

GRAND JUNCTION TRANSIT STUDY

Cambridge Transit Advisory Committee
June 1, 2023

Purpose

Share scope of Grand Junction Transit Feasibility Study and progress to date

Outcome

Receive feedback on “Universe of Alternatives” and approach to other feasibility considerations for further study

Process

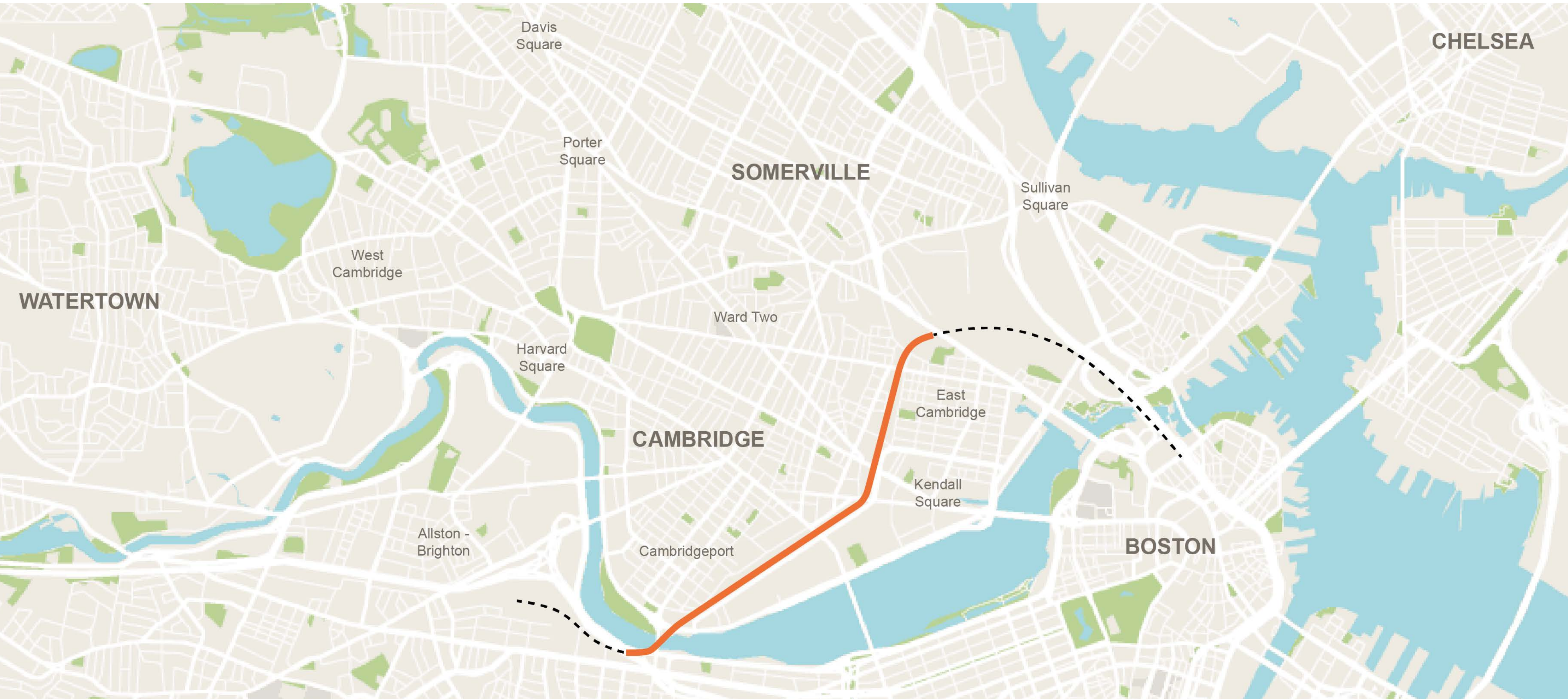
Project overview, Q&A, and discussion of options preferred for further study

- TAC to ‘raise hand’ during presentations and discussions
- Public to type in questions in zoom Q&A or speak verbal comments during public comment period

- Context
- Why this Study?
- What We've Learned from Previous Studies
- Universe of Alternatives
- Other Feasibility Considerations
- Questions & Answers
- General Discussion



Existing Grand Junction Corridor



In Progress: Grand Junction Corridor Multi-Use Path



<https://www.cambridgema.gov/CDD/Projects/Transportation/GrandJunctionPathway>

Why Transit Along Grand Junction?

- Major North-South transit link across Greater Boston
- Alleviate portions of existing MBTA transit system
- Provide opportunity for Cambridge residents to commute more sustainably

MBTA's subway tracks are far more broken than previously disclosed

The T unveiled a new dashboard Thursday that will allow riders to track slow zones.

By Taylor Dolven and Nick Stoico Globe Staff and Globe Correspondent.
Updated March 24, 2023, 9:31 a.m.



A Red Line train driver checked the platform before departing Park Street Station in Boston last week. CRAIG F. WALKER/GLOBE STAFF

Envision Cambridge

A plan for the future of the city

Resilient Cambridge

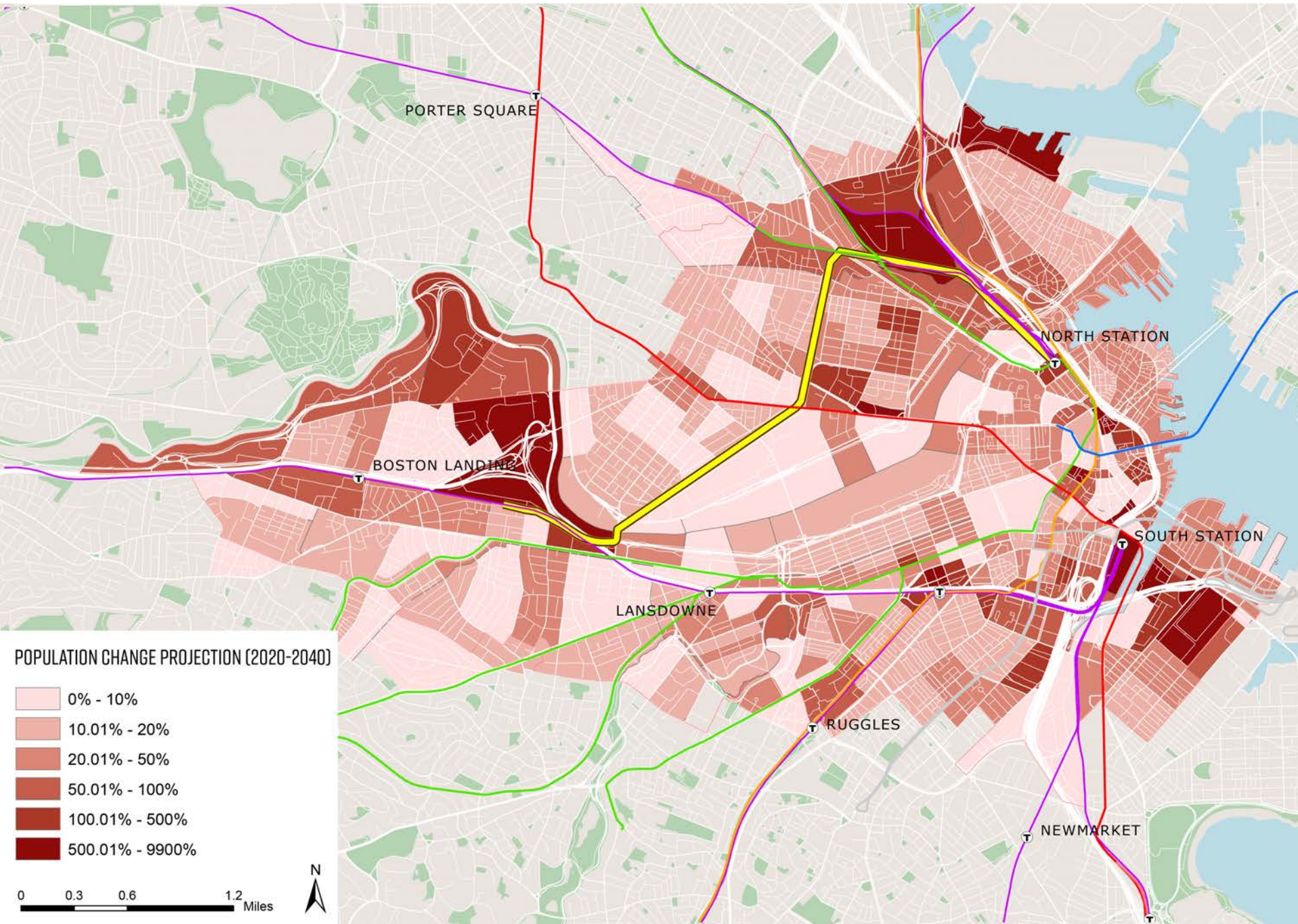
Climate Change Preparedness and Resiliency Plan

City of Cambridge, MA

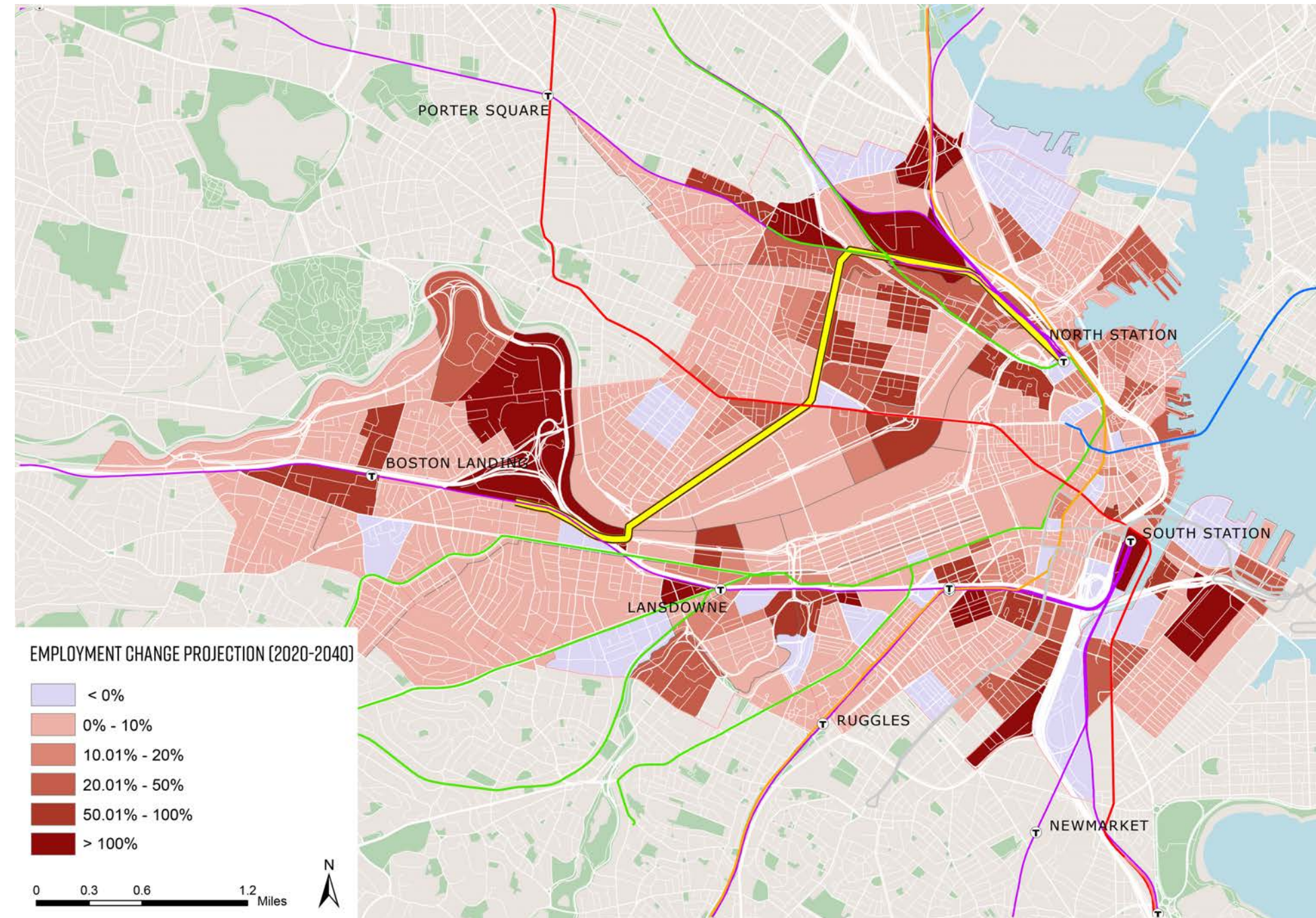
Why this Study?

Planning for the Future

Population Change Projection 2020-2040



Employment Change Projection 2020-2040



Our Study's Look at Feasibility:

- Existing Conditions
- Alternatives Development
- Transit Demand Analysis
- Infrastructure Needs and Operational Analysis
- Final Report

Why this Study?

Universe of Alternatives for
Consideration / Discussion:

TRANSIT MODE / EQUIPMENT

ROUTE AND TERMINUS LOCATIONS

CAMBRIDGE STATION LOCATIONS

Other Feasibility
Considerations:

SINGLE VS. DOUBLE TRACKING

CROSSING LOCATIONS

YEAR	PREVIOUS STUDY
Ongoing	Silver Line Extension (SLX) Alt. Analysis (MassDOT)
2019	MBTA Rail Vision (MBTA \ MassDOT OTP)
2022	West Station Area Transit Study (MAPC)
2017	GoBoston 2030 (City of Boston)
2016	Transport Kendall (Kendall Square Mobility Task Force)
2016	Grand Junction Feasibility Review (City of Cambridge)
2015	Better Rapid Transit for Greater Boston (Greater Boston BRT Study Group)
2014	Grand Junction Preliminary Operations Plan for Urban Rail (R. Burckardt)
2014	MIT Property Feasibility Study (MIT)
2012	Grand Junction Transportation Feasibility Study (MassDOT \ CTPS)
2012	Grand Junction Transit Expansion (MIT \ MS Engineering Studio)
2012	Grand Junction Branch Line Study (MIT)
2010	Urban Ring (MassDOT)
2010	Grand Junction Improvement Options (Harvard University)
2006	Grand Junction Rail with Trail (City of Cambridge)
2001	Grand Junction Multi-Use Path (Cambridge Bike Committee)

Definition: FRA Compliance



U.S. Department of Transportation
Federal Railroad Administration

Grand Junction Corridor currently in use by:

- MBTA movement – commuter rail cars between North and South Station
- Freight car movement
- Amtrak movement

Any equipment that does not comply with FRA rail requirements will interrupt existing services and will be difficult to implement





Types of Modes: Commuter Rail

Strengths:

- FRA Compliant
- Works with existing rail, especially important for bridge crossing opportunities to the North (Chelsea, Everett, etc.)

Challenges:

- Less frequent service
- No integration with Green Line & other rapid transit connections
- Length of vehicles in an urban setting:
 - Issues with platform length
 - Potential issues with pedestrian crossing
- Unpopular service concept



Types of Modes: Urban Rail

Strengths:

- FRA Compliant
- Looks like Light Rail, operates on Commuter Rail tracks
 - Works with existing rail, especially important for bridge crossing opportunities to the North (Chelsea, Everett, etc.)
- Shorter vehicle length for urban setting
- Can run on diesel or electric depending on equipment
- More frequent service (15-20 minute headways)

Challenges:

- No integration with Green Line & other rapid transit connections
- Unfamiliar service concept

Previous Modes / Equipment Considered



Union Pearson Express DMU in Toronto, Canada

Craig James White

Types of Equipment: DMU (Diesel Multiple Unit)



MBTA Red Line

Derek Yu

Types of Equipment: Underground Rail Tunnel



MBTA Green Line

Types of Equipment: Light Rail



TransMilenio in Bogotá, Colombia

Types of Equipment: BRT (Bus Rapid Transit)

Previous Modes / Equipment Considered

YEAR	PREVIOUS STUDY	Commuter Rail	Urban Rail	DMUs	Underground Rail Tunnel	LRT	BRT	Multi-Use Path
Ong.	Silver Line Extension (SLX) Alt. Analysis (MassDOT)						X	
2019	MBTA Rail Vision (MBTA \ MassDOT OTP)		E					
2022	West Station Area Transit Study (MAPC)		E				X	
2017	GoBoston 2030 (City of Boston)						X	X
2016	Transport Kendall (Kendall Square Mobility Task Force)		X					X
2016	Grand Junction Feasibility Review (City of Cambridge)	X	D	C, N			X	
2015	Better Rapid Transit for Greater Boston (Greater Boston BRT Study Group)						X	
2014	Grand Junction Preliminary Operations Plan for Urban Rail (R. Burckardt)		D	C				
2014	MIT Property Feasibility Study (MIT)							X
2012	Grand Junction Transportation Feasibility Study (MassDOT \ CTPS)	X						
2012	Grand Junction Transit Expansion (MIT \ MS Engineering Studio)	X		C, N	X	X	X	
2012	Grand Junction Branch Line Study (MIT)	X		C				
2010	Urban Ring (MassDOT)						X	
2010	Grand Junction Improvement Options (Harvard University)	X	D	C			X	X
2006	Grand Junction Rail with Trail (City of Cambridge)	X					X	X
2001	Grand Junction Multi-Use Path (Cambridge Bike Committee)					X		X

Legend:

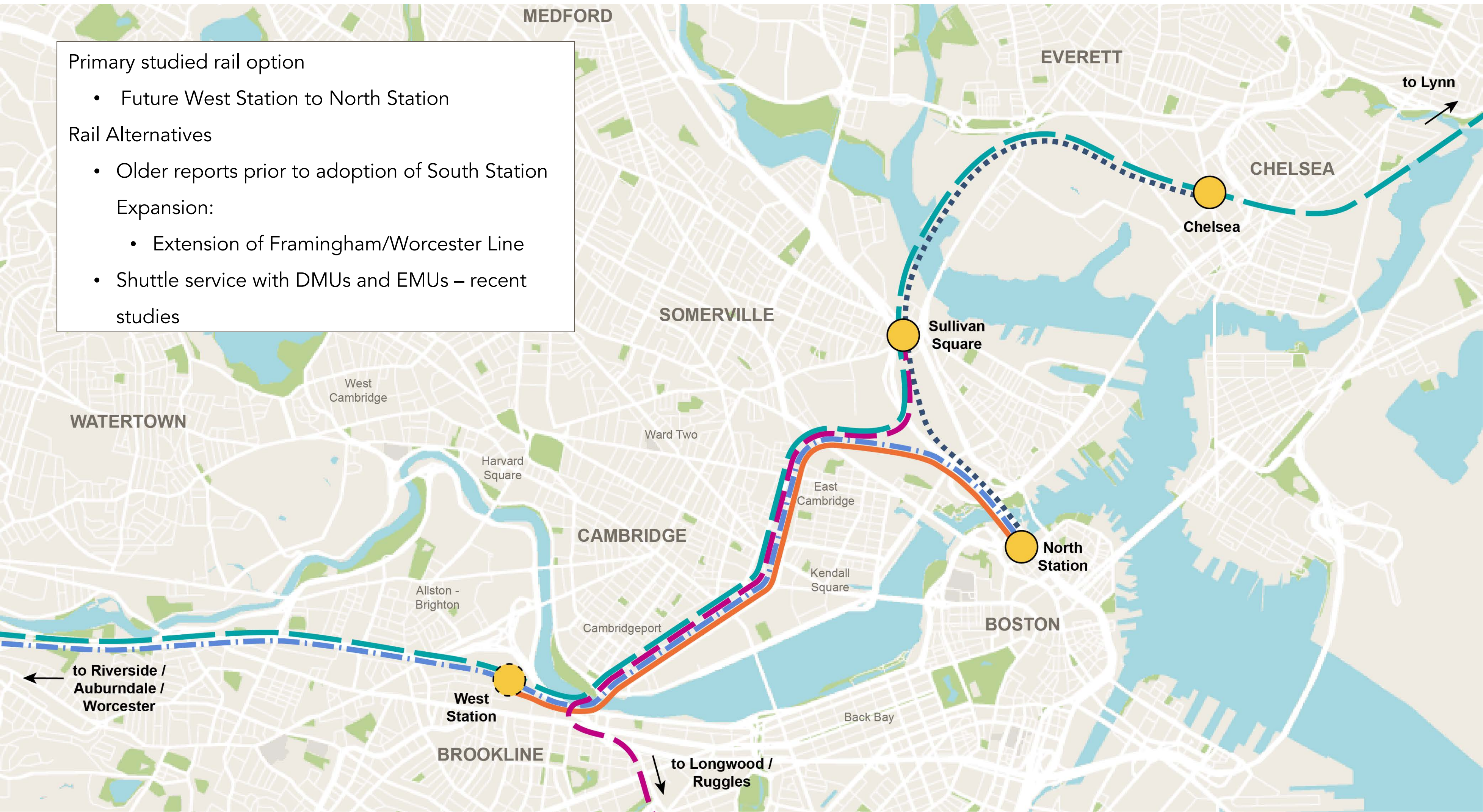
X = Considered
 D = Considered as Diesel
 E = Considered as Electric

For DMUs:
 C = FRA Conforming
 N = FRA Non-conforming



Previous Terminus Locations Considered

- Primary studied rail option
- Future West Station to North Station
- Rail Alternatives
- Older reports prior to adoption of South Station Expansion:
 - Extension of Framingham/Worcester Line
 - Shuttle service with DMUs and EMUs – recent studies



Previous Terminus Locations Considered

YEAR	PREVIOUS STUDY	NORTHERN TERMINUS					SOUTHERN TERMINUS			
		North Station	Sullivan Square	North Station	Lynn / Chelsea / Everett	Chelsea / Everett	West Station	Longwood / Ruggles	Riverside / Auburndale / Worcester	West Station / Riverside
Ongoing	Silver Line Extension (SLX) Alternatives Analysis (MassDOT)									X
2022	West Station Area Transit Study (MAPC)	X								
2019	MBTA Rail Vision (MBTA \ MassDOT OTP)	X								
2016	Transport Kendall (Kendall Square Mobility Task Force)	X			X		X			
2016	Grand Junction Feasibility Review (City of Cambridge)	X	X		X					
2015	Better Rapid Transit for Greater Boston (Greater Boston BRT Study Group)		X							
2014	Grand Junction Preliminary Operations Plan for Urban Rail (R. Burckardt)	X								
2012	Grand Junction Transportation Feasibility Study (MassDOT \ CTPS)				X					
2012	Grand Junction Transit Expansion (MIT \ MS Engineering Studio)	X			X					
2012	Grand Junction Branch Line Study (MIT)				X					
2010	Urban Ring (MassDOT)		X							
2010	Grand Junction Improvement Options (Harvard University)	X			X					
2006	Grand Junction Rail with Trail (City of Cambridge)	X								

Options likely not feasible based on existing studies:

X Non-FRA Compliant Equipment



Types of Equipment:
Light Rail

- X** Challenging for FRA Compliance
 - Would require temporal separation
 - Change to rail line is cost prohibitive
 - Grade changes to connect to existing Green Line stations very challenging



Types of Equipment:
Bus Rapid Transit

- X** Not FRA Compliant
 - ROW too small (rail, multi-use path)
 - Would prohibit existing uses

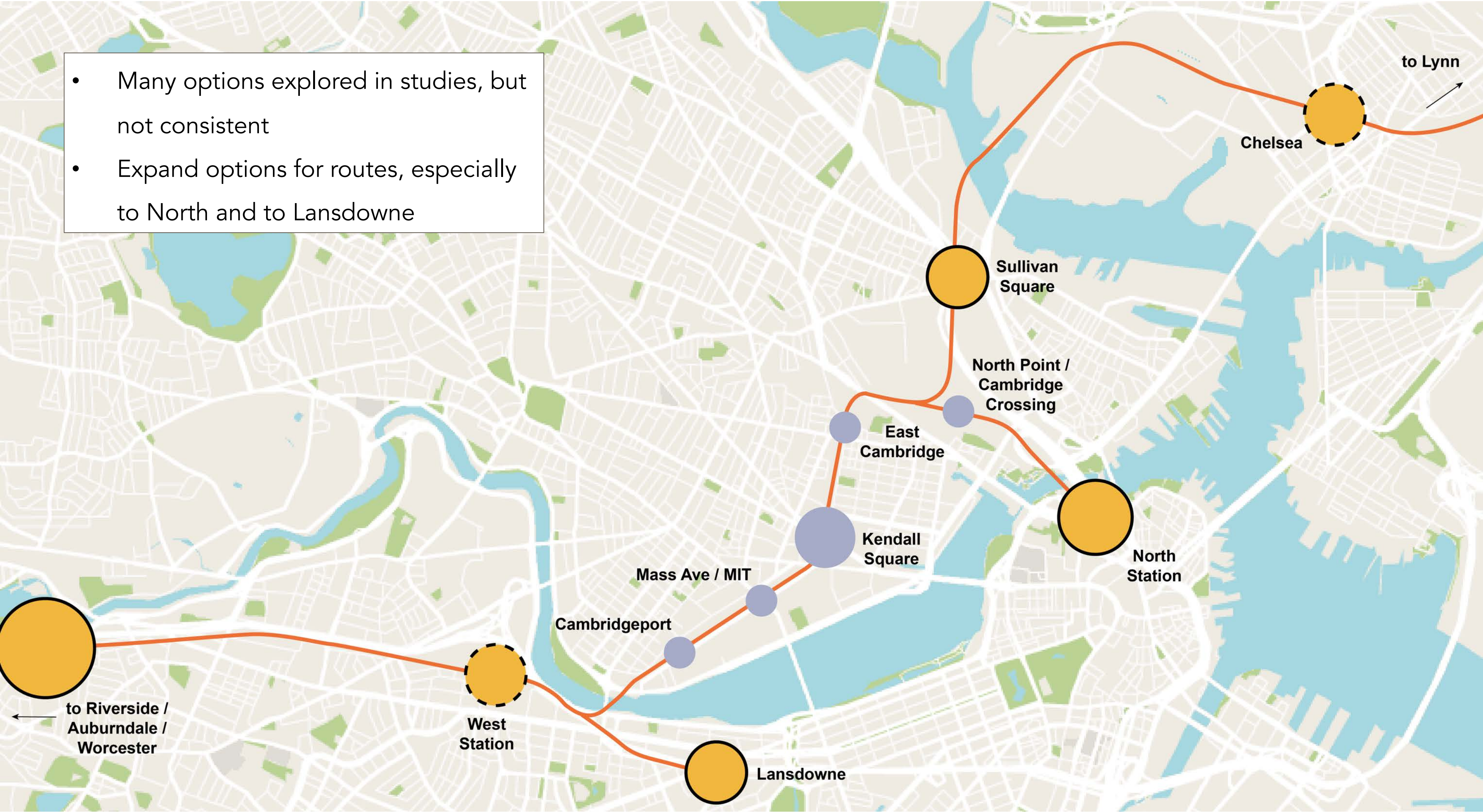


Types of Equipment:
Underground Rail Tunnel

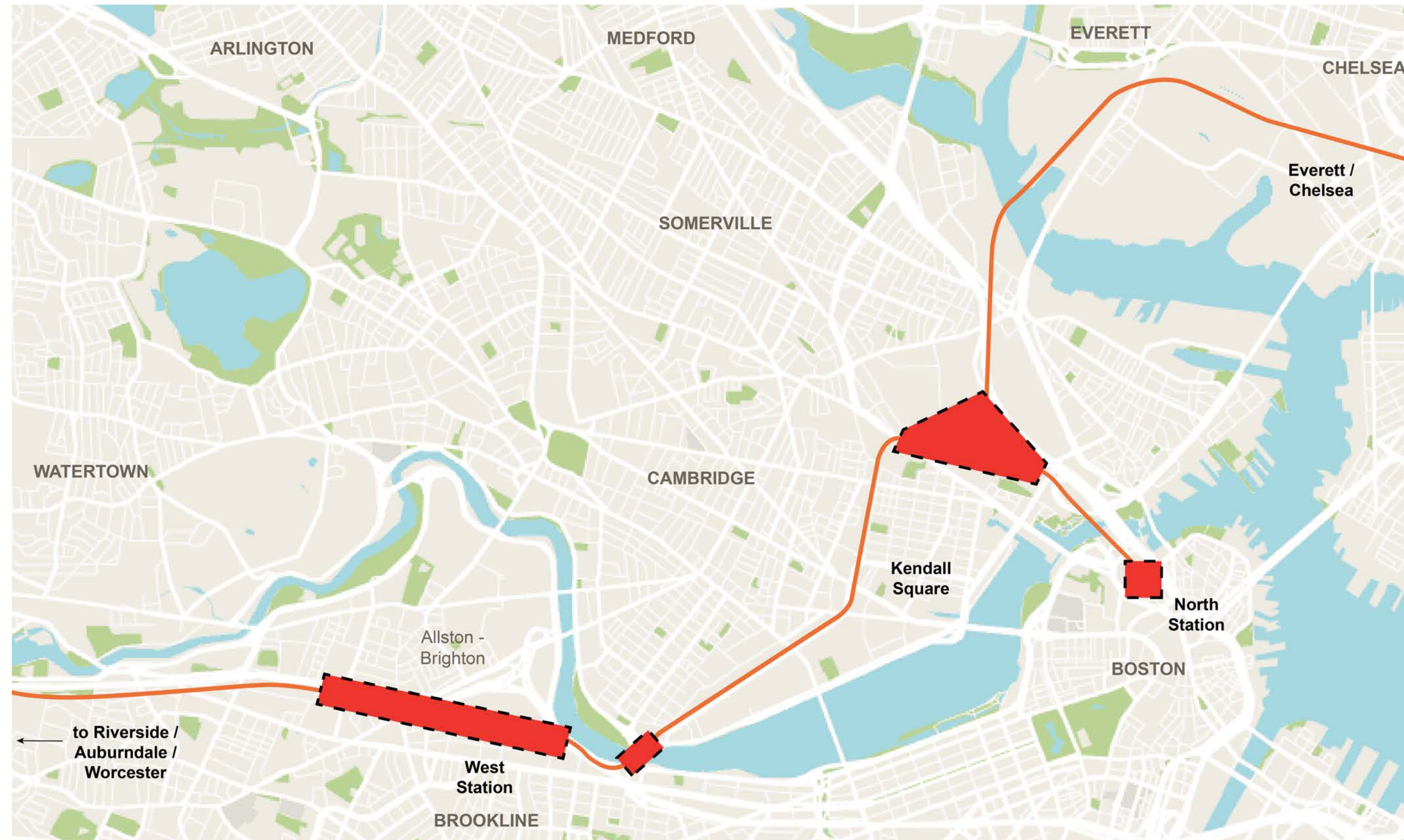
- X** Creating underground tunnel is cost prohibitive
 - Corridor too short for partial underground tunnel

Universe of Alternatives: Terminus Locations

- Many options explored in studies, but not consistent
- Expand options for routes, especially to North and to Lansdowne



- Connections with existing commuter rail tracks in Allston and in Cambridge
- Potential GLX-related constraints
- Existing Charles River crossing near the BU Bridge
- Terminal constraints at North Station



- Potential ridership markets north of Cambridge in Everett, Chelsea, and Lynn

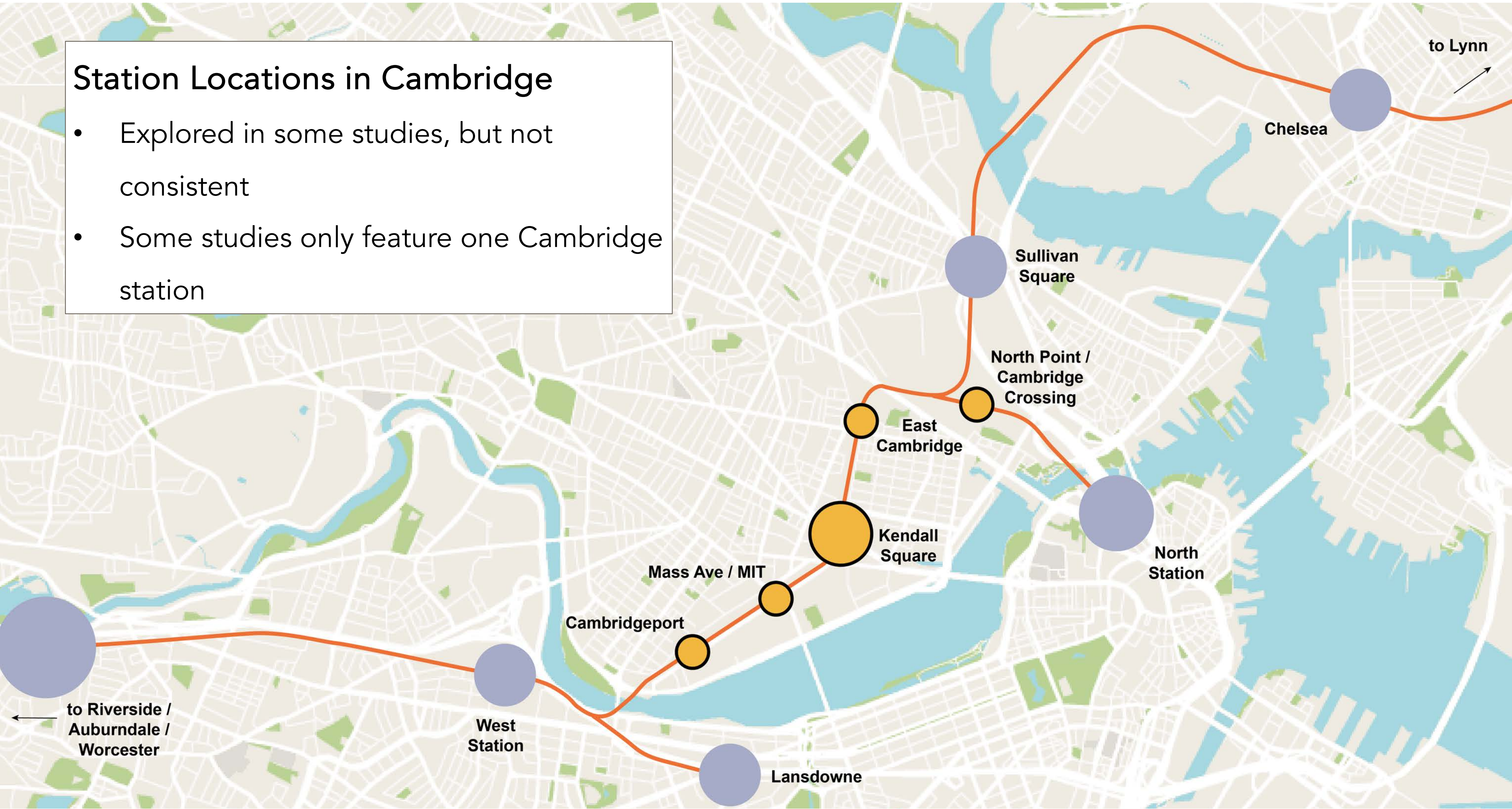


Former MBTA and MassDOT officials celebrate the opening of the Chelsea Station. 2021, MassTransit

Universe of Alternatives: Cambridge Stations

Station Locations in Cambridge

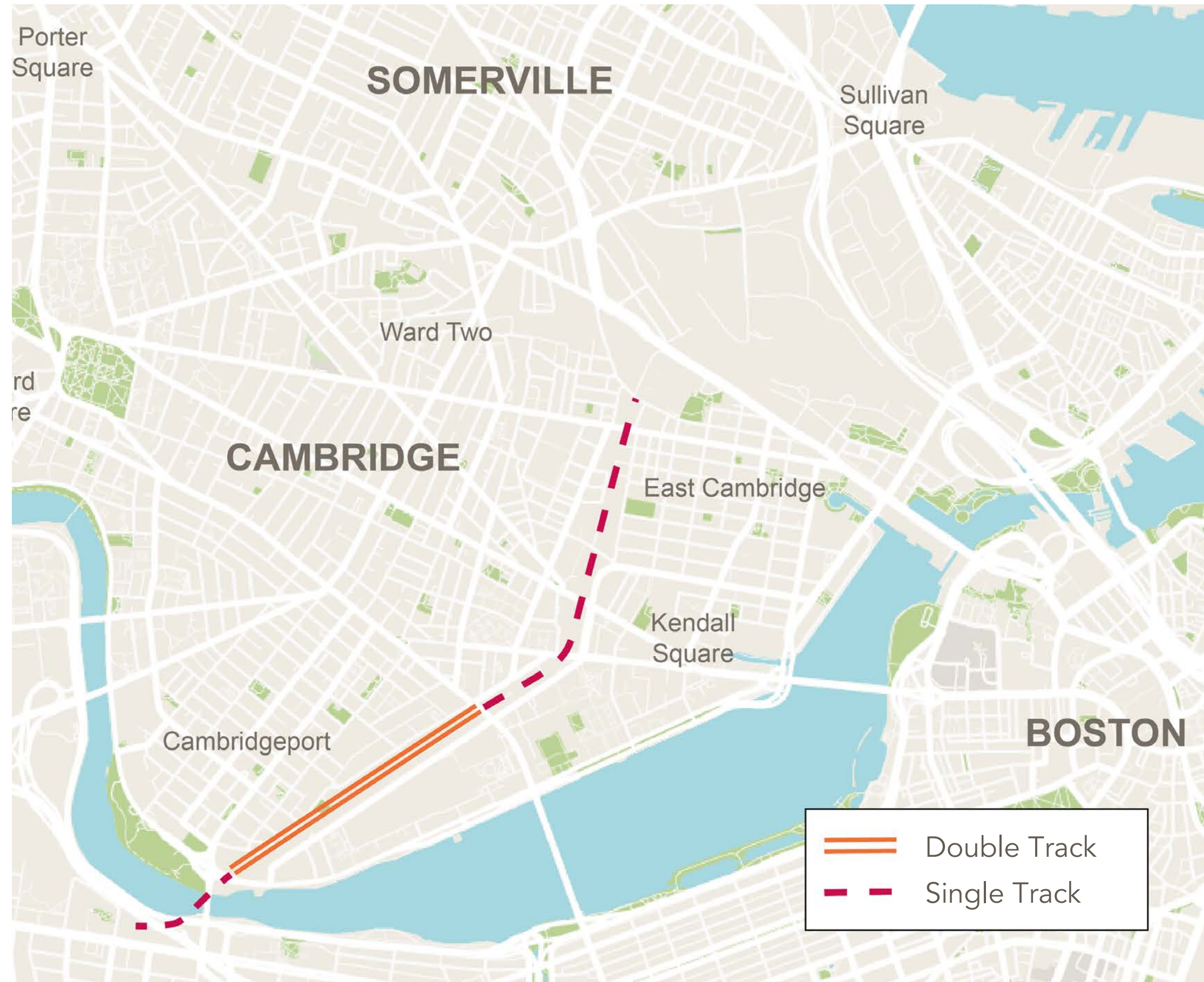
- Explored in some studies, but not consistent
- Some studies only feature one Cambridge station



- Single track may only allow for a single Cambridge station
- Double-tracking could help secure desired 15-minute headways

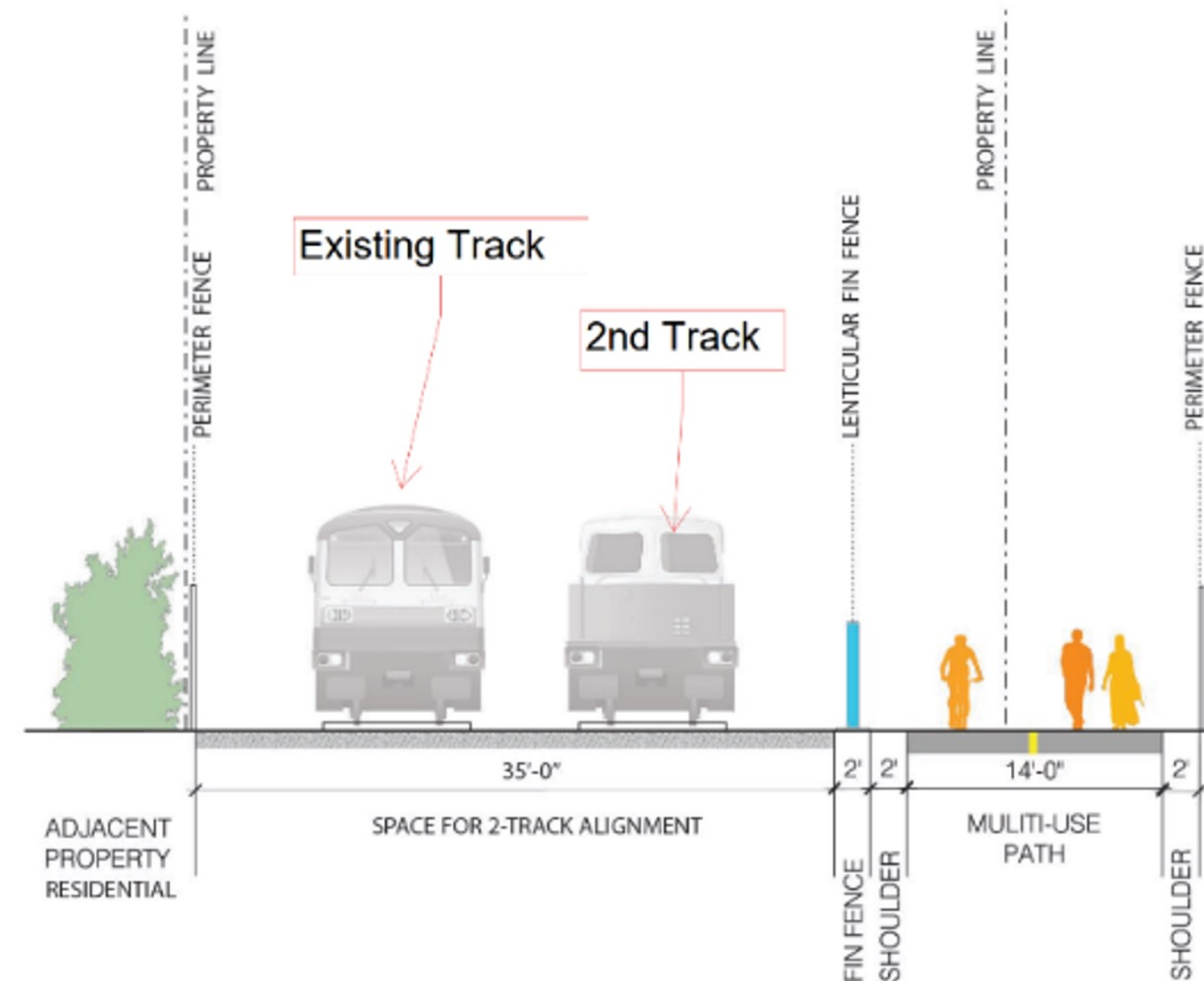
Other Tracking Considerations

- Location of Path
- Right-of-way
- Station Locations



Initial Findings

- Feasibility informed by Multi-Use Path project not precluding double track
- May require shifting of existing track in places
- Tight ROW may preclude center platforms
- Will need to work with partner land owners for access issues at specific points



Grade Crossings Infrastructure

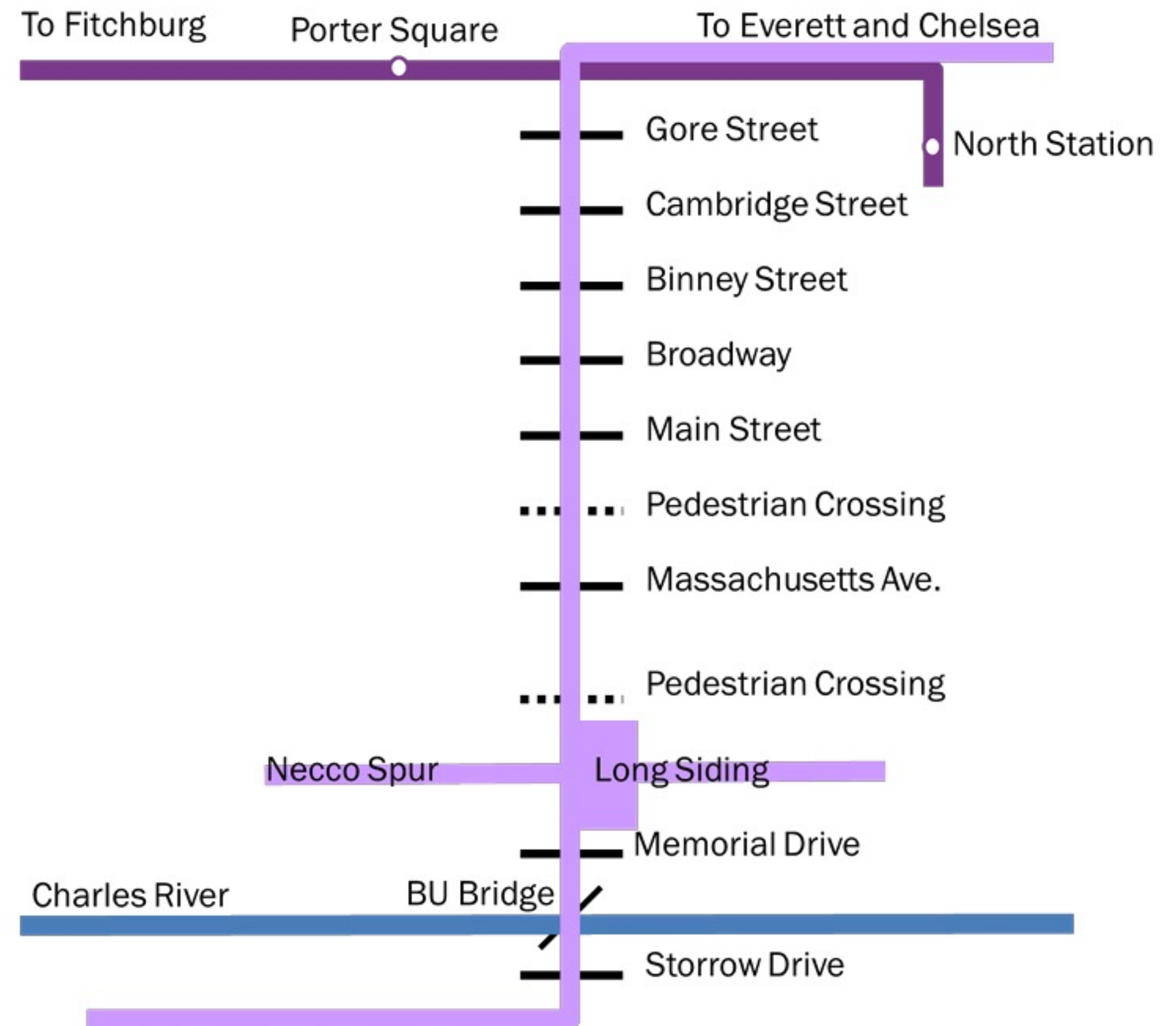
- Signage
- Pavement markings
- Adding gates

Emergency Response Impacts

- Locations of fire, police and ambulance
- Response routes

Traffic Impacts

- Conceptual approach – What is likely total time impact per train?
- Interconnection with adjacent traffic signals to reduce potential impacts



Grade Crossings in Cambridge, from Technical Report: Grand Junction Feasibility Review, City of Cambridge (2016)

Remaining Project Schedule

June

July

August

September

October

Existing Conditions



Alternatives Development



Transit Demand Analysis



Infrastructure Needs and Operational Analysis



Final Report



Next Meeting Target with TAC: September



Thank You!

Questions & Answers

Discussion

Universe of Alternatives:

TRANSIT MODE / EQUIPMENT

Supported by findings:

- Urban Rail

Other options:

- Commuter Rail
- Light Rail

ROUTE AND TERMINUS LOCATIONS

West:

- West Station
- Lansdowne
- Riverside
- Worcester

East:

- North Station
- Sullivan Square
- Everett / Chelsea / Lynn

CAMBRIDGE STATION LOCATIONS

- Cambridgeport
- Mass Ave / MIT
- Kendall Square
 - at Main Street
 - at Broadway
 - at Binney St
- East Cambridge
- North Point / Cambridge Crossing