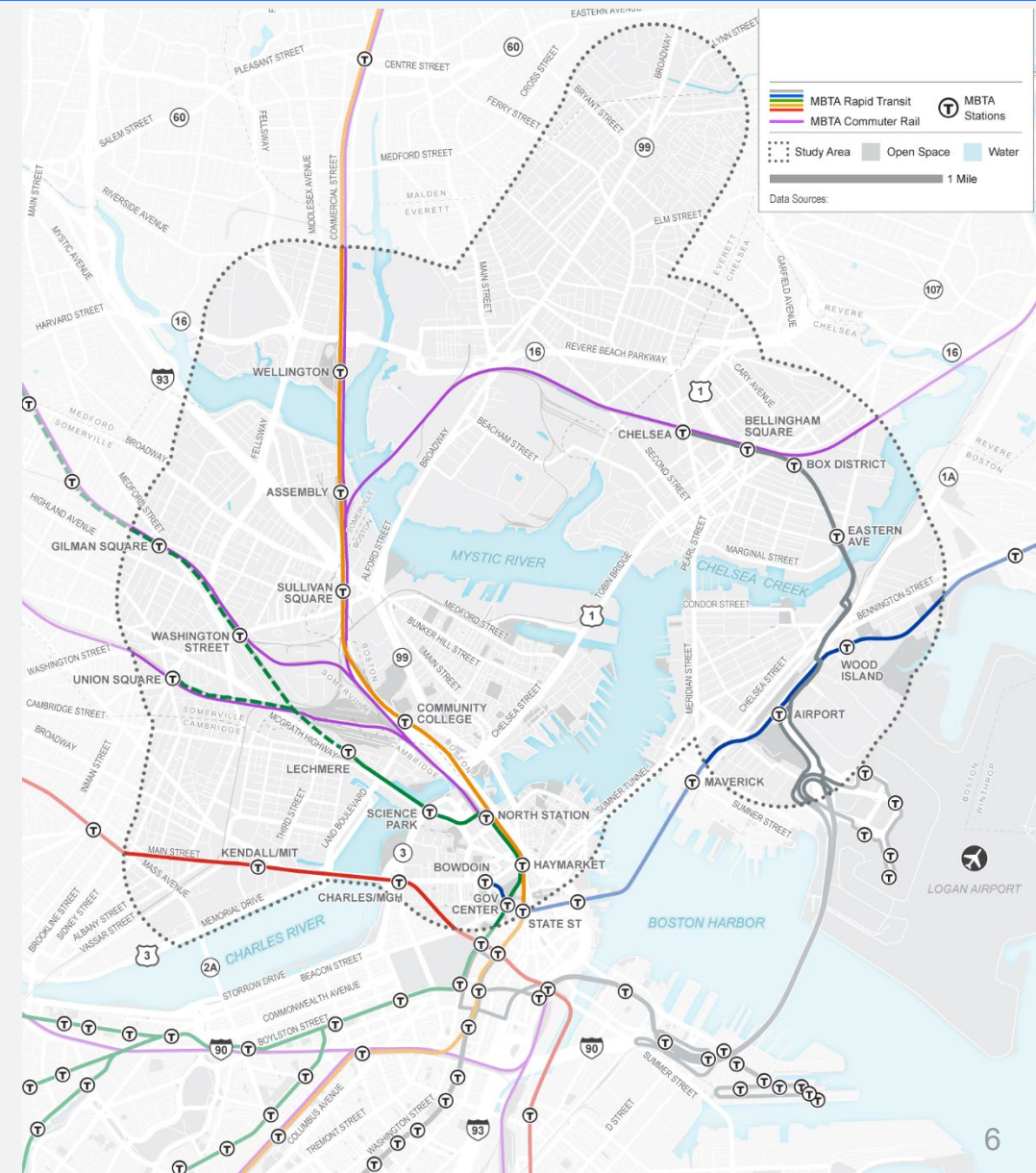
Project Overview

What is the project, and why are we doing it?

Project Purpose

The purpose of the **Silver Line Extension Alternatives Analysis** is to assess the feasibility, utility, and cost of various alignment and service frequency options of an extension of the Silver Line, providing high quality transit from Chelsea through Everett and on to Somerville, Cambridge and/or Boston.

Project Need

- This project's objective is to add transit service capacity and connectivity that will **knit together Chelsea and Everett with nearby communities** that are not currently well connected with high-quality transit.
    - o Existing transit service is not competitive with driving for many types of trips being made to and from Chelsea and Everett.
    - o Despite the lack of competitiveness, bus ridership in Chelsea and Everett during the pandemic has been more durable than in other communities.
    - o Chelsea, Everett, Somerville, and Cambridge are experiencing rapid growth in housing and employment in areas that are not currently well served by transit.
    - o There are existing transit connections in Chelsea, Everett, and nearby communities that could be leveraged and improved into a high-quality cohesive network.

Study Area

The study area was developed to encompass likely study alignments that would meet the project's purpose, with a reasonable buffer to reflect uncertainty.

Project Schedule

Task	2020	2021				2022
	Fall	Winter	Spring	Summer	Fall	Winter	Spring
Engage with the Public & Stakeholders		★	★ ★		★ ★	★ ★	●
Develop Goals and Objectives			●				
Understand Existing and Future No Build Conditions		●					
Define Alternatives		○ ●					
Analyze Alternatives			○		●		
Prepare Final Report						○	●

Public and Stakeholder Outreach

★ Working Group Meetings

★ Public Information Meetings
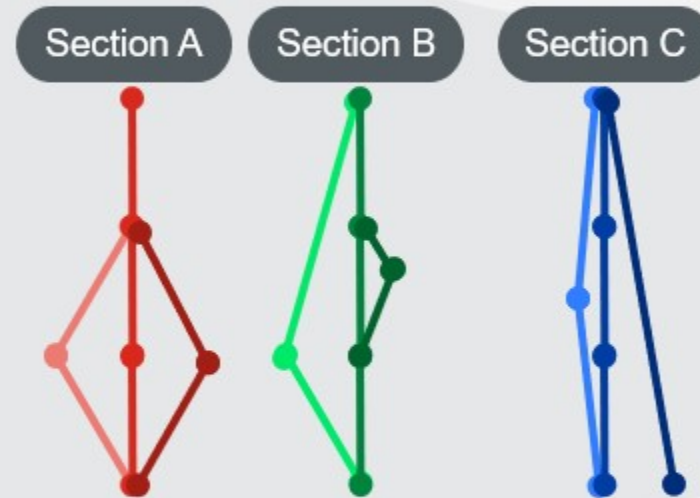
We Are Here

Alternatives Evaluation Framework

Screening

Review a wide host of ideas and remove all those that don't meet the project's purpose

We Are Here

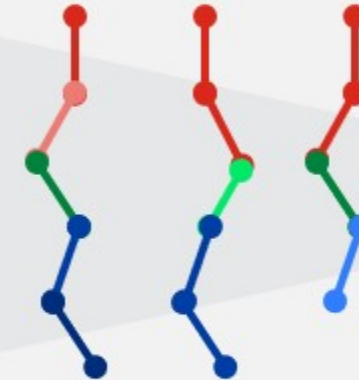## Tier 1 Evaluation

Section A Section B Section C

Test different alignments within each section against goals and objectives

NOTE: Alignments shown above are illustrative, and not intended to represent any specific alignments!

Tier 2 Evaluation

Entire Route

LPA

Test best alignments as complete route against goals and objectives
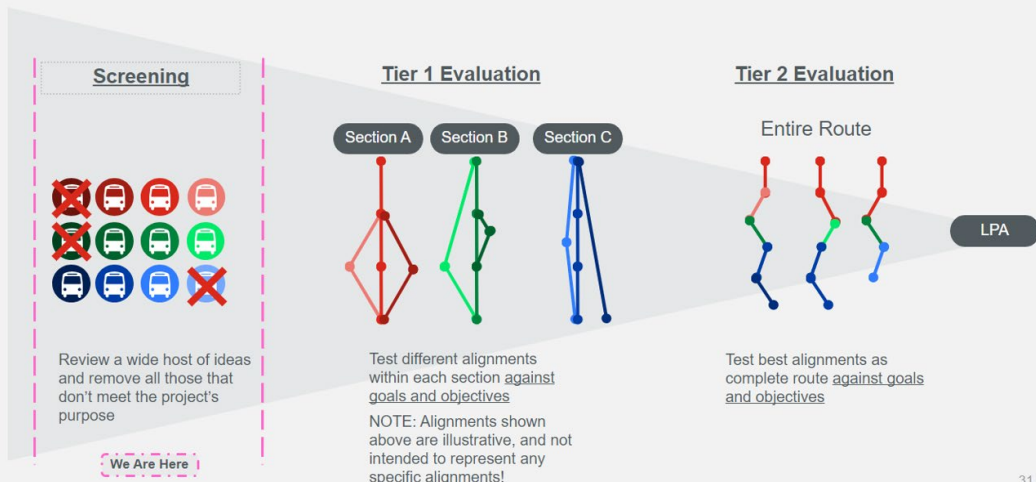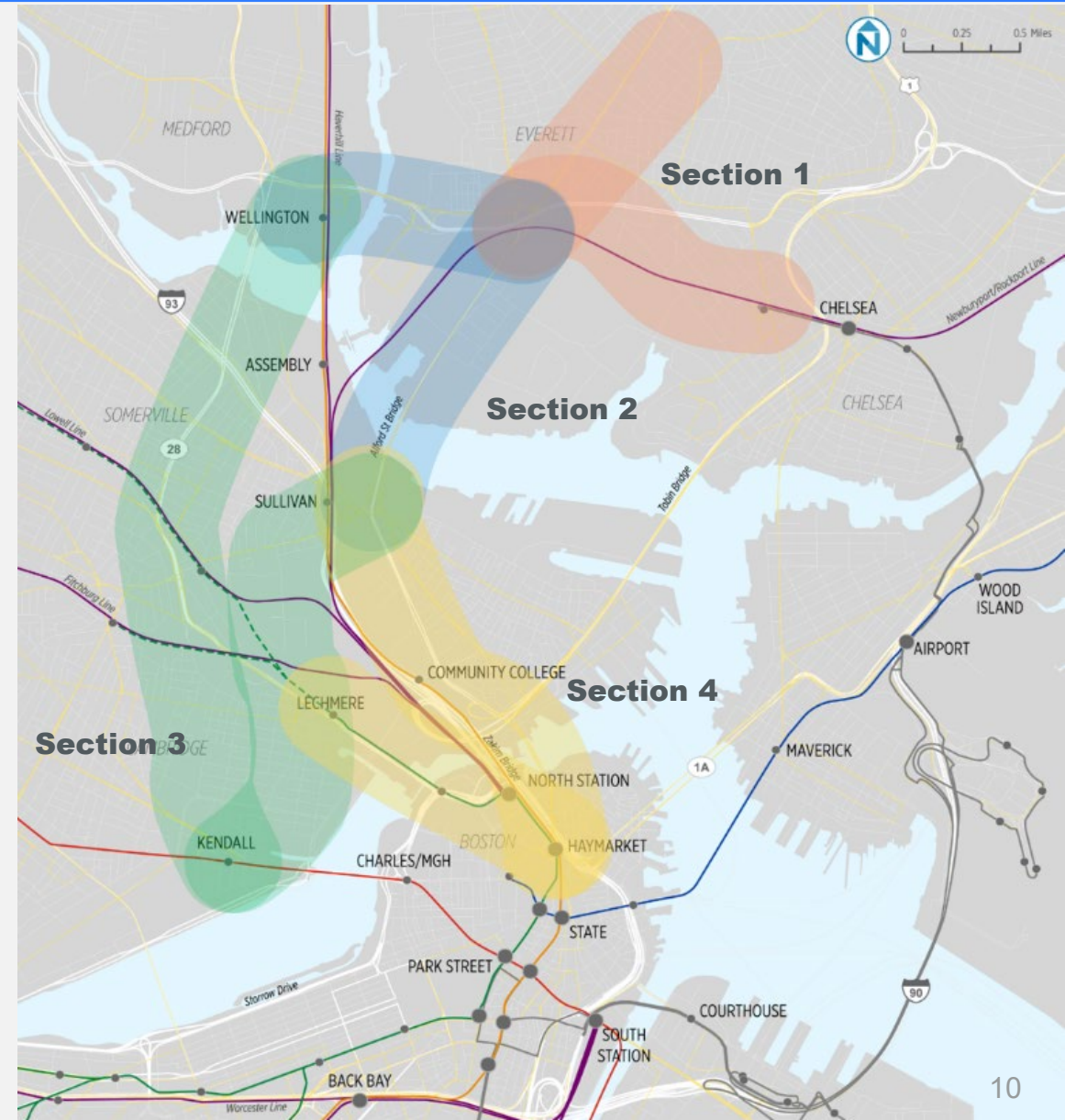
Potential Alignments to be Considered

A draft set of the long list of ideas

Screening and the Tier 1 Evaluation are Done at a Geographic Section Level

- o Section 1: Chelsea to Everett

- o Section 2: Everett to Orange Line

- o Section 3: Orange Line to Kendall

- o Section 4: Orange Line to Boston

Screening

Review a wide host of ideas and remove all those that don't meet the project's purpose

We Are Here

Tier 1 Evaluation

Section A   Section B   Section C

Test different alignments within each section against goals and objectives

NOTE: Alignments shown above are illustrative, and not intended to represent any specific alignments!

Tier 2 Evaluation

Entire Route

LPA

Test best alignments as complete route against goals and objectives

31

Section 1
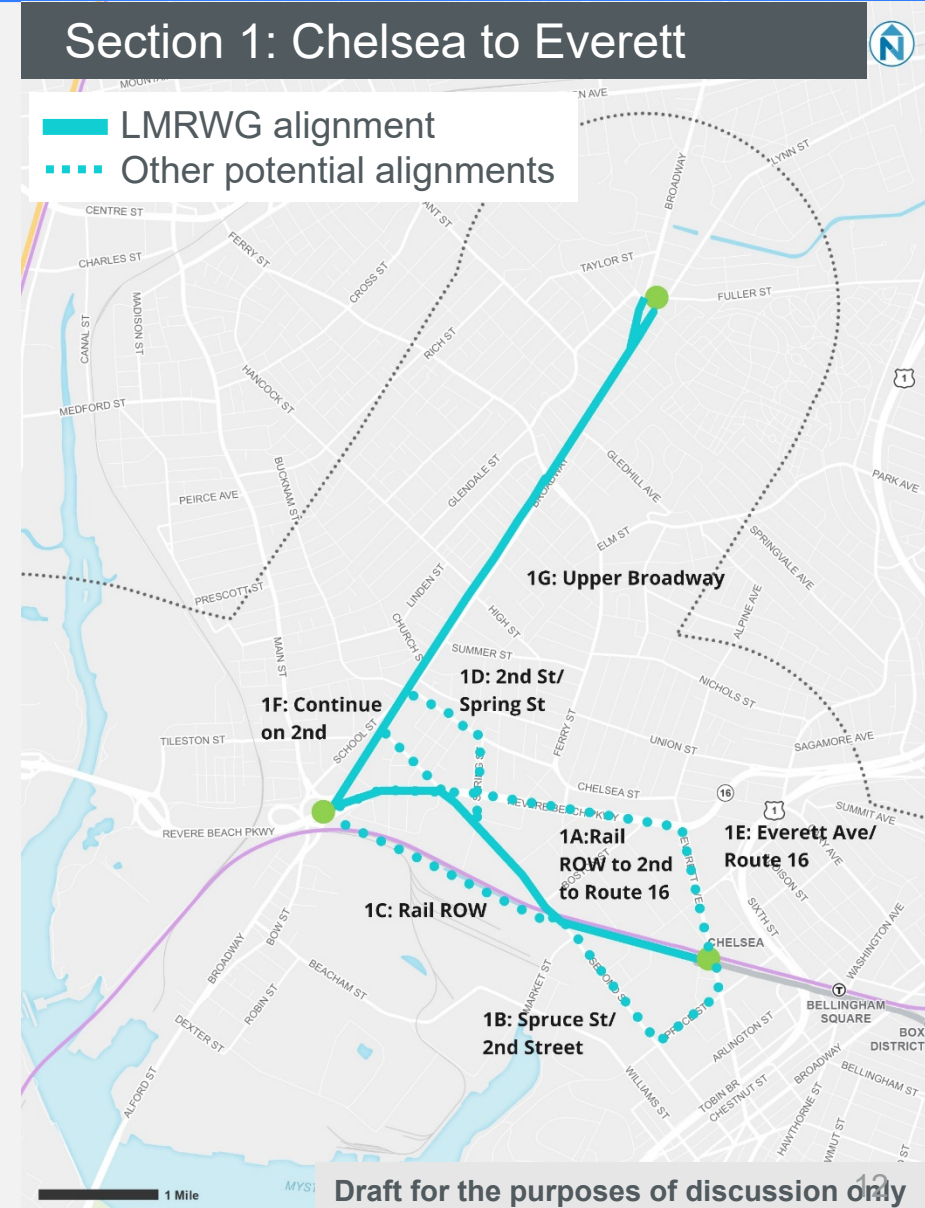
Section 2

Section 4

Section 3

10

Potential Alignments

- Study team identified a universe of potential alignments based on the existing conditions analysis, stakeholder discussions, and past studies

- These alignments have been refined in collaboration with stakeholders and the public (including tonight!)

- Not all alignments shown tonight will pass through the "Screening" process

- Alignment sections may be combined in different ways as we determine what Alternatives should advance and ultimately select the final Locally Preferred Alternative

Potential Alignments: Section 1

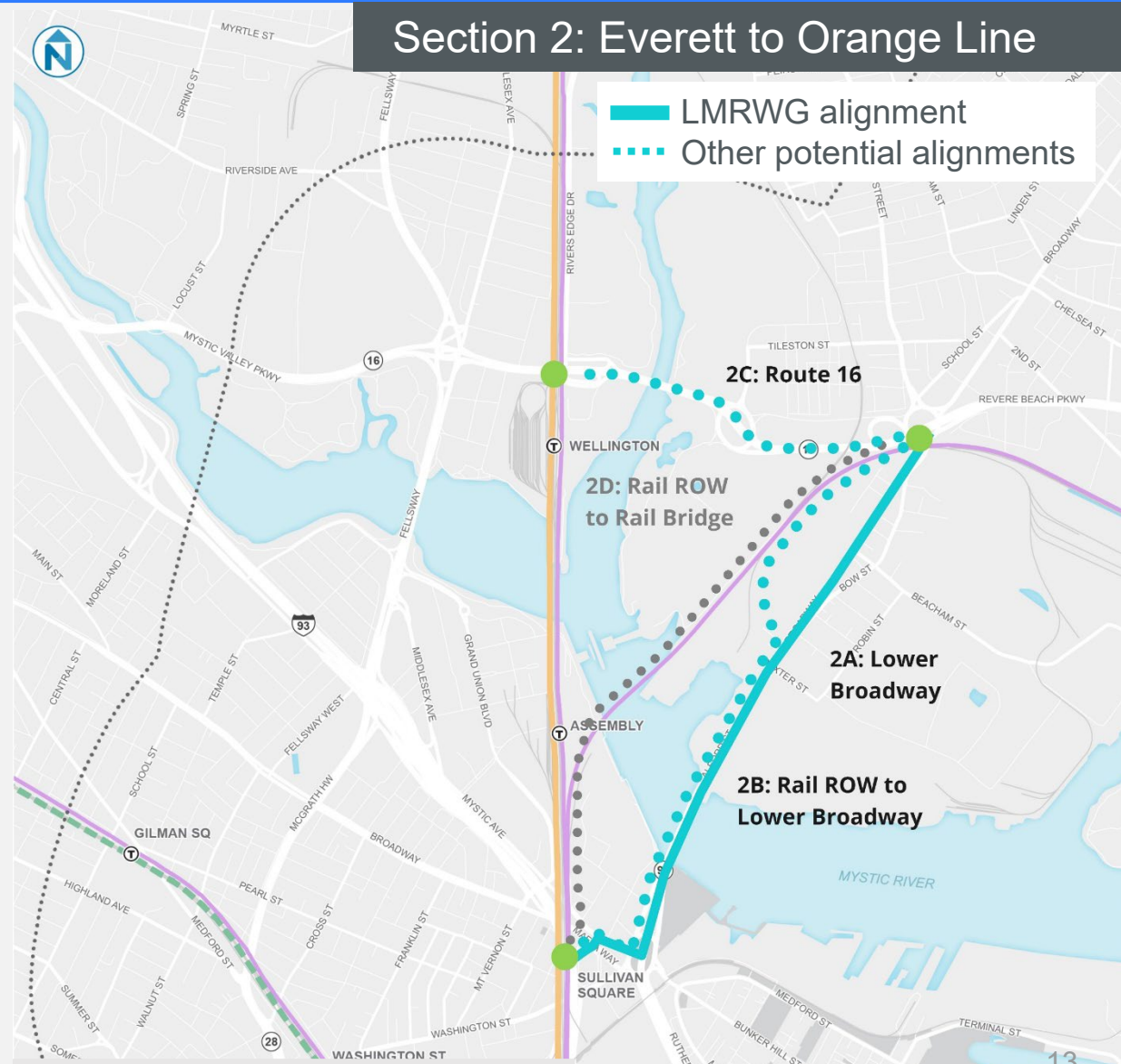| Code	Name	Description
1A	Rail ROW to 2nd to Route 16	Chelsea Station – Rail ROW – 2nd Street – Route 16 – Sweetser Circle **Preferred Alignment from Lower Mystic Study**
1B	Spruce Street / 2nd Street	Chelsea Station – Everett Avenue – Spruce Street
1C	Rail Right of Way	Rail ROW – Sweetser Circle
1D	2nd Street / Spring Street Option	Spring Street – Chelsea Street – Broadway – Sweetser Circle
1E	Everett Avenue / Route 16	Chelsea Station – Everett Avenue – Route 16 – Sweetser Circle **NOTE: Route 16 Study Forthcoming**
1F	Continue on 2nd Option	Chelsea Station – Rail ROW – 2nd Street – Broadway – Sweetser Circle
1G	Upper Broadway	Glendale Square – Broadway – Sweetser Circle

NOTE: The City of Everett is leading a study at Sweetser Circle currently Underway

Section 1: Chelsea to Everett

LMRWG alignment
Other potential alignments

1G: Upper Broadway
1D: 2nd St/ Spring St
1F: Continue on 2nd
1A: Rail ROW to 2nd to Route 16
1E: Everett Ave/ Route 16
1C: Rail ROW
1B: Spruce St/ 2nd Street

Draft for the purposes of discussion only

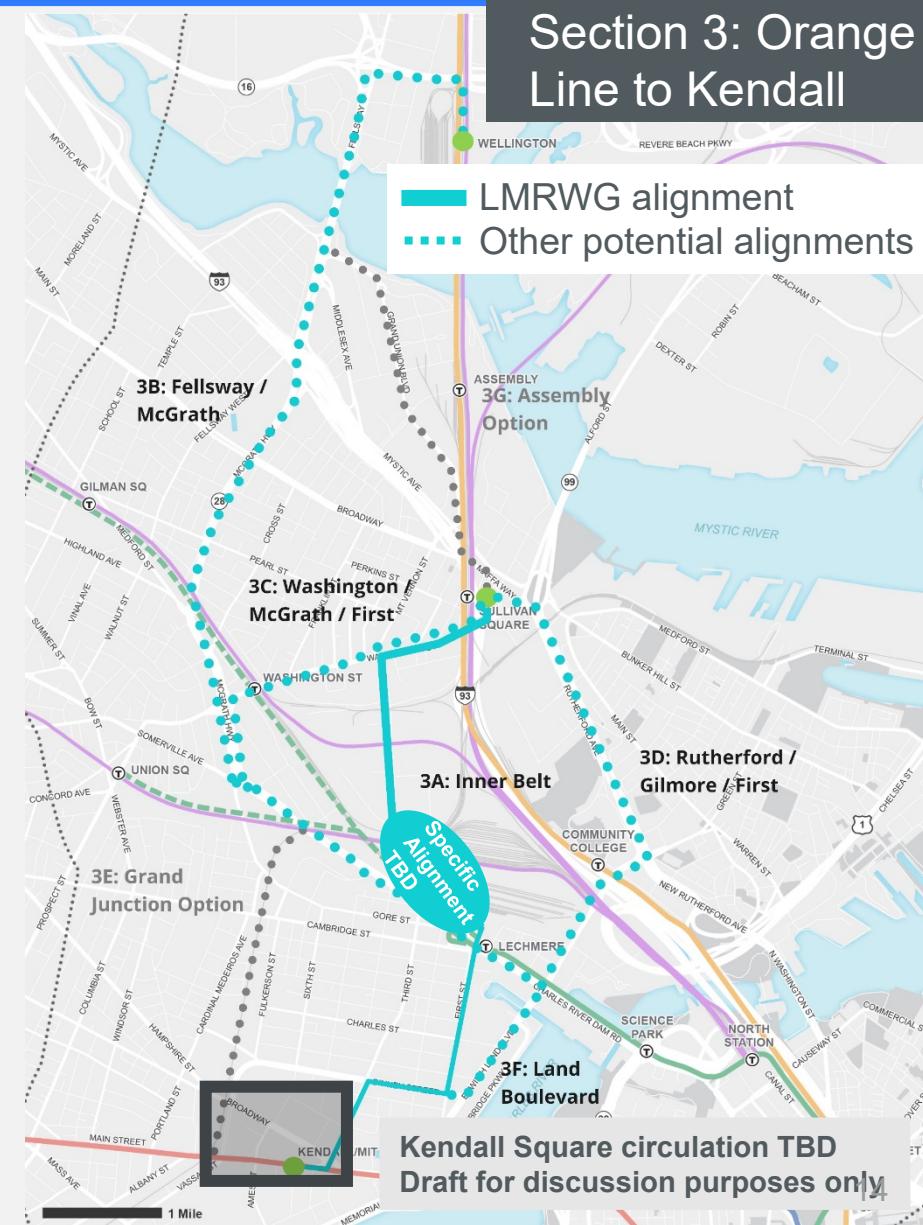| Code	Name	Description
2A	Lower Broadway	Sweetser Circle – Lower Broadway – Sullivan Square **Preferred Alignment from Lower Mystic Study**
2B	Rail Right of Way to Lower Broadway	Sweetser Circle – Rail ROW – Lower Broadway – Sullivan Square
2C	Route 16	Sweetser Circle – Revere Beach Parkway – Wellington
2D	Rail ROW to Rail Bridge	Rail ROW – New Bridge – New Alignment – Sullivan Square **NOTE: Concerns about feasibility**

Section 2: Everett to Orange Line

LMRWG alignment
Other potential alignments

2C: Route 16
2D: Rail ROW to Rail Bridge
2A: Lower Broadway
2B: Rail ROW to Lower Broadway

Draft for the purposes of discussion only

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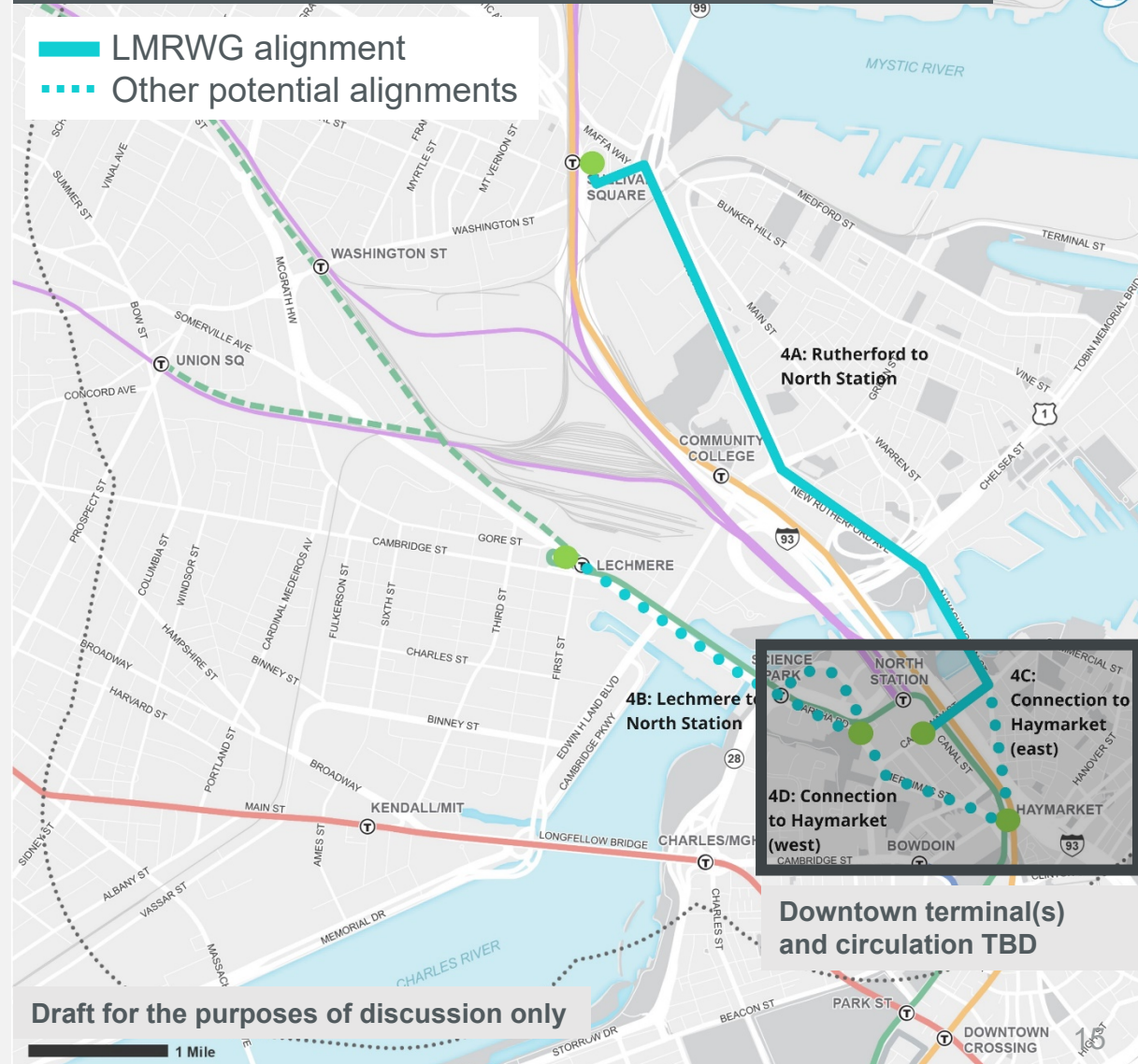| Code	Name	Description
3A	Inner Belt	Sullivan Square – Washington – Inner Belt Road – McGrath – Lechmere – First Street – Binney Street – Third Street – Kendall Square **Preferred Alignment from Lower Mystic Study** **NOTE: Concerns about feasibility**
3B	Fellsway / McGrath	Wellington – Fellsway – McGrath – Lechmere – First Street – Binney Street – Third Street – Kendall Square
3C	Washington / McGrath	Sullivan Square – Washington – East Somerville – McGrath – Lechmere – First Street – Binney Street – Third Street – Kendall Square
3D	Rutherford / Gilmore	Sullivan Square – Rutherford Avenue – Gilmore Bridge – Charles River Dam Road – Lechmere – First Street – Binney Street – Third Street – Kendall Square
3E	Grand Junction Option	(From McGrath) – Grand Junction Line – Binney Street – Kendall Square **NOTE: Concerns about feasibility**
3F	Land Blvd Option	(From Lechmere) – Charles River Dam Road – Land Boulevard – Binney Street – Third Street – Kendall Square
3G	Assembly Option	Wellington – Grand Union – Sullivan – Washington (continues alignment of 3A) **NOTE: Concerns about feasibility**

LMRWG alignment
Other potential alignments

Kendall Square circulation TBD
Draft for discussion purposes only
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Potential Alignments: Section 4

Code	Name	Description
4A	Rutherford to North Station	Sullivan Square – Rutherford Avenue – Washington Street – North Station **Preferred Alignment from Lower Mystic Study**
4B	Lechmere to North Station	Lechmere – Charles River Dam Road – Marth Street – North Station – Nashua Street
4C	Connection to Haymarket Option (from the east)	(From Washington Street Bridge) – Washington Street – Haymarket
4D	Connection to Haymarket (from the west)	(From Washington Street or North Station) – Merrimac Street – Haymarket

Section 4: Orange Line to Downtown Boston

— LMRWG alignment
⋯ Other potential alignments

4A: Rutherford to North Station

4B: Lechmere to North Station

4C: Connection to Haymarket (east)

4D: Connection to Haymarket (west)

Downtown terminal(s) and circulation TBD

Draft for the purposes of discussion only

1 Mile

15

Next Steps

Where do we go from here?

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Next Steps

Provide feedback on our Goals and Objectives and potential alignments through our online feedback form and web-based map, available at:

mbta.com/slx

Between Now and Public Meeting #2 we will:

- Finalize our goals and objectives based on public feedback

- Screen and evaluate alignment concepts against goals and objectives

Appendix:

Goals and Objectives

Setting the Stage for Making Decisions

Silver Line Gateway Study

SL3 to Chelsea construction begins

Broadway Inbound Bus Lane -Everett

SL3 to Chelsea construction complete, service starts

Sweetser Circle Bus Lanes, Broadway Outbound Bus Lanes (Everett) Main Street

Silver Line Extension Alternatives Analysis begins

Silver Line Extension Alternatives Analysis complete

We are here

2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

Go Boston 2030

Everett Transit Action Plan

MBTA Focus 40

Lower Mystic Regional Working Group Report

Envision Cambridge

Somervision 2040

Goals and Objectives

Goals and Objectives provide the framework that guides the study

They help us know when we have been successful

Evaluation criteria nest within the goals and objectives, and help us understand which alignments are more effective than others

Our Goals and Objectives must be consistent with the goals and visions laid out by each community within the study area as well as the missions of MassDOT and the MBTA

Goals and Objectives

Our Goals and Objectives are drawn from other recently-completed plans:

- MBTA Focus 40

- City of Chelsea (various studies)

- Everett Transit Action Plan

- Go Boston 2030

- SomerVision 2040

- Envision Cambridge

Our Goal Areas

The major themes that will guide our work

Expand Mobility and Access

Advance Equity
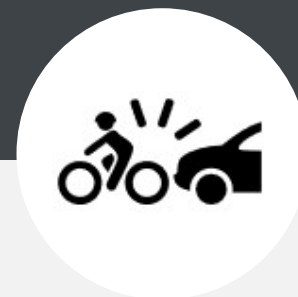
Improve Safety

Support Climate Change Resilience and Sustainability

Goal Area	Objective

Expand Mobility and Access	• **Connect residents directly with jobs, services, and other daily activities**
	   • Metric: Total employment (existing or planned) within ½ mile walk of concept
	• **Provide transit service at or near rapid-transit levels to communities not currently served by rapid-transit**
	   • Metric: Total population starting trips within ½ mile of station or stop within section
	• **Provide transit competitive* with driving for trips within and to/from the study area**
	   • Metric: NONE (Second Level Evaluation only)
	• **Maximize new connections with other transit services**
	   • Metric: Number of other transit services that can be transferred to within this section.
	• **Provide transit access to existing and planned affordable housing**
	   • Metric: Number of affordable housing units within a ½ mile of station or stop within section
	• **Leverage investments to improve existing transit services throughout the study area**
	   • Metric: Reduction in daily passenger minutes of delay on existing bus routes (if applicable)
	• **Provide transit service to areas currently experiencing and anticipating substantial increases in housing and jobs**
	   • Metric: 2040 population and employment within ½-mile of station or stop
	• **Optimize potential ridership**
	   • Metric: NONE (Second Level Evaluation only)

*Competitive: relatively similar transit travel times compared with drive times

Goal Area	Objective

Advance Equity	• **Provide transit service for transit critical populations**
	  • *Metric:* Total transit critical population starting trips within ½ mile of station or stop within section
	• **Ensure service frequency and span matches the travel patterns of transit critical populations**
	  • *Metric: NONE (Second Level Evaluation only)*
	• **Make improvements to existing transit service utilized by transit critical populations**
	  • *Metric: % of reduction in daily passenger minutes of delay on existing bus routes that is experienced by transit critical populations*
	• **Optimizes potential ridership among transit critical populations**
	  • *Metric: NONE (Second Level Evaluation only)*

Improve Safety	• **Provide safe and comfortable pedestrian access to and from stations**
	  • *Metric: Can an accessible pedestrian path to any station in this section from the nearest intersection be accommodated in the existing or potential right-of-way? (Yes/No)*
	• **Provide comfortable bicycle facilities along or parallel to project corridors**
	  • *Metric: Existing and/or potential bicycle LOC within ½ mile of concept*
	• **Address identified transportation safety issues along project corridors**
	  • *Metric: Ability to address known safety issues identified through Existing Conditions Analysis*

Support Climate Change Resilience and Sustainability	• **Increase transit mode share in the study area**
	  • *Metric: NONE (Second Level Evaluation only)*
	• **Minimize Greenhouse Gas Emissions from trips within the study area**
	  • *Metric: NONE (Second Level Evaluation only)*
	• **Avoid climate change vulnerabilities of new transit infrastructure**
	  • *Metric: Ability to remain outside known areas of climate change vulnerability OR ability to construct alignment so that it would withstand climate change vulnerability*

Goal Area	Objective
Expand Mobility and Access	**Connect residents directly with jobs, services, and other daily activities** • *Metric: Number of jobs accessible via 30-, 45-, or 60-minute transit commute* **Provide transit service at or near rapid-transit levels to communities not currently served by rapid-transit** • *Metric: Number of top travel flows by served by transit that meets Key Bus Route frequency and span standards* **Provide transit competitive* with driving for trips within and to/from the study area** • *Metric: Transit travel time between key trip pairs* • *Metric: Ratio of transit time to drive travel time* **Maximize new connections with other transit services** • *Metric: Number of other services that can be transferred to within an Alternative.* **Provide transit access to existing and planned affordable housing** • *Metric: Number of affordable housing units within ½-mile of an Alternative* **Leverage investments to improve existing transit services throughout the study area** • *Metric: Reduction in daily passenger minutes of delay on existing bus routes (if applicable)* **Provide transit service to areas currently experiencing and anticipating substantial increases in housing and jobs** • *Metric: 2040 population and employment within ½-mile of station or stop* **Optimize potential ridership** • *Metric: Total daily riders, total potential market*

* Competitive: relatively similar transit travel times compared with drive times

Goal Area	Objective

Advance Equity	• **Provide transit service for transit critical populations**
	   • *Metric: Number of jobs accessible via 30-, 45-, or 60-minute transit commute for transit-critical populations*
	• **Ensure service frequency and span matches the travel patterns of transit critical populations**
	   • *Metric: Number of top travel flows by transit critical populations served by transit that meets Key Bus Route frequency and span standards*
	• **Make improvements to existing transit service utilized by transit critical populations**
	   • *Metric: % of reduction in daily passenger minutes of delay on existing bus routes that is experienced by transit critical populations*
	• **Optimizes potential ridership among transit critical populations**
	   • *Metric: % of total daily riders estimated to be within transit critical populations*
	   • *Metric: % of total potential market estimated to be within transit critical populations*

Improve Safety	• **Provides safe and comfortable pedestrian access to and from stations**
	   • *Metric: NONE (First Level Evaluation only)*
	• **Able to provide comfortable bicycle facilities along or parallel to project corridors**
	   • *Metric: NONE (First Level Evaluation only)*
	• **Address identified transportation safety issues along project corridors**
	   • *Metric: Ability for Alternative to provide a connection to an existing pedestrian and bicycle facility or to retain width for a new facility that is continuous, comfortable, and safe*

Support Climate Change Resilience and Sustainability	• **Increase transit mode share in the study area**
	   • *Metric: % change in transit mode split*
	• **Minimize Greenhouse Gas Emissions from trips within the study area**
	   • *Metric: % change in GHG emissions*
	• **Avoid climate change vulnerabilities of new transit infrastructure**
	   • *Metric: Ability to remain outside known areas of climate change vulnerability OR ability to construct alignment so that it would withstand climate change vulnerability*

Appendix:

Existing Conditions

Conditions today set the stage for how to make improvements over time

Existing Conditions

We do an Existing Conditions analysis for a few reasons

- o We want to make sure we understand how the system is used today so that our recommended changes are truly improvements

- o Sets the context of where our work is, in relation to all the work that has been done before

- o The data we compile in Existing Conditions serves as a baseline for our future work

    - Creating alternatives

    - Evaluating alternatives

    - Making a recommendation on preferred alignment

Key Takeaways from Existing Conditions

1 Everett and Chelsea have the demand and demographics to support high-frequency, high-capacity transit service

2 Study area has more "transit critical" residents than the Inner Core overall, but with significant community variation

3 Everett residents have less access to regional activity centers than residents in adjacent communities

4 Existing transit network constraints and congestion play a role in that lack of access

5 A Silver Line extension and other transit priority investments could potentially help address the gap
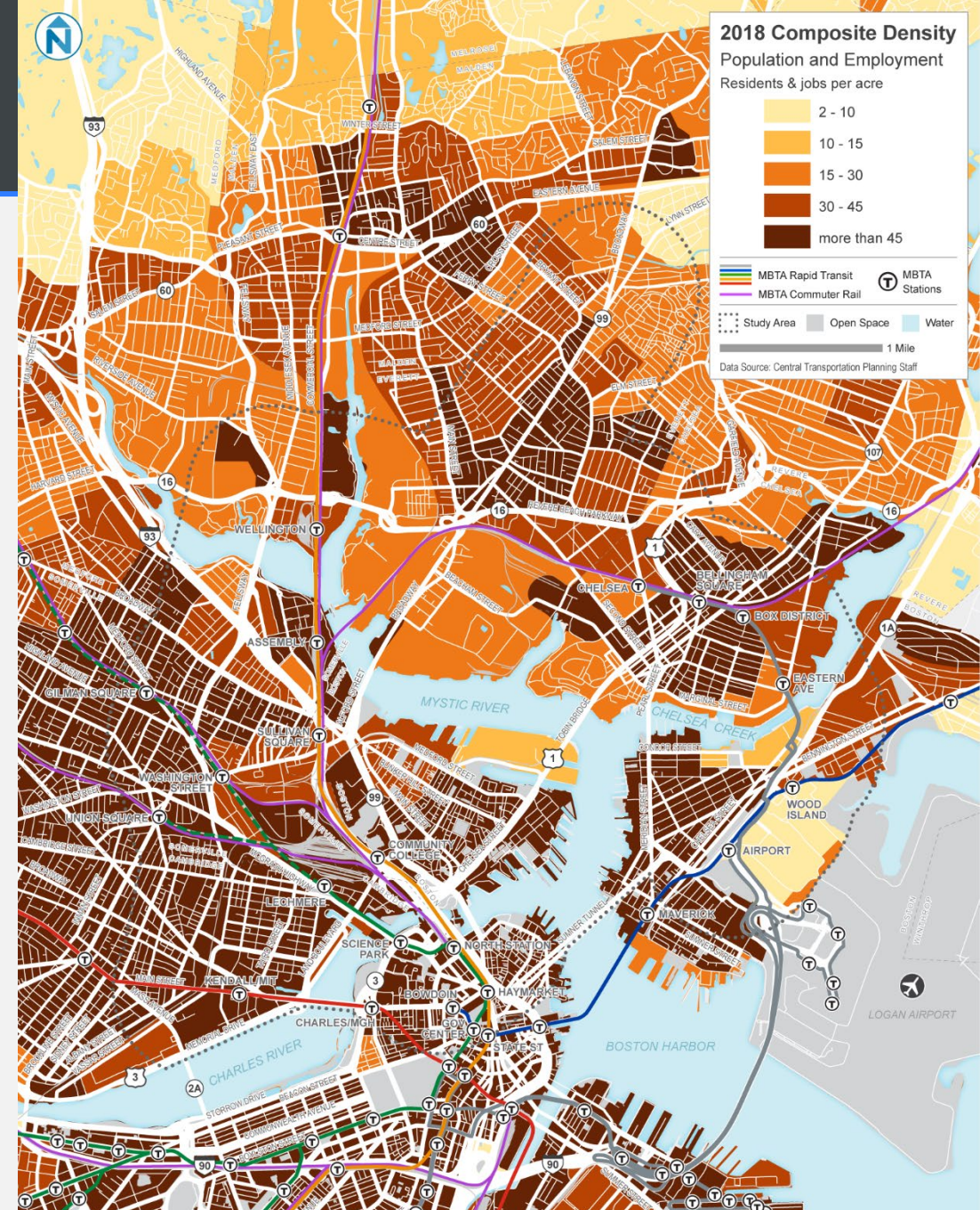
Existing Conditions Analysis

1

Everett and Chelsea have the demand and demographics to support high-frequency, high-capacity transit service

	Total (2018)	Density (per Acre)
Population	181,000	23.1
Jobs	138,000	17.6

Excluding Downtown Boston and Logan Airport

Population + Job Density

Source: MAPC/CTPS Estimates, 2018
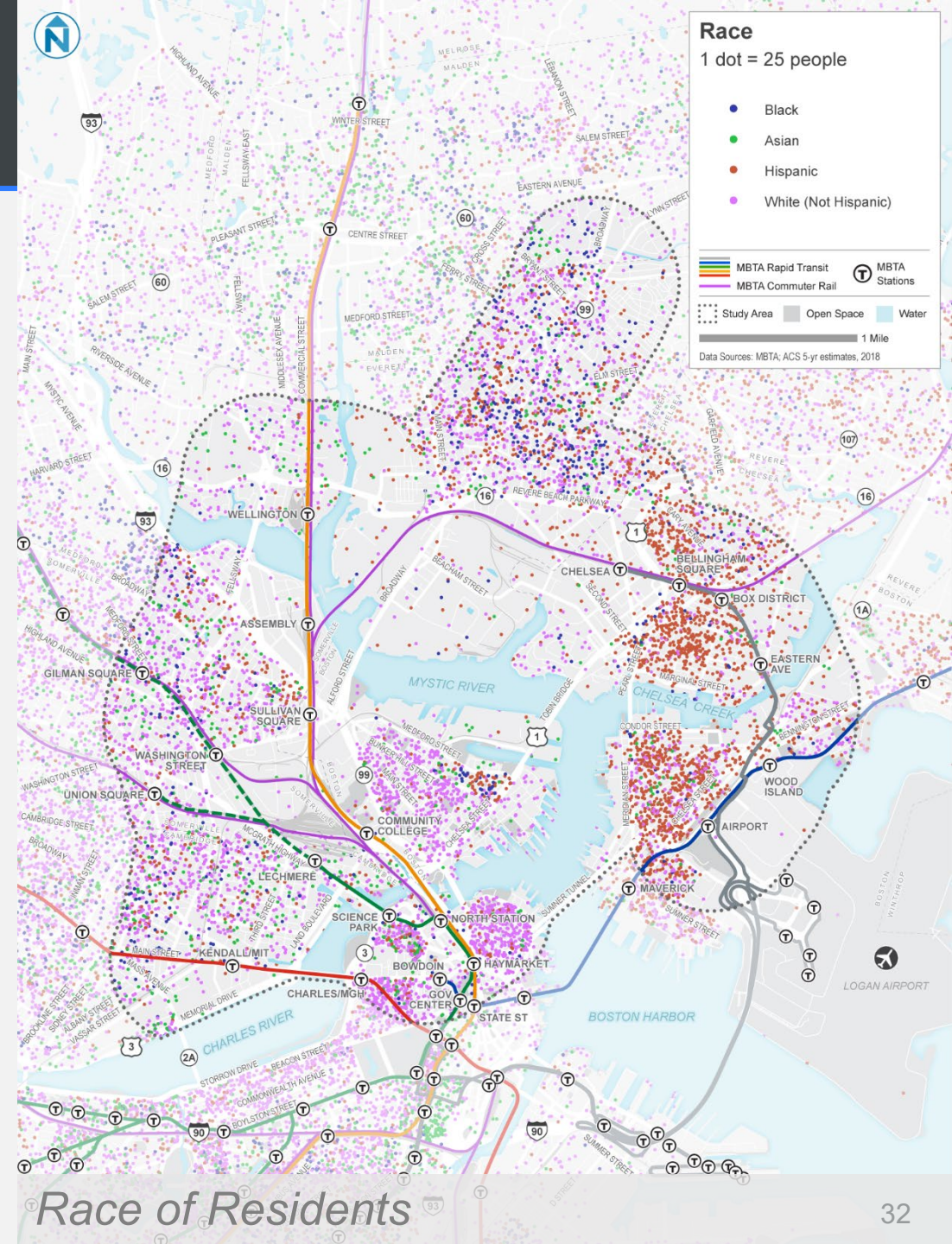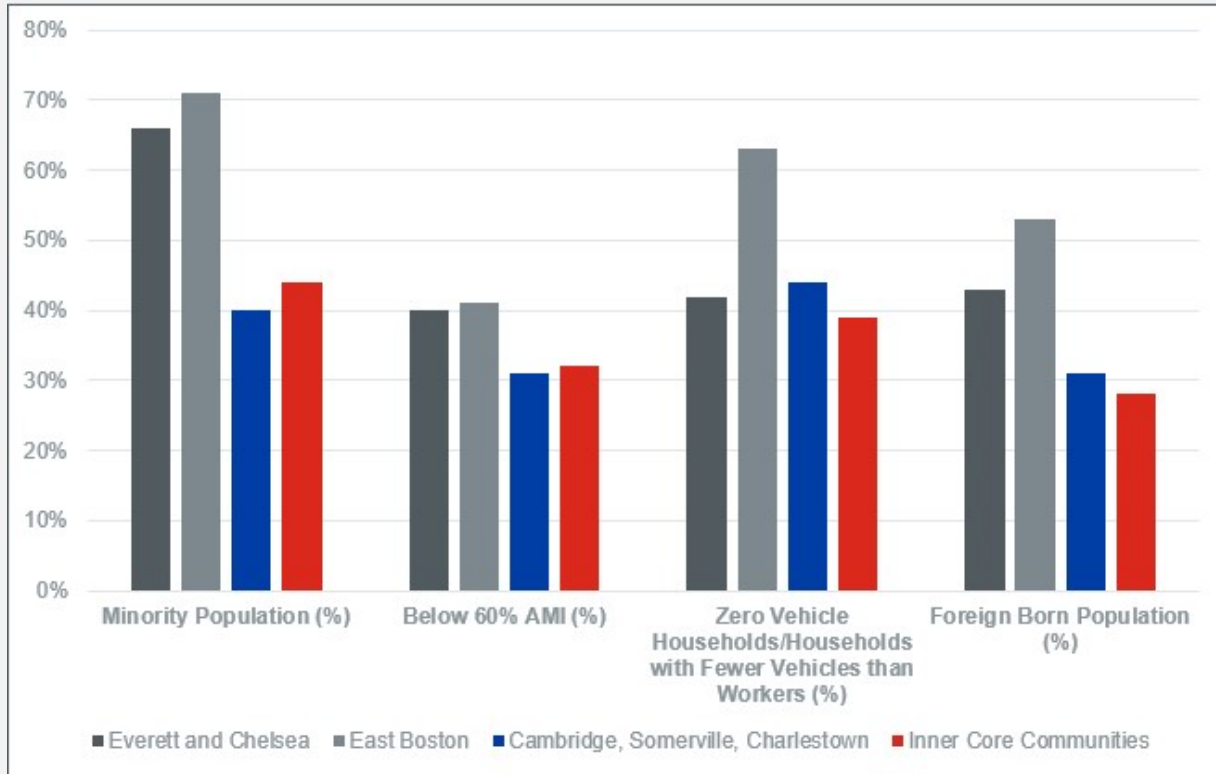
Existing Conditions Analysis

2 Study area has more "transit critical" residents than the Inner Core overall, but with significant community variation
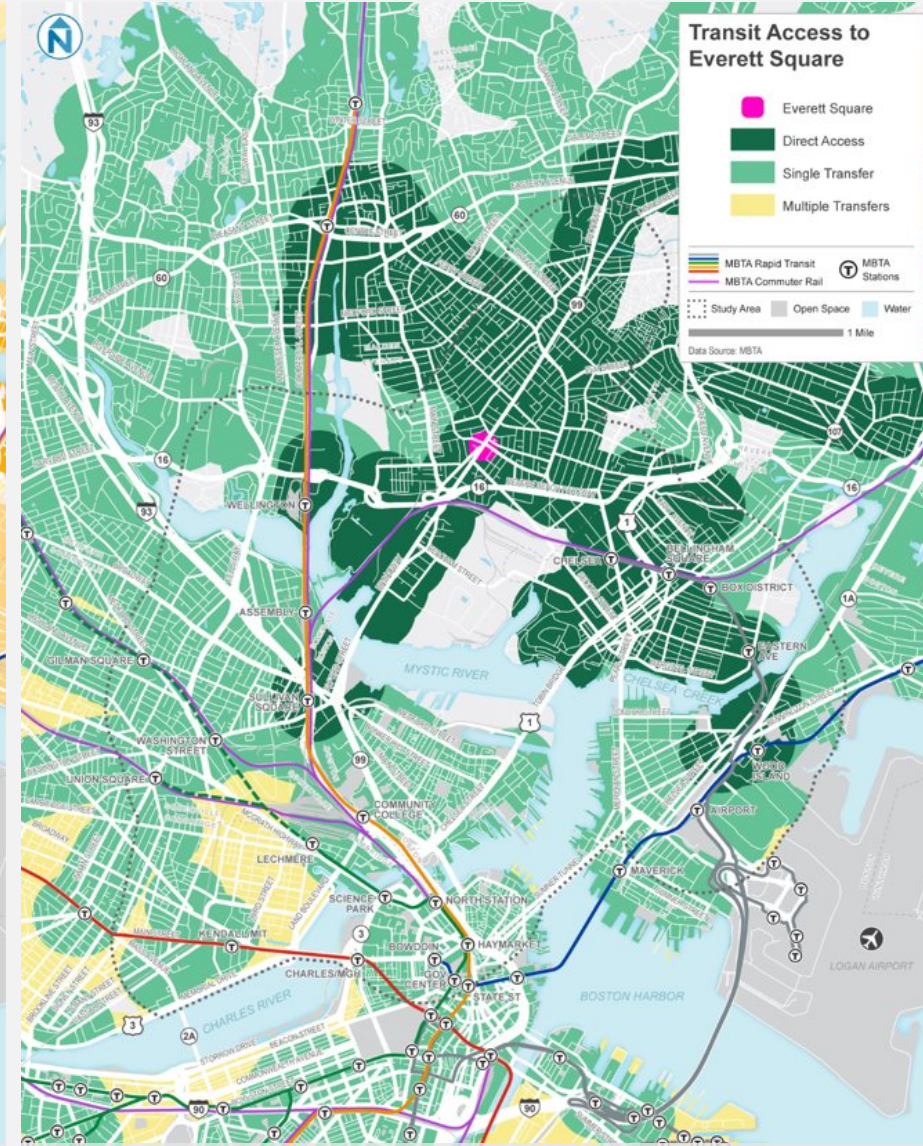

Race of Residents

3

Everett residents have less access to regional activity centers than residents in adjacent communities

Access – Travel Time from Everett Square

Access – Direct Access vs. Transfer to Everett Square

Existing Conditions Analysis

4 Existing transit network constraints and congestion play a role in that lack of access

Daily Passenger Minutes in Delay
Median, Weekdays

— less than 250 mins
— 250 - 500 mins
— 500 - 1,000 mins
— more than 1,000 mins

MBTA Rapid Transit
MBTA Commuter Rail
Ⓣ MBTA Stations

Study Area   Open Space   Water
1 Mile
Data Source: MBTA Winter 2020

Weekday Daily Passenger Delay (Median)
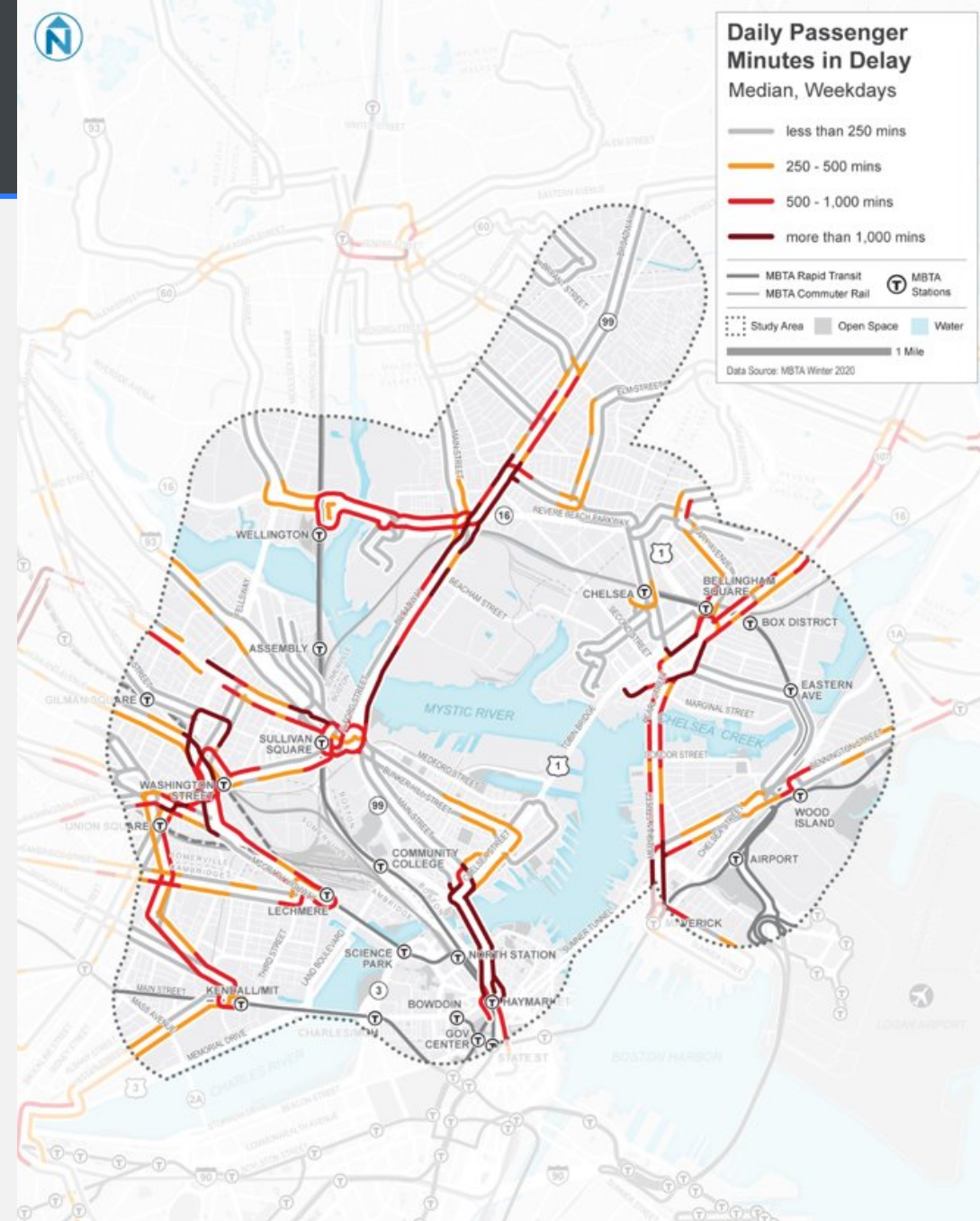
Existing Conditions Analysis

5

A Silver Line extension and other transit priority investments could potentially help address the gap

	Jobs accessible within 45 mins via transit	Jobs accessible within 45 mins via auto
Maverick Square	866,000	2.1 mil
Davis Square	806,000	2.1 mil
Malden Center	695,000	1.8 mil
Glendale Square	155,000	1.8 mil

Jobs accessible within 45 mins via transit

Jobs accessible within 45 mins via auto

Source: University of Minnesota Accessibility Observatory (2019)

Job Accessibility by Auto vs. Ratio of Job Accessibility by Transit vs. Auto

Job access within 45 minutes at peak

Overall and Transit Accessible Job Access

35