Mass Ave Partial Construction Project

Working Group #4

April 25, 2024

Remote Participation Instructions

Working Group Members

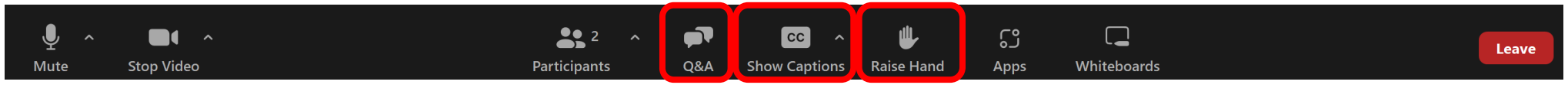
- Participants may speak and show webcam video
- Use "Raise Hand" button during discussion or press *9 if you are joining by phone only
- Mute your microphone when others are speaking
- Screen-share will be turned off during discussion to allow for more of a virtual meeting room

Members of the Public

- Attendees are muted and cannot show video
- Written questions and comments will be accepted through the Q&A feature and verbal responses will be provided, time permitting, during the public comment period.
- Verbal questions and comments will be heard during a public comment period at the end of the meeting.

You can enable live captions using the button pictured below.

Technical Support: MassAve4@Cambridgema.gov



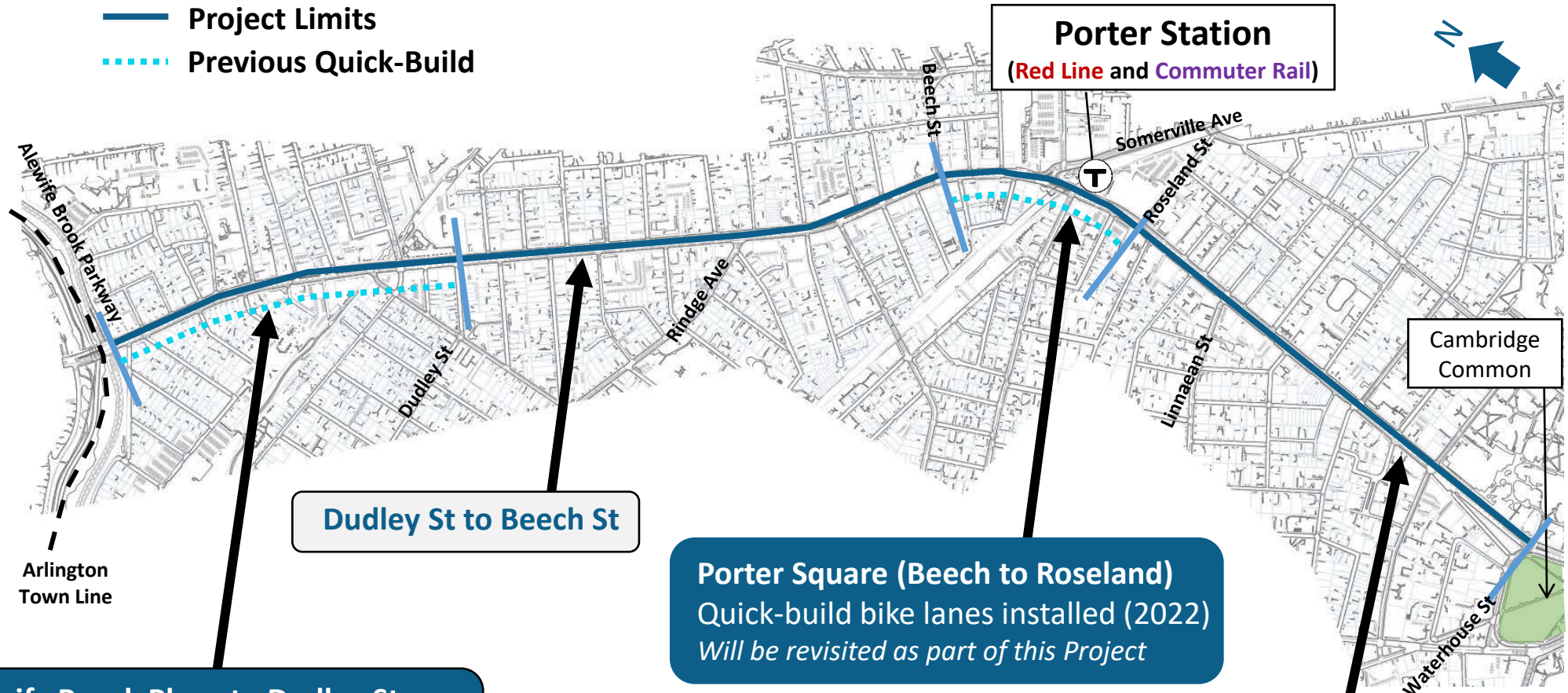
Agenda

- Project Status
- Rindge Ave to Porter Square: Concept Design
  - Rindge Ave to Walden Street:
    - Concept Design
    - Traffic Operations
  - Walden Street to Porter Square
- Porter Square to Linnaean St: Design Direction
- Linnaean St to Waterhouse St: 50% Design Update
- Next Steps
- Working Group Discussion*
- Public Comment

** Opportunities for Working Group Q&A between agenda topics, with broader discussion at the end of the meeting*

Partial Construction Project Limits

Massachusetts Ave from Waterhouse Street to Alewife Brook Parkway



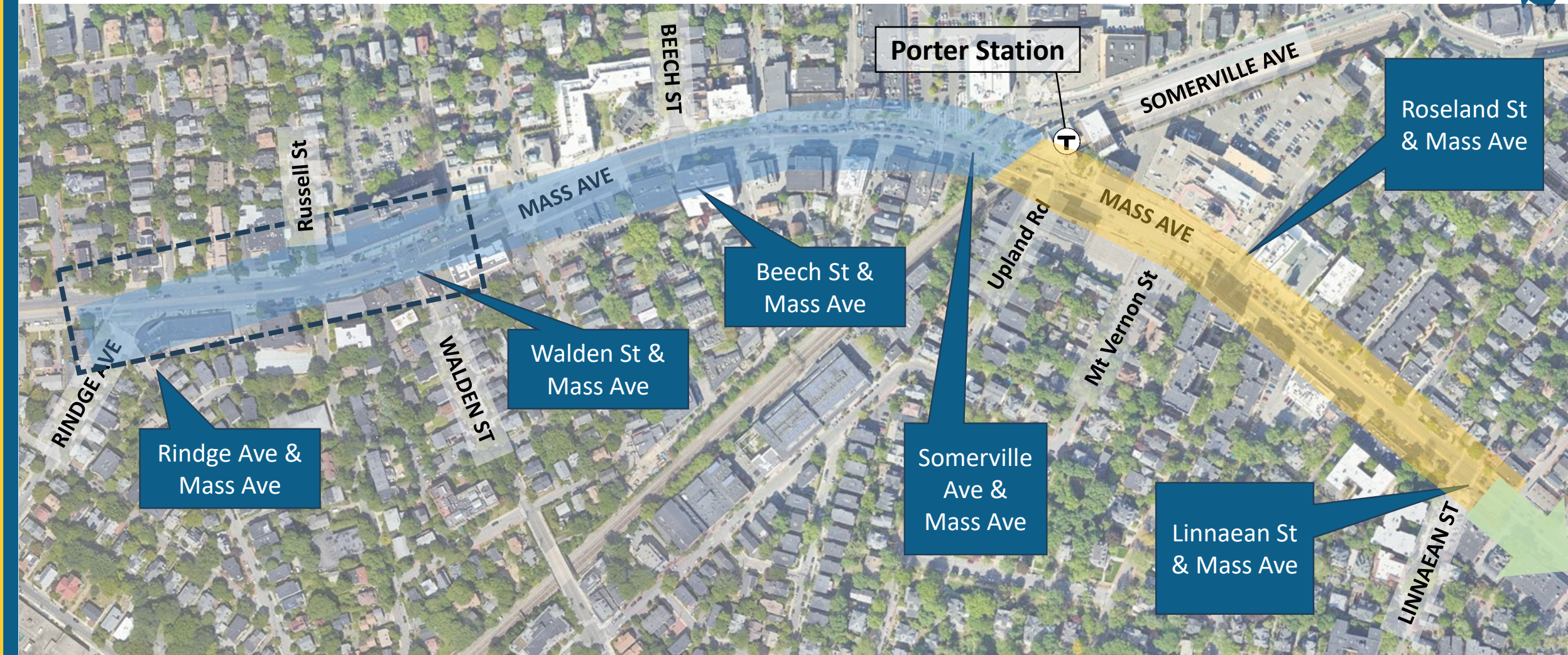
Focus Today

Concept Design

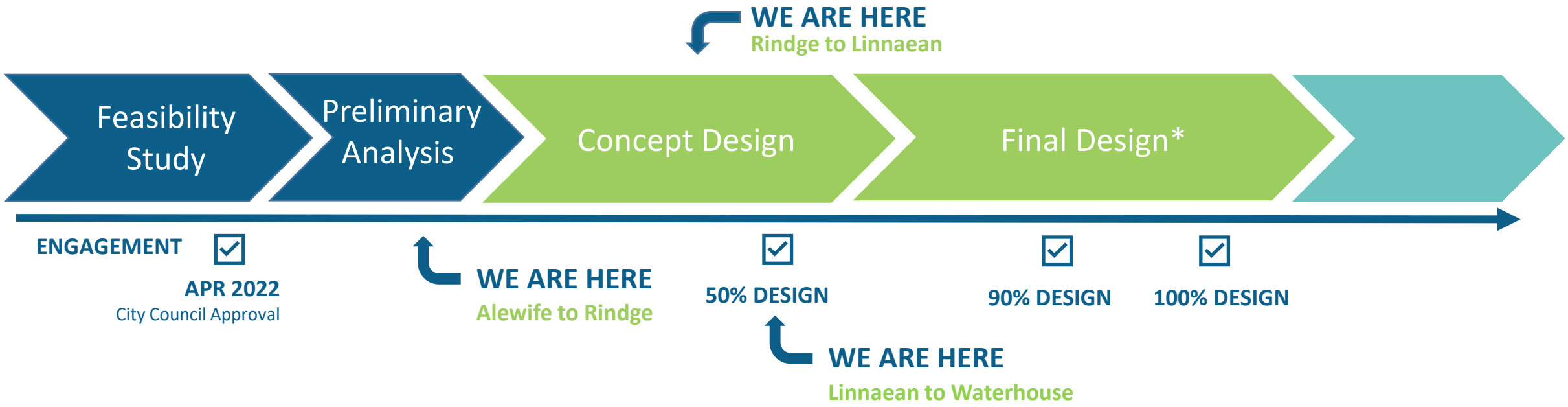
Operations

Design Direction (no definite concept yet...)

50% Design Status (changes since December public open house)



Project Status



Project Milestone

Stakeholder Engagement

Comments to Email

- 47 comments since December open house
- 36 comments regarding concrete separation between bicycle lane and travel lane

Businesses & Abutters

- Harvard Law School
- Town of Arlington
- Cambridge Greenhouse Antiques and Collectibles
- Fast Phil's
- Home Décor/City Paint and Supply
- Frank's Steakhouse
- Dr. Bane, DMD
- Cambridge-Somerville Chiropractic

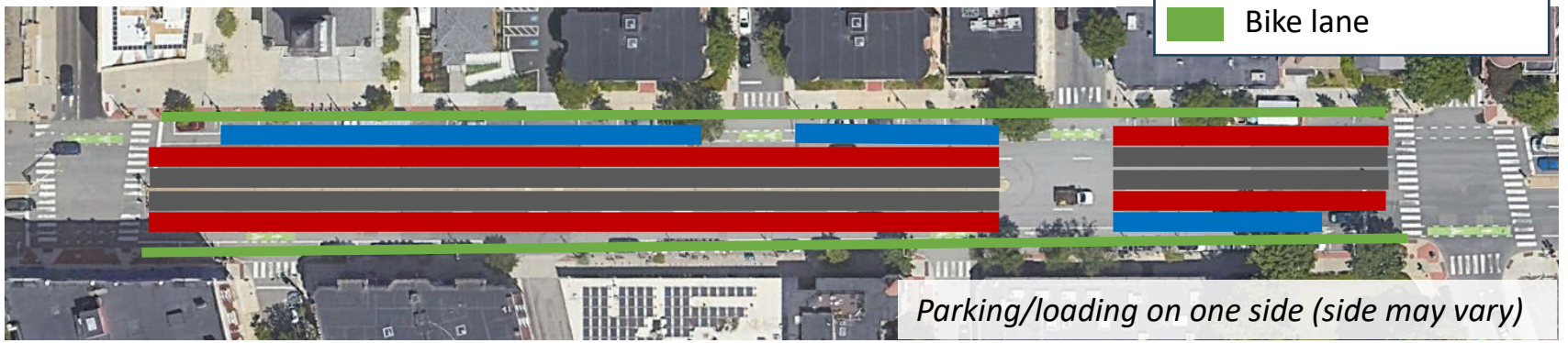
Potential Options to Balance Curbside Uses and Bus Operations

Bus lane
Curbside access
General vehicle travel
Bike lane

← *Northbound- Alewife Brook Parkway* *Southbound - Harvard Square* →

Full time bus lanes

- Curbside access on one side at a time
- Benefits to bus operations



Parking/loading on one side (side may vary)

Part time bus lane on one side

- Continuous curbside access on one side, off-peak access on other
- Benefits to buses during peak periods

Full time parking/loading on one side; part time on the other

Bus lane on one side only

- Continuous curbside access on both sides
- Southbound bus in mixed traffic

Full time parking/loading on both sides, except at bus stops

Rindge Ave to Linnaean Street
Concept Design – Cross Section

Transit Ridership

Average Weekday Bus Ridership (2023)

- Route 77 – 4,853
- Route 83 – 1,302
- Route 96 – 1,041

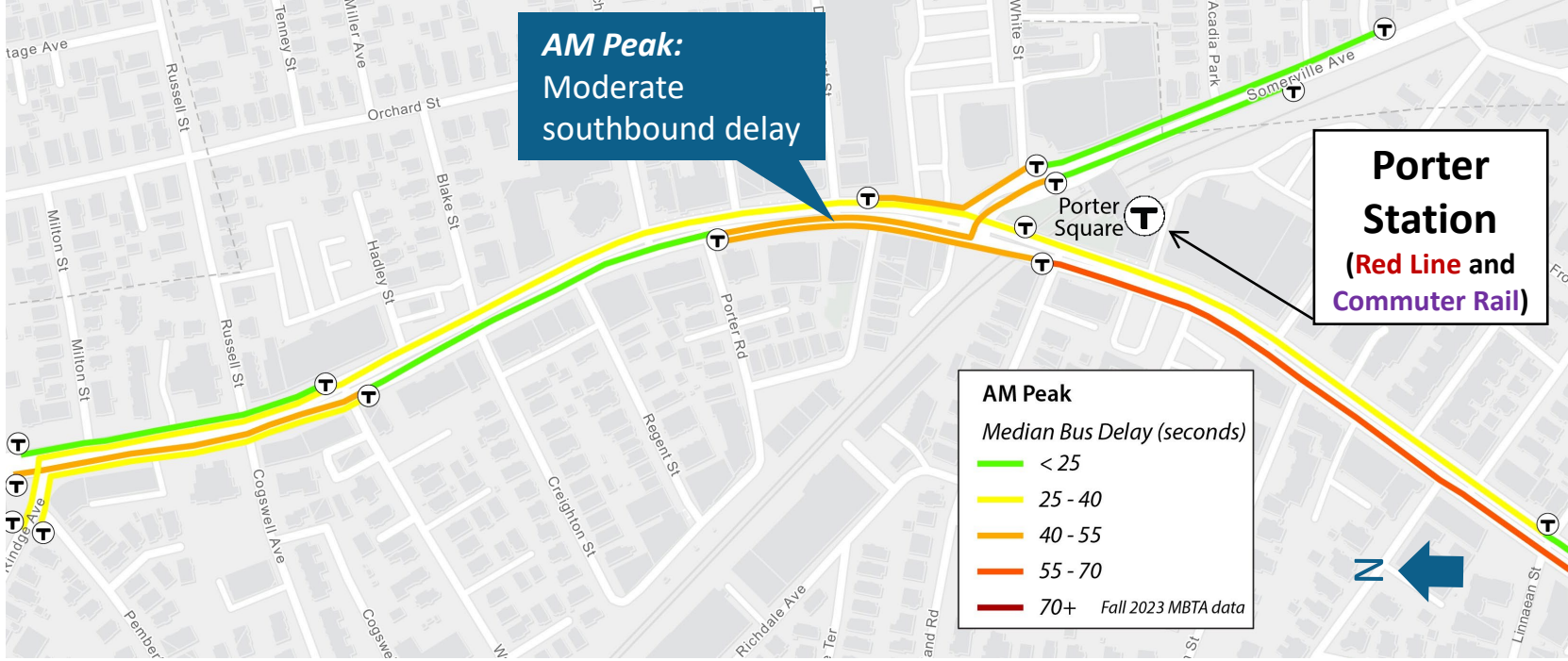
Average daily boardings - Porter Square Station

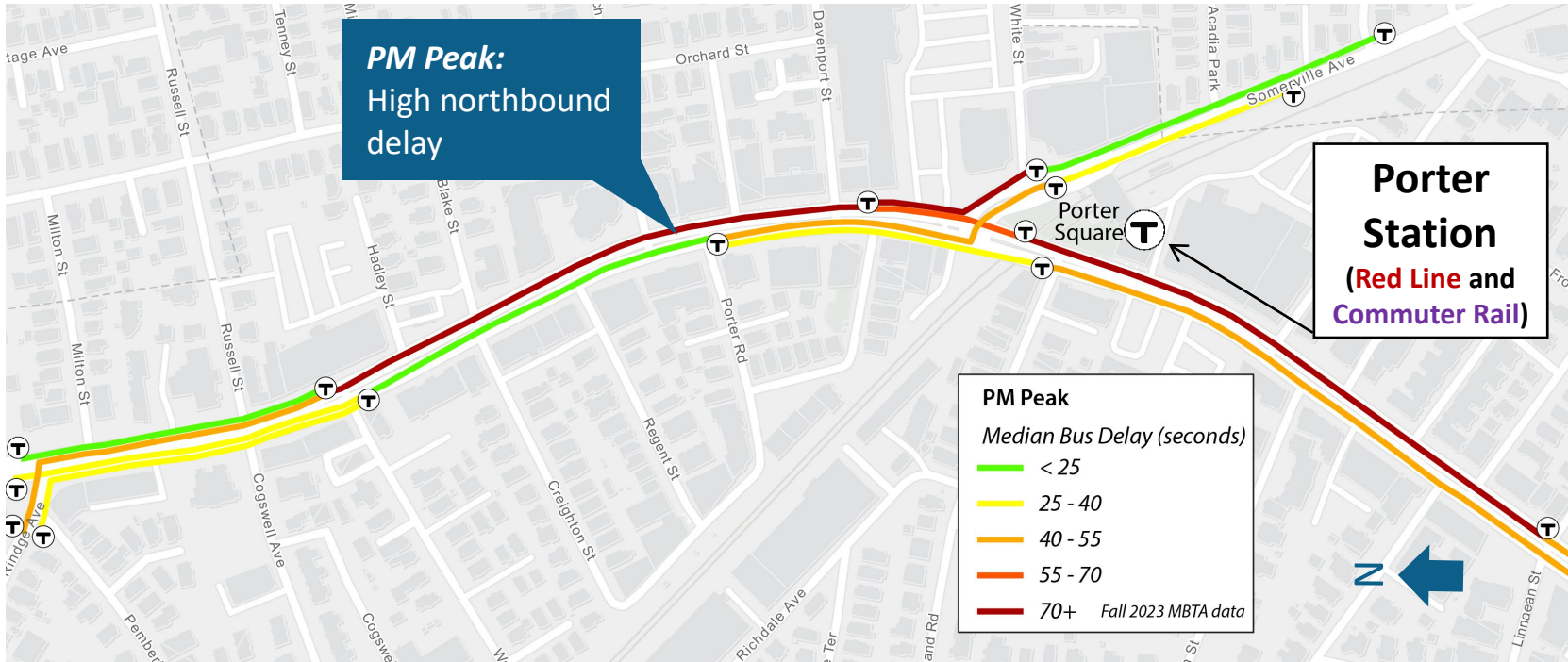
- Red Line ~ 8,100 (2020)
- Commuter Rail ~ 1,500 (2018)

Important connections

Existing Bus Delay

This shows a recent analysis of bus delay. We do not have a recentanalysis for bus travel time variability or unreliability.





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General vehicle travel
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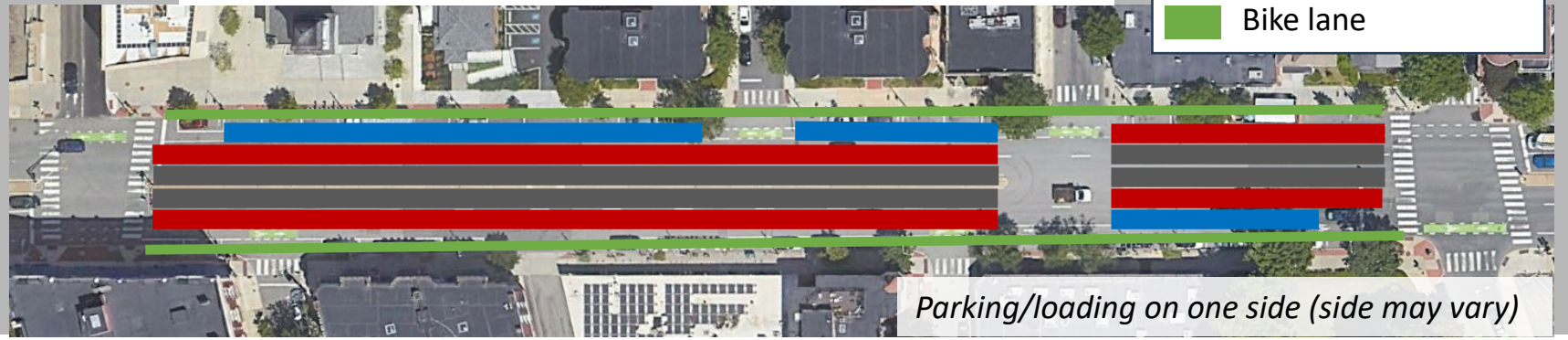

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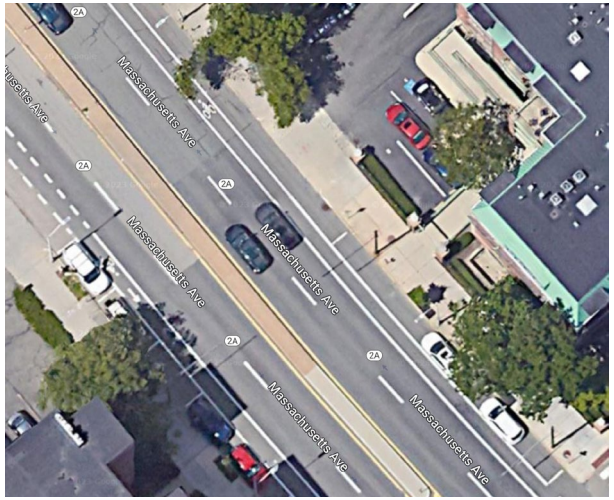
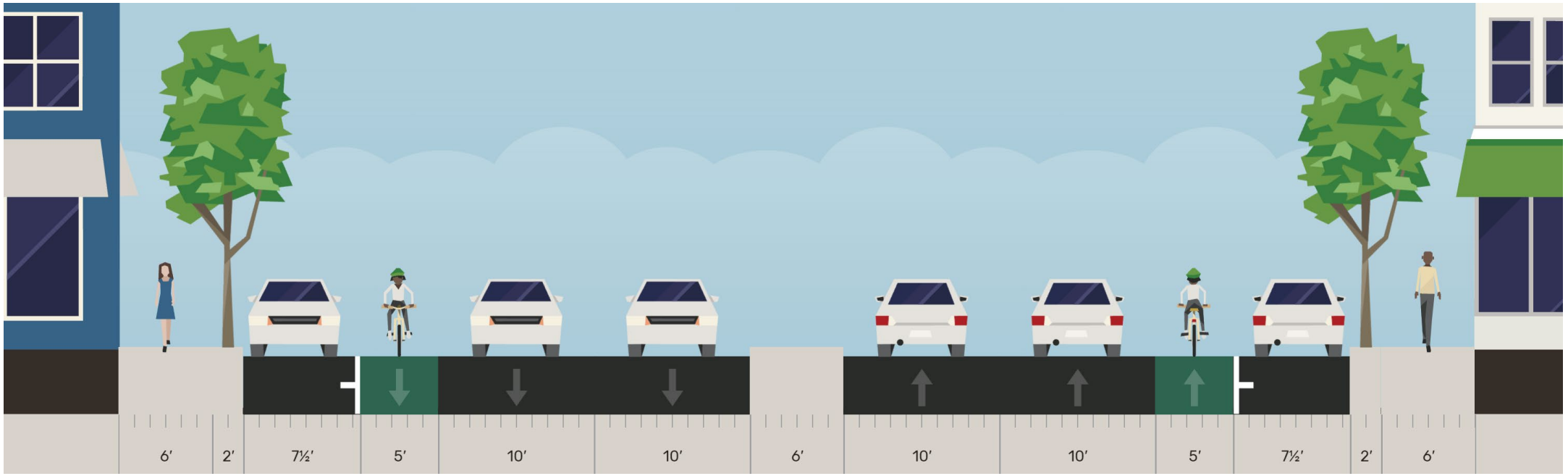
Existing typical cross section

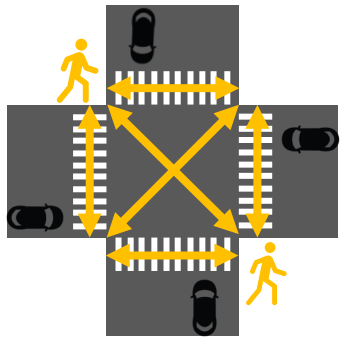




71 feet

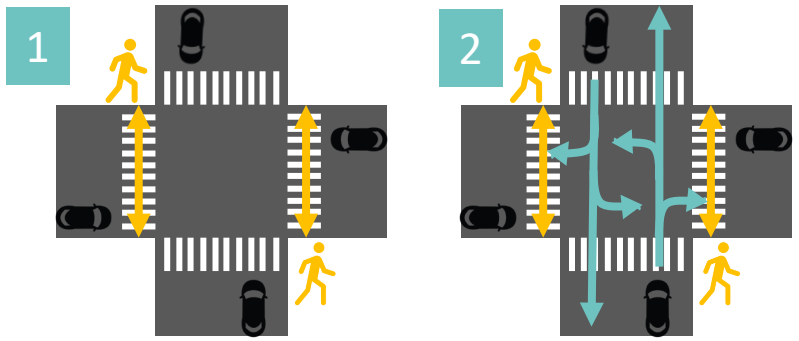
Pedestrian Signal Phasing

Exclusive Phasing



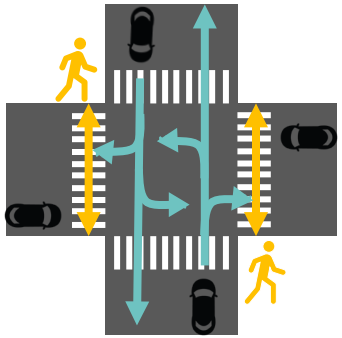
Includes phase where ***only pedestrians move***

Concurrent with Leading Pedestrian Interval



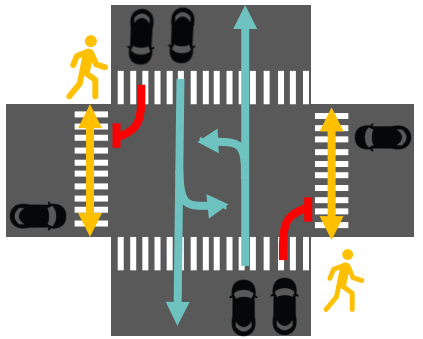
Concurrent phase where ***pedestrians get a head start***

Concurrent Phasing



Includes phase where ***vehicles and pedestrians move together***

Protected Concurrent Phasing



Concurrent phase where ***turning movements are controlled***

Considerations

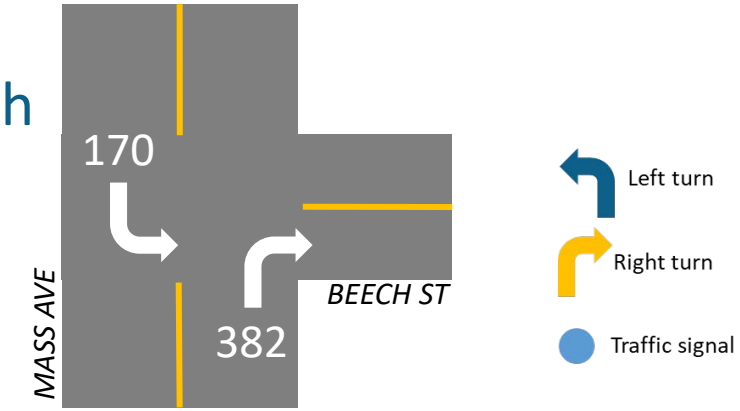
Volume of turning conflicts

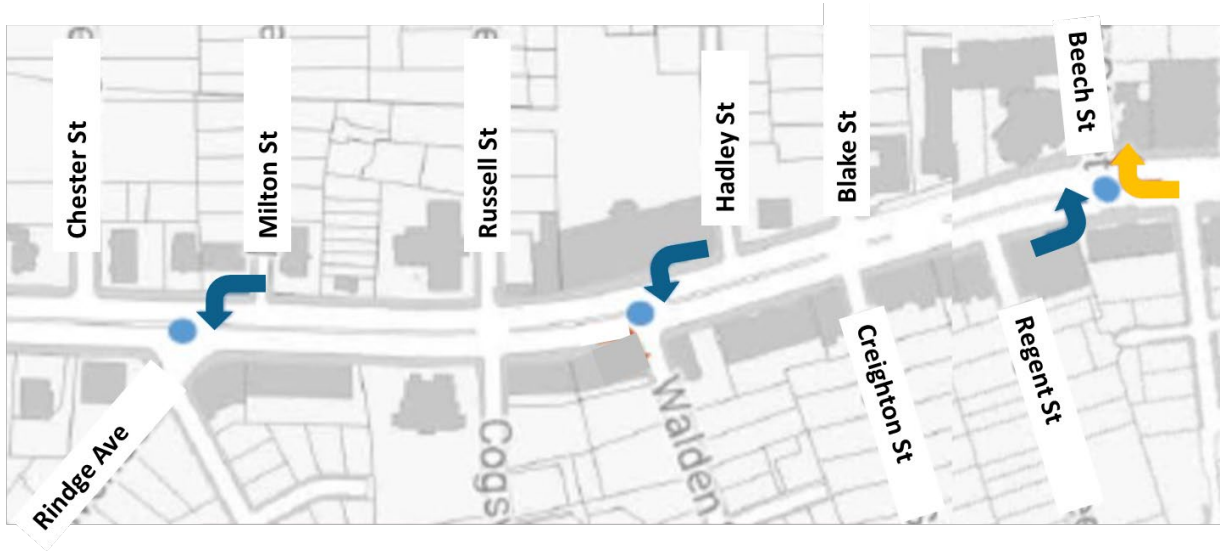
Geometry of intersection

	Waiting time	Conflicts
Concurrent	↓	↑
Exclusive	↑	↓

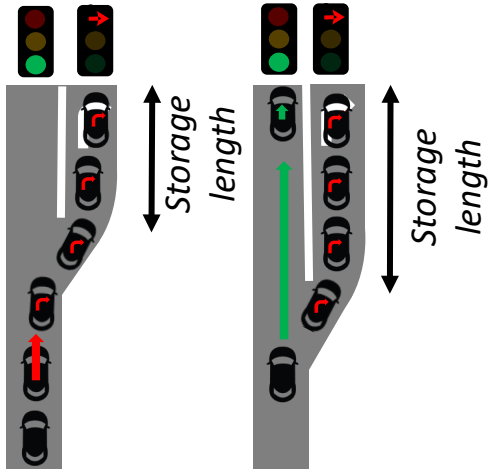
Manage Vehicle Queues

At locations with **high turning volumes**…





…we need to consider **appropriate storage lengths**

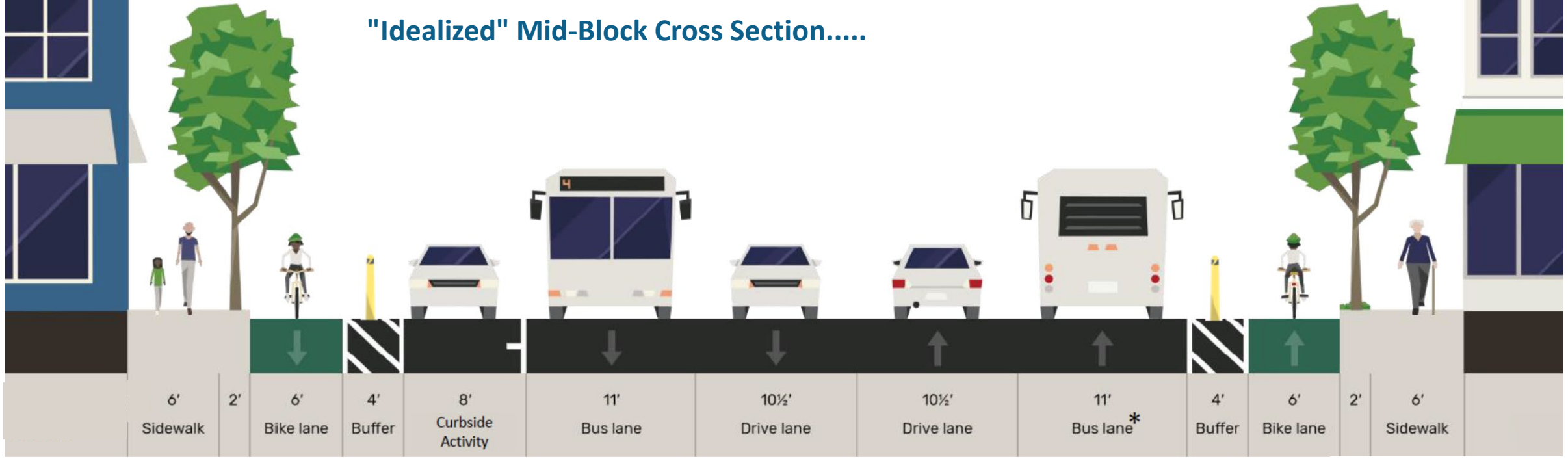


Cambridge City Council votes to ban turns on red - Boston News, Weather, Sports | WHDH 7News

CAMBRIDGE, MASS. (WHDH) - After a city council vote Monday night, Cambridge joins a handful of cities in America where turning on red is illegal.The<a class="excerpt-read-more"

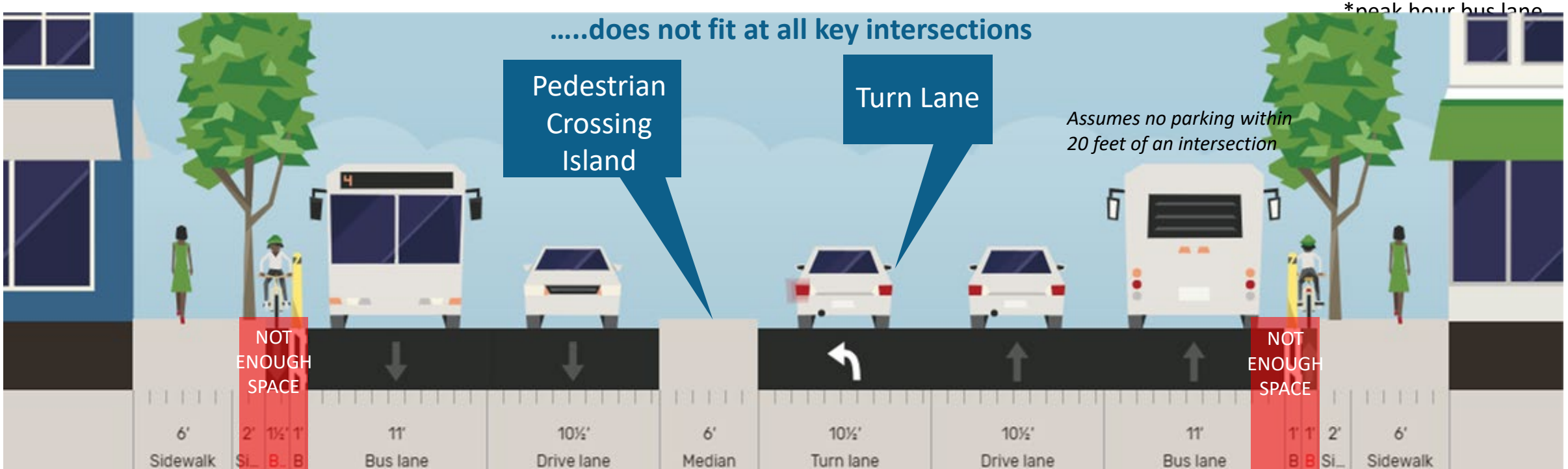
Boston News, Weather, Sports | WHDH 7News

"Idealized" Mid-Block Cross Section.....

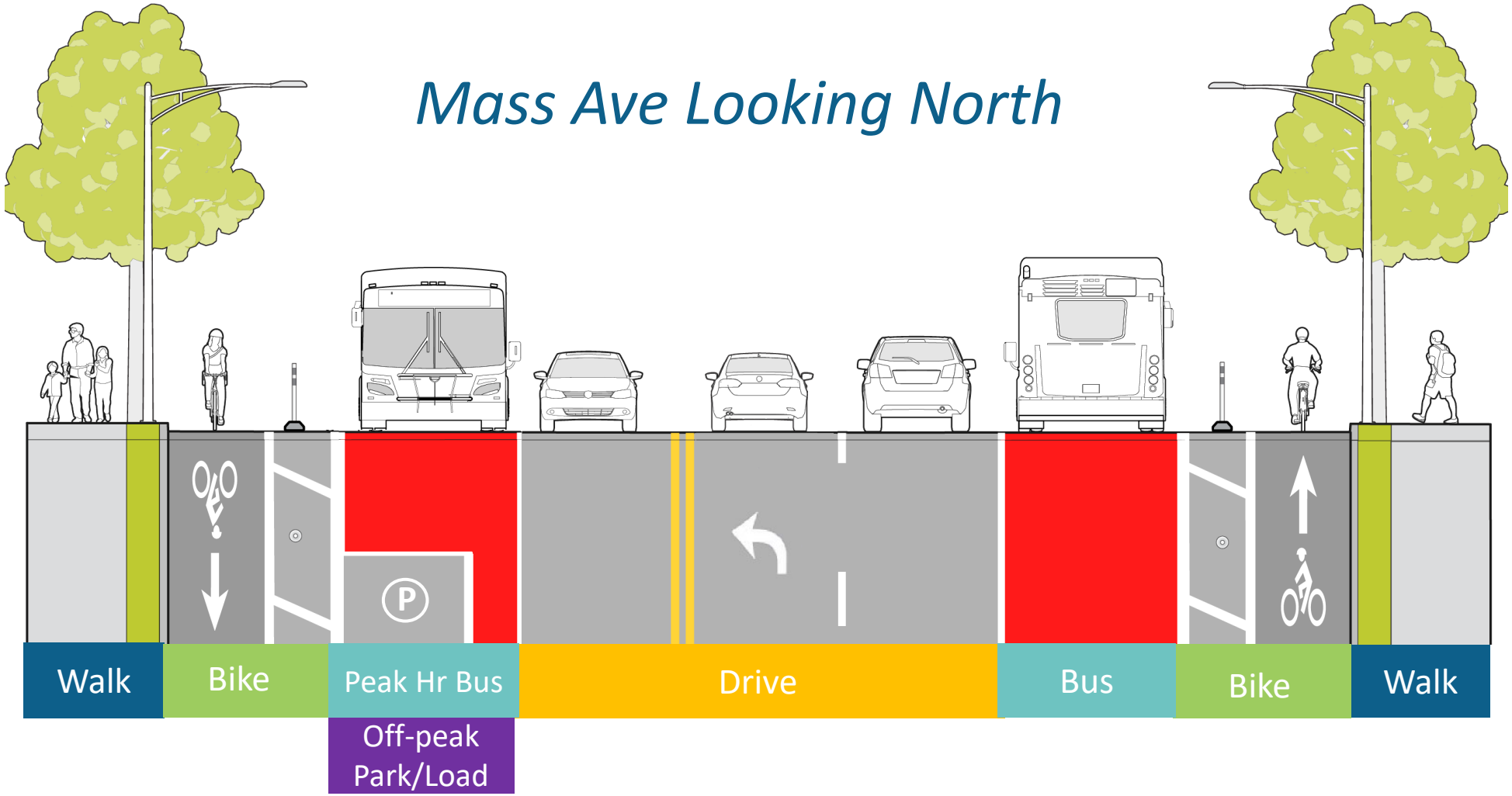


*peak hour bus lane

.....does not fit at all key intersections



Typical Proposed Cross Section: Rindge Avenue to Linnaean Street



Bus Lane Configuration

Key Features of the Draft Concept

Between Rindge Ave and Linnaean Street, the following are proposed:

- Separated bike lanes
- Northbound bus lane
- Southbound bus lane morning peak period
  - Parking during the day and evening where feasible
  - Dedicated turn lanes
- Floating bus stop islands
- Crosswalk signal timing improvements
- New crosswalk locations
- Accessible parking maintained or shifted to side streets
- Loading and pick-up/drop-off activity accommodated where feasible

Working Group Q&A

Rindge Ave to Porter Square
Concept Design

Let's Talk About…

Crosswalk locations

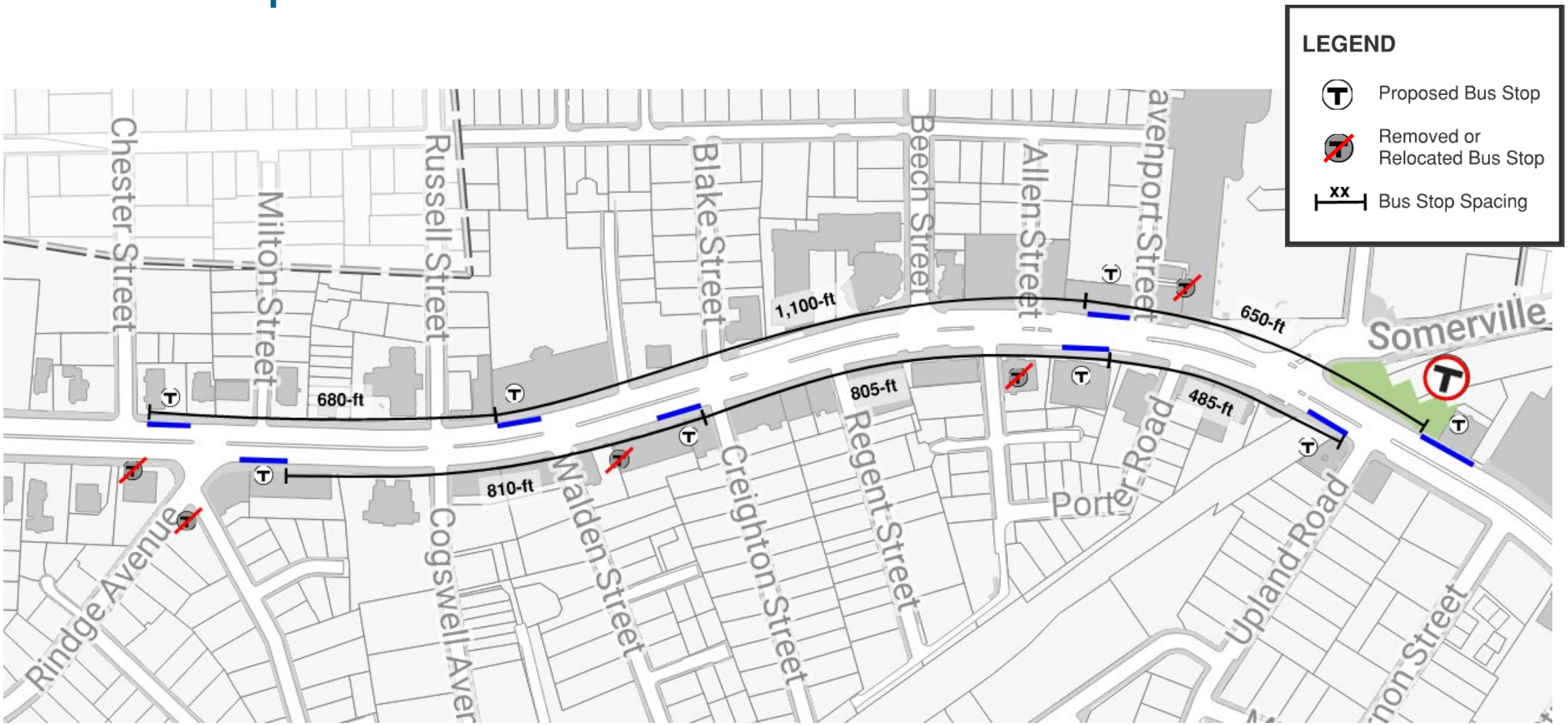
Bus stops

Curb Uses

Crosswalks

HAWK on Binney Street

Bus Stops


LEGEND
Proposed Bus Stop
Removed or Relocated Bus Stop
XX
Bus Stop Spacing
Chester Street
Milton Street
Russell Street
Blake Street
Beech Street
Allen Street
avenport Street
Somerville
680-ft
1,100-ft
650-ft
805-ft
485-ft
810-ft
Ridge Avenue
Cogswell Aver
Walden Street
Creighton Street
Regent Street
Porter Road
Upland Road

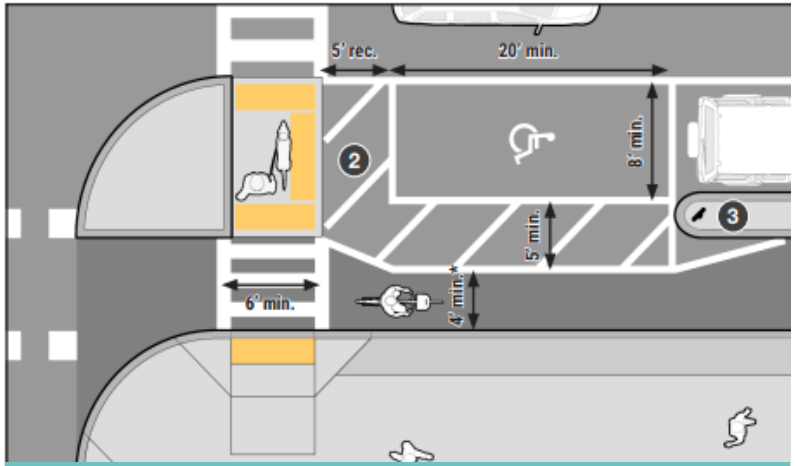
Review of Curb Use Elements

Floating Parking

Side street curb regulations

Loading Zone

Curbside Accessible Space

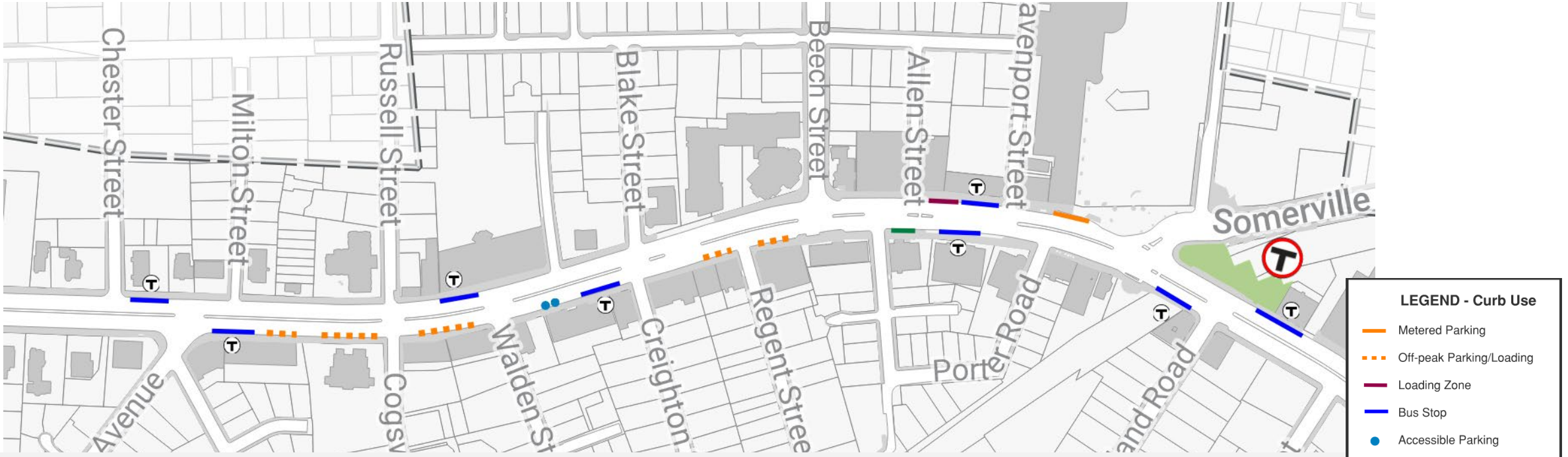


"Floating" Accessible Space
(MassDOT Separated Bike Lane Design Guide)

Floating Bus Stop

Draft Curbside Use Allocation Proposal

- With higher traffic demands in this section, curbside activity will primarily be provided off-peak within the southbound bus lane
- Opportunities to provide additional accessible parking and loading along side streets is currently under review



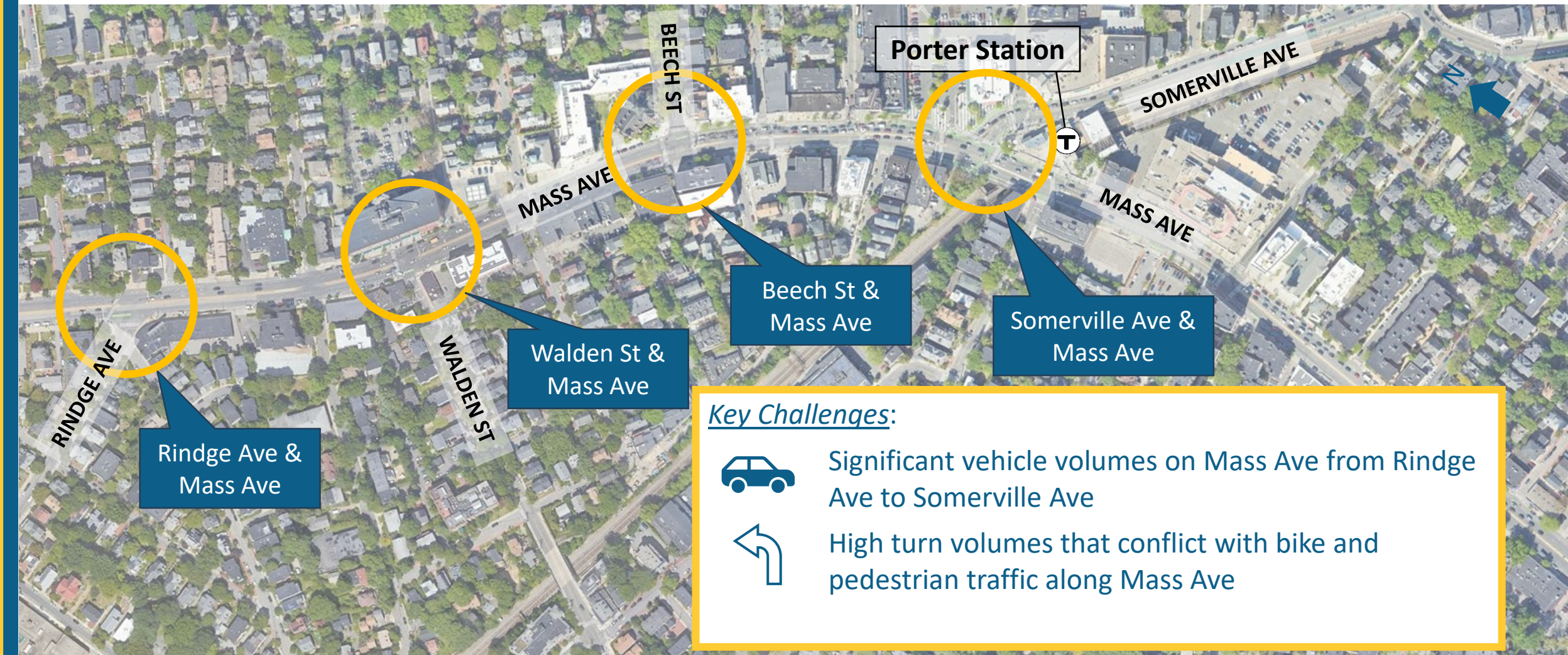
For Discussion – specific locations for loading, Bluebikes, etc TBD based on feedback and further study

Working Group Q&A

Rindge Ave to Walden St
Traffic Operations

Traffic Operations

Rindge Ave to Somerville Ave *has several intersections with complex multimodal challenges*

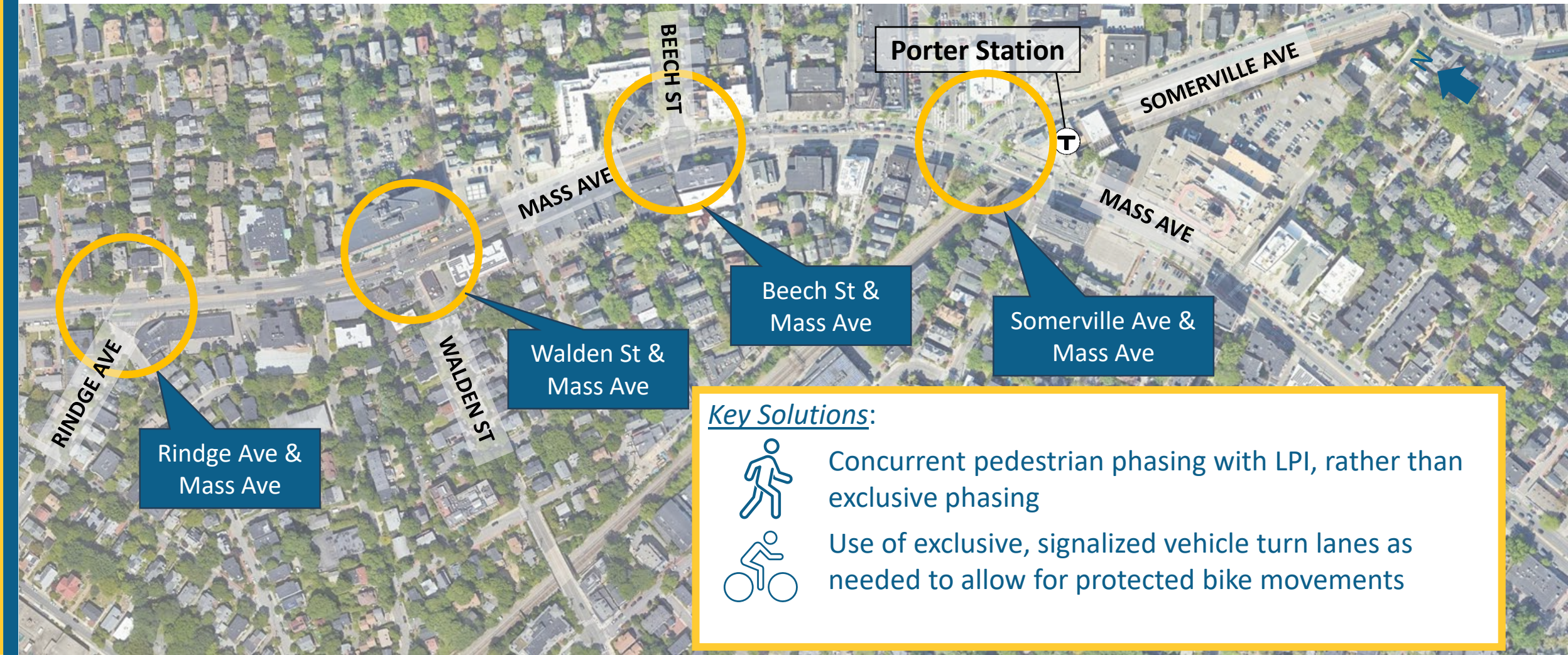


Key Challenges:

- Significant vehicle volumes on Mass Ave from Rindge Ave to Somerville Ave
- High turn volumes that conflict with bike and pedestrian traffic along Mass Ave

Traffic Operations

*The **Concept Design** includes key solutions to address intersection challenges*

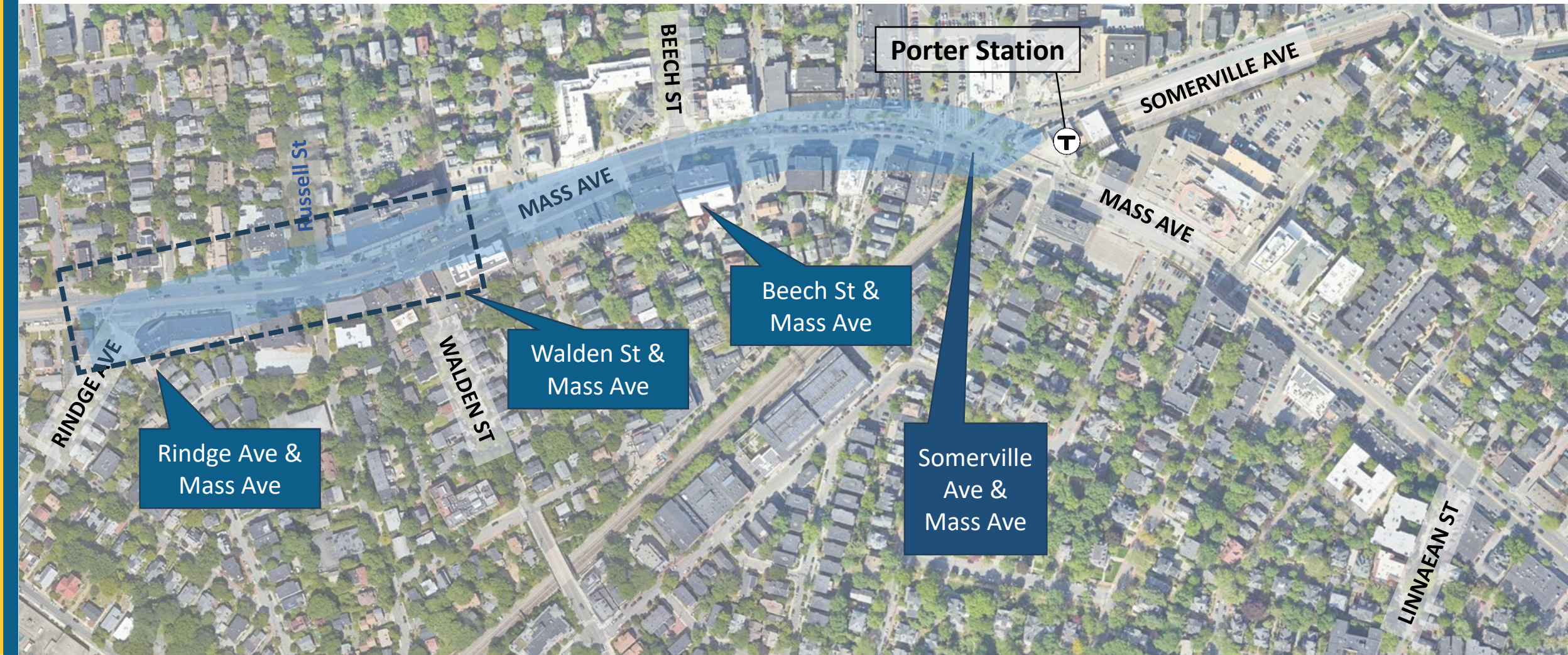


Key Solutions:

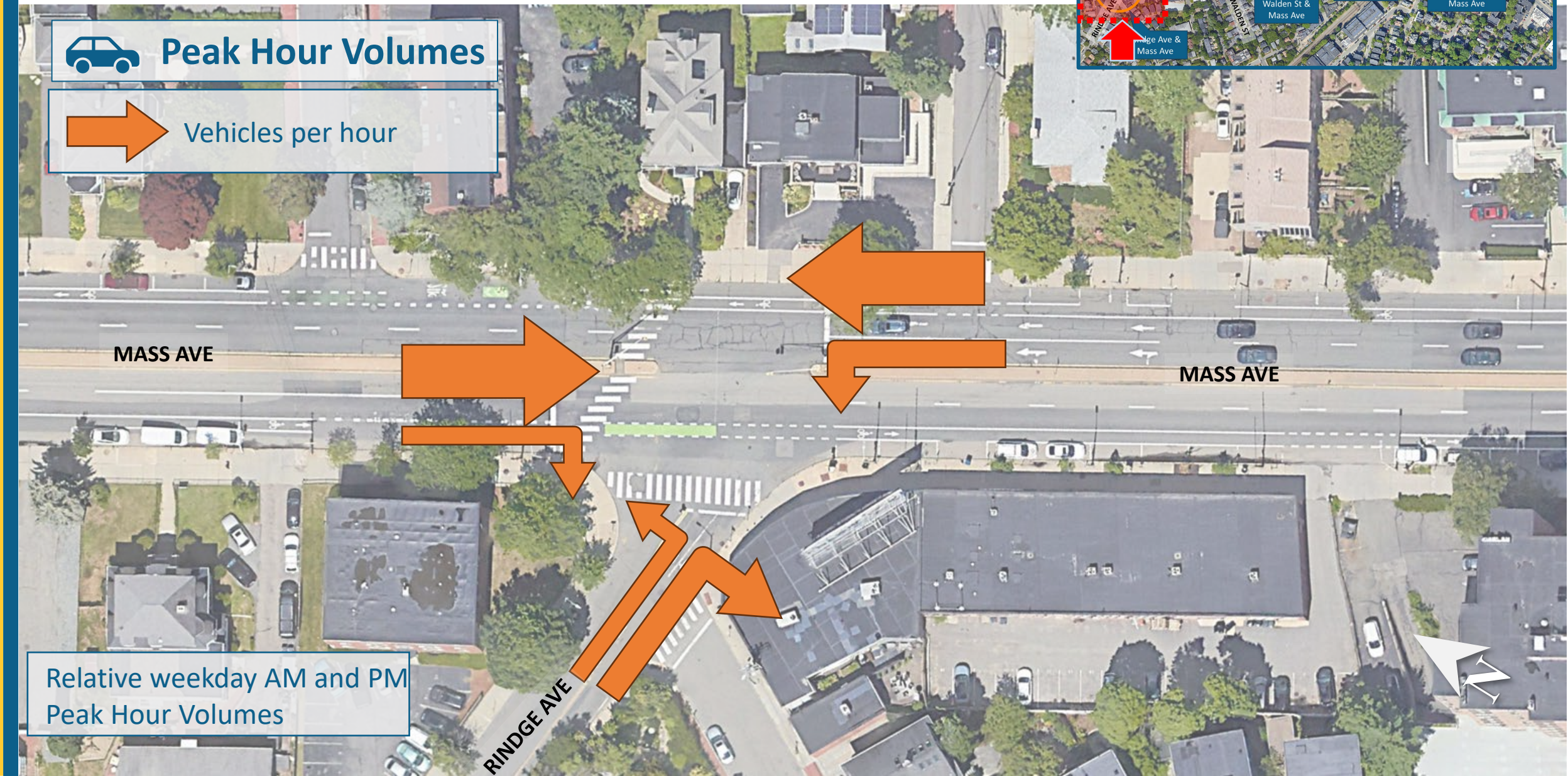
- Concurrent pedestrian phasing with LPI, rather than exclusive phasing
- Use of exclusive, signalized vehicle turn lanes as needed to allow for protected bike movements

Traffic Operations

Rindge Ave to Walden St



Rindge Ave Intersection



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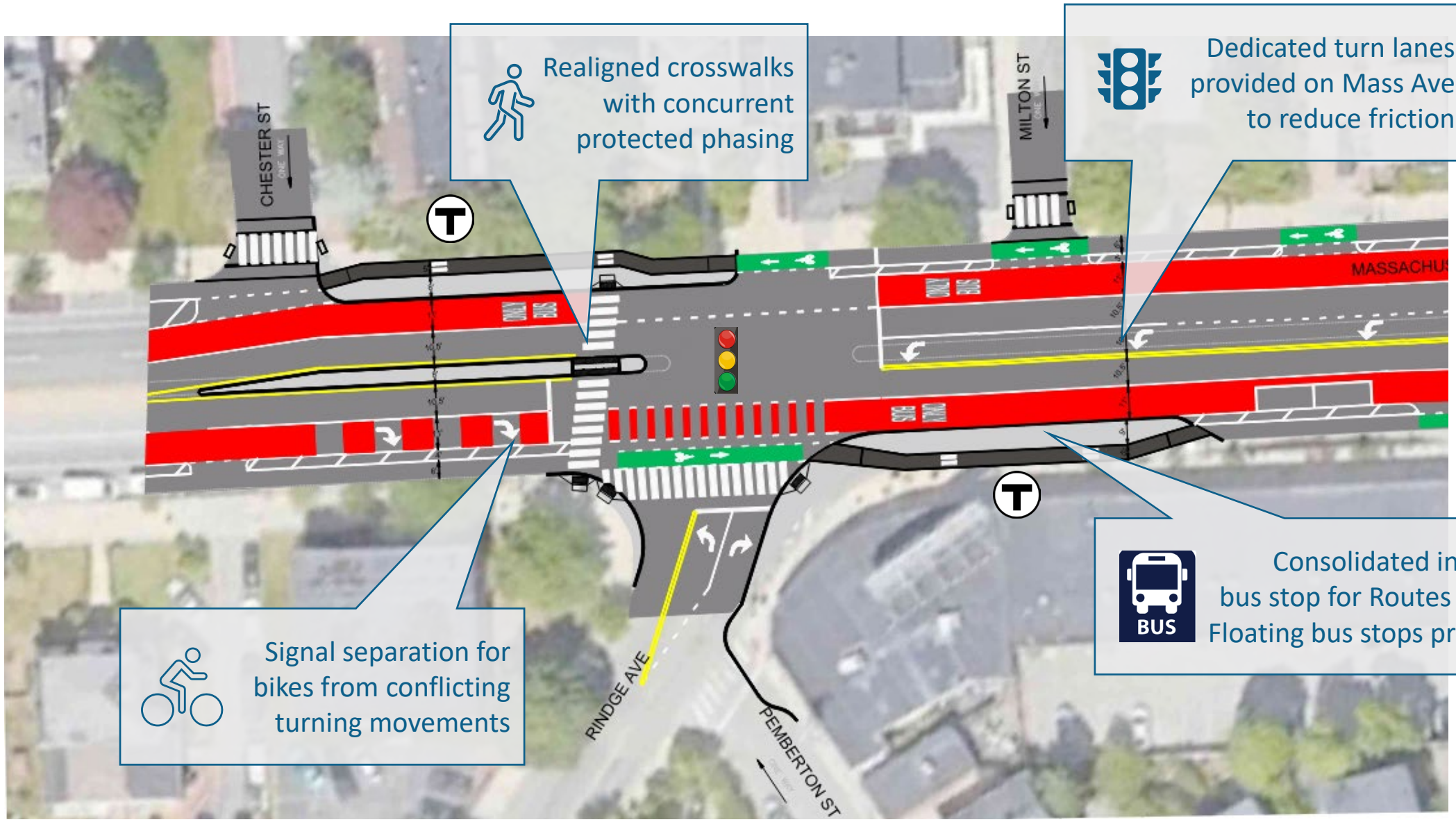


Rindge Ave Intersection

Signal Phase 1

- Vehicle movements
- Bus movements
- Bike movements

MASS AVE

RINDGE AVE

PEMBERTON ST

MILTON ST

Potential opportunity to implement transit signal priority.

Right-turns to run as a separate phase to provide bike and pedestrian separation.

Rindge Ave Intersection

Signal Phase 2

- Vehicle movements
- Bus movements
- Bike movements
- Pedestrian movements

MILTON ST

MASS AVE

RINDGE AVE

PEMBERTON ST

Bicycles and pedestrian phases to run with no turning vehicle conflicts.

Concurrent protected pedestrian crossing phase.

Rindge Ave Intersection

Signal Phase 3

Vehicle movements

Pedestrian movements

Concurrent protected pedestrian crossing phase.

MILTON ST

MASS AVE

RINDGE AVE

PEMBERTON ST

Left turn lane allows for phasing separation from Rindge Ave pedestrian movement.

Rindge Ave Intersection

Signal Phase 4

Vehicle movements

MILTON ST

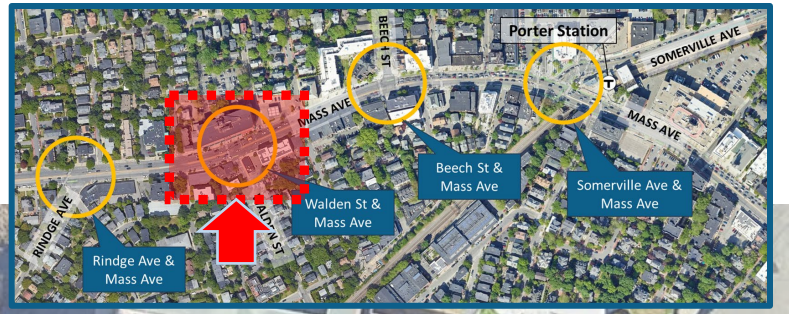
MASS AVE

RINDGE AVE

PEMBERTON ST

This phase would only run when there is a left-turn demand on Rindge Ave.

Walden Street Intersection



Peak Hour Volumes

Vehicles per hour

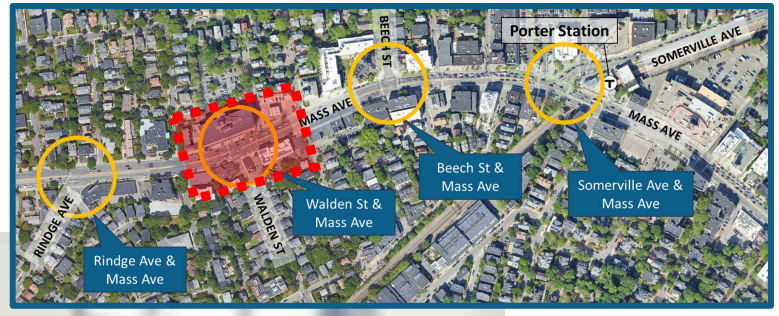
MASS AVE

MASS AVE

N

Relative weekday AM and PM Peak Hour Volumes

Walden Street Intersection



BUS

Dedicated bus lanes and floating bus stops provided

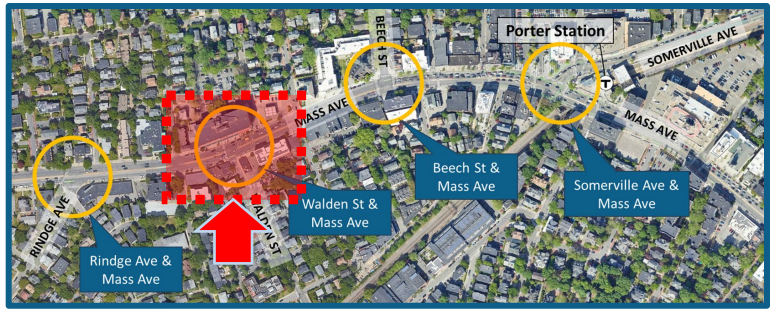
New crosswalk added. Concurrent protected phasing provided

Signal separation for bikes from conflicting turning movements

Accessible parking maintained

Dedicated turn lanes provided on Mass Ave to reduce friction

Walden Street Intersection



Signal Phase 1

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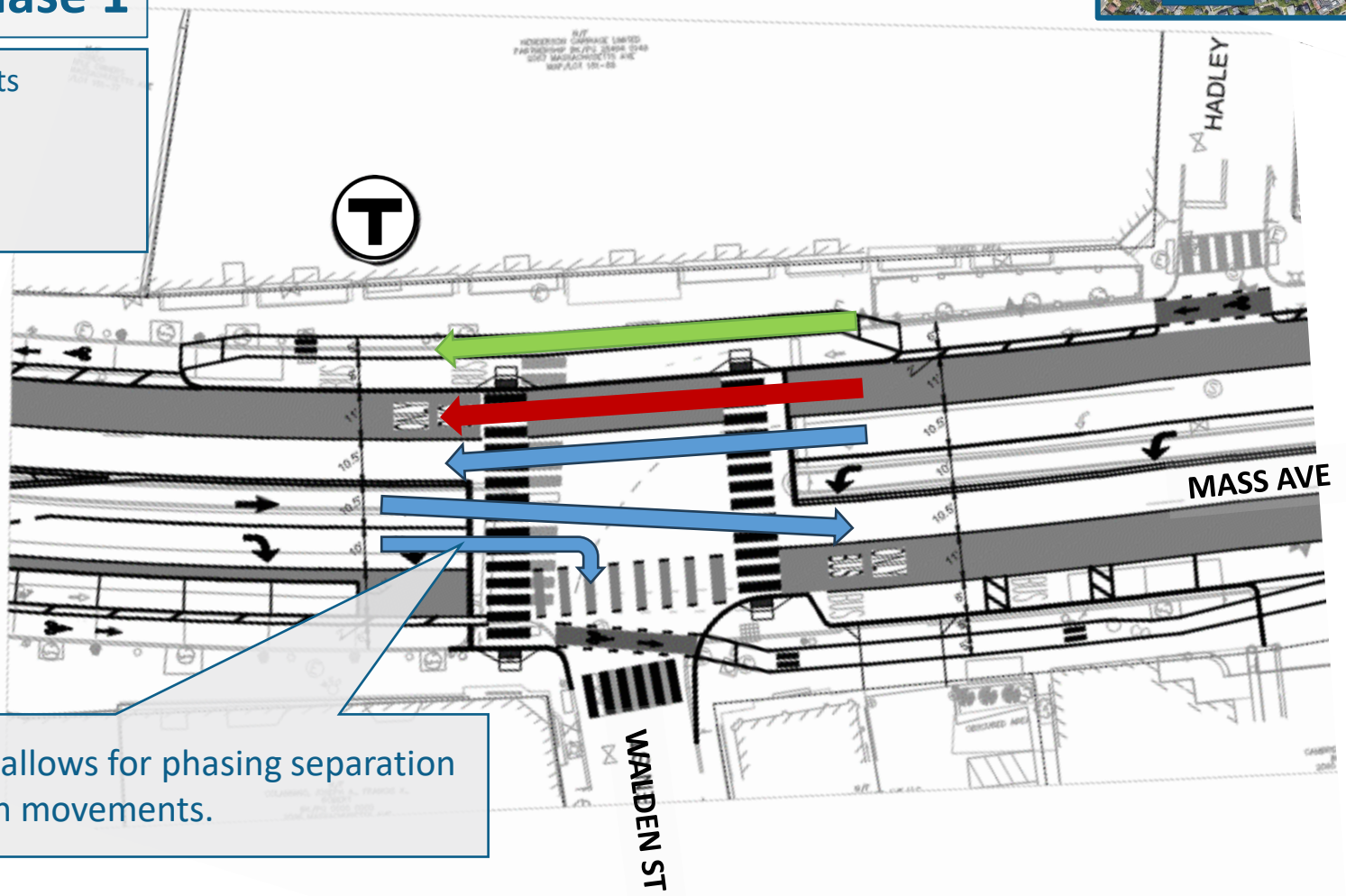
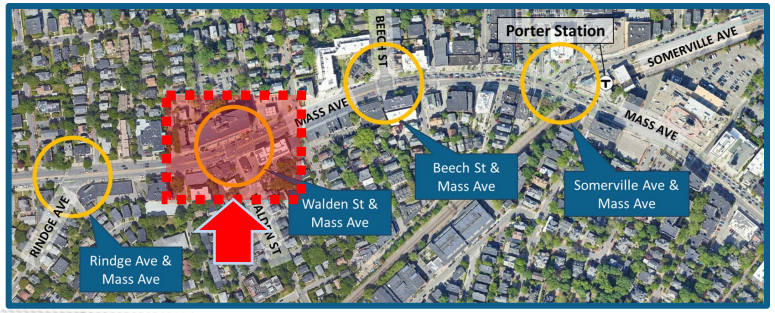
- Bike movements



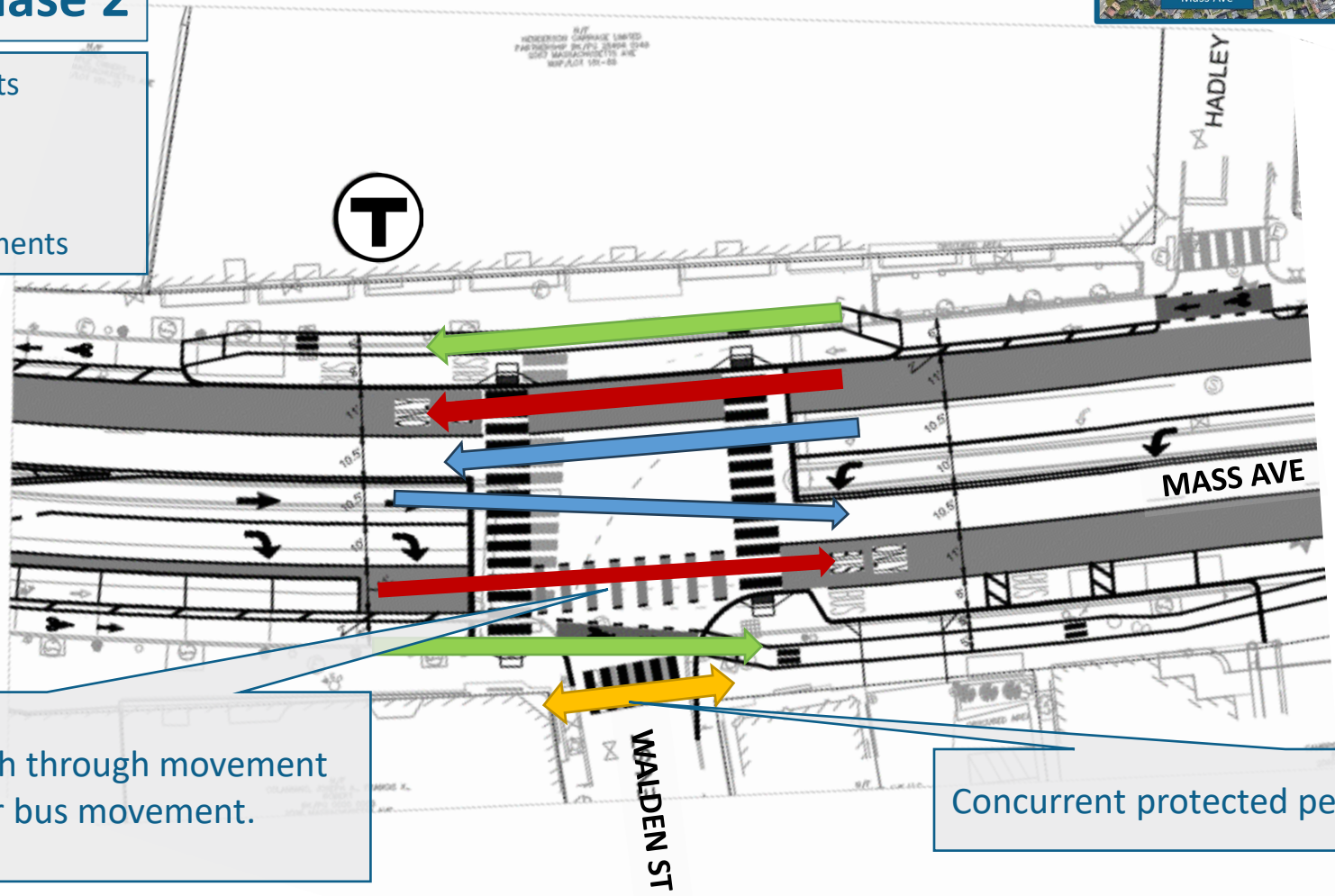
Providing right-turn lane allows for phasing separation from bike, and pedestrian movements.

Walden Street Intersection



Signal Phase 2

- Vehicle movements
- Bus movements
- Bike movements
- Pedestrian movements



Running the bus lane with through movement maximizes green time for bus movement.

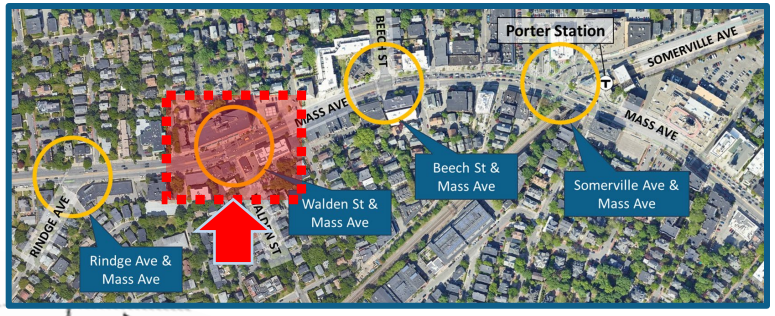
Concurrent protected pedestrian crossing phase.

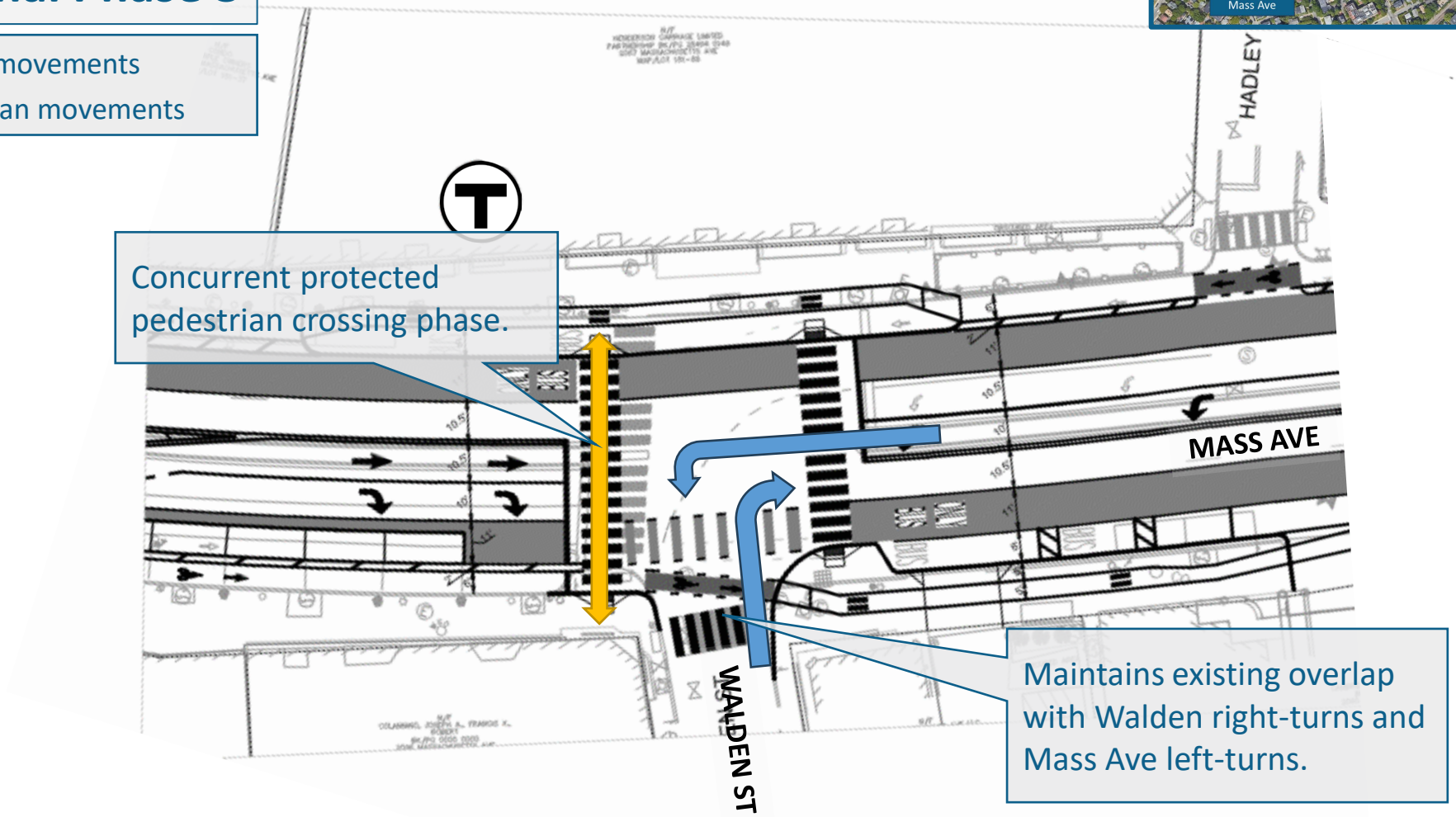
Walden Street Intersection

Signal Phase 3

Vehicle movements

Pedestrian movements





Concurrent protected pedestrian crossing phase.

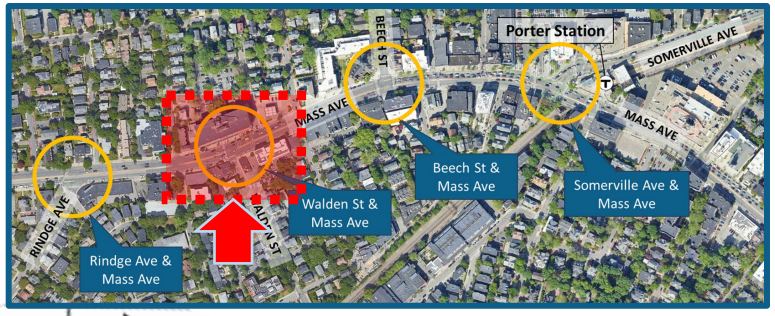
Maintains existing overlap with Walden right-turns and Mass Ave left-turns.

Walden Street Intersection

Signal Phase 4

Vehicle movements

Pedestrian movements



Concurrent protected pedestrian crossing phase.

HADLEY

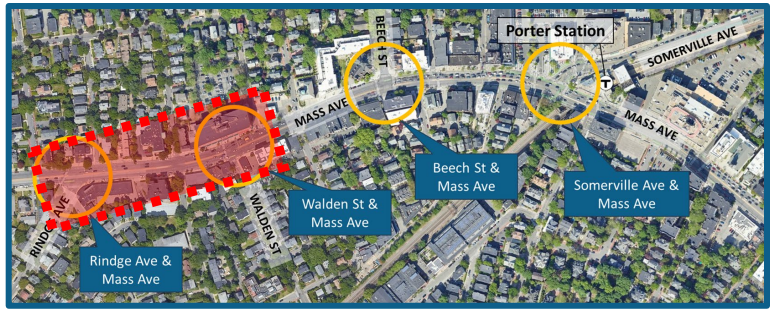
MASS AVE

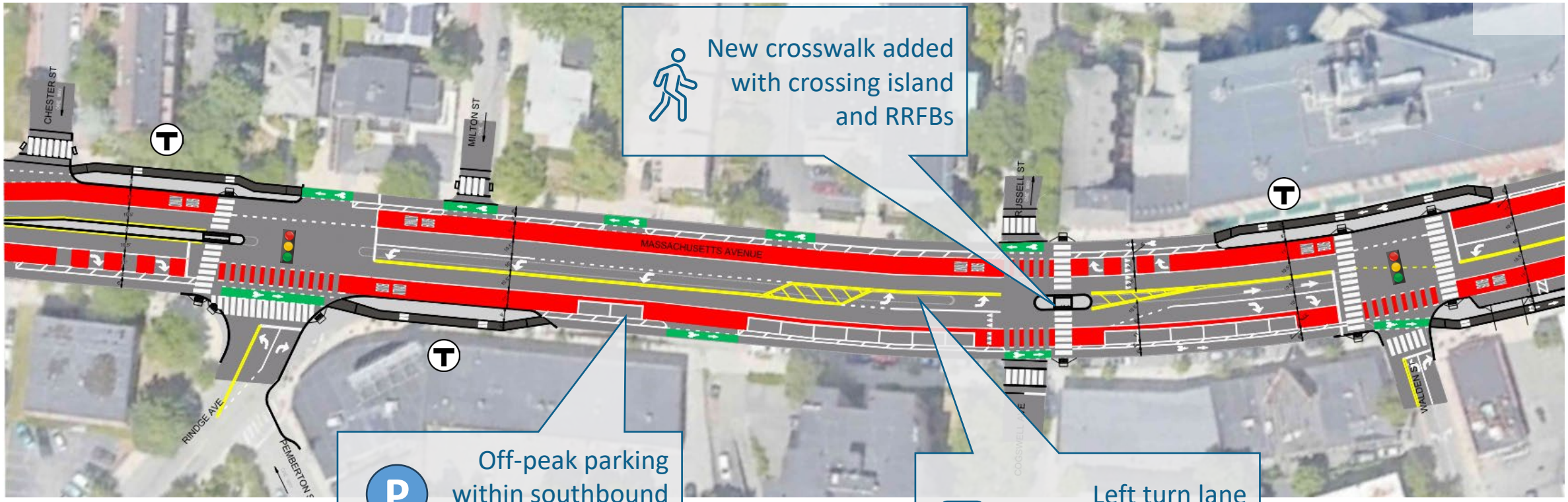
WALDEN ST

High left-turn demand allows for movement to run concurrent with new crosswalk on Mass Ave.

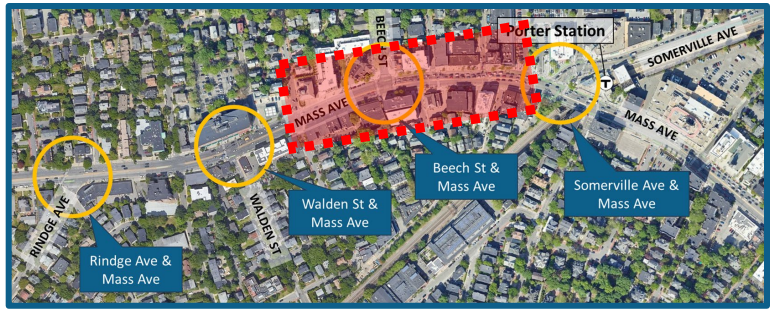
Working Group Q&A

Rindge to Walden



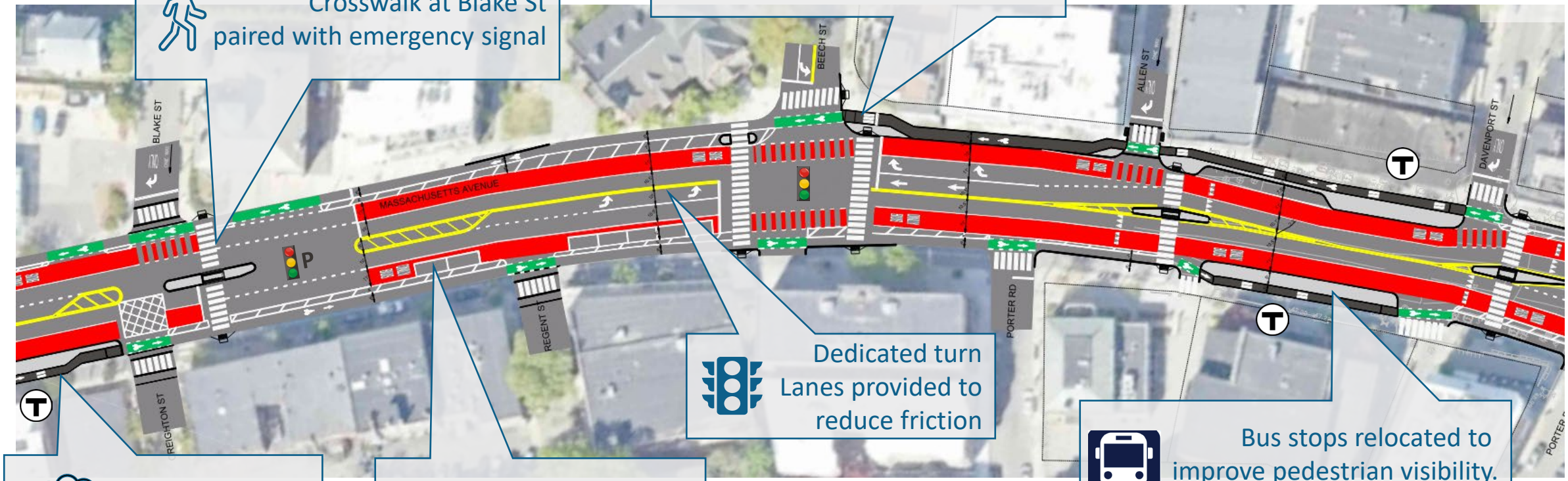


Walden to Davenport



Crosswalk at Blake St paired with emergency signal

Signal separation and protected intersection treatment to reduce conflicts



Dedicated turn Lanes provided to reduce friction

Bus stops relocated to improve pedestrian visibility. Floating stops provided

BUS

Tree condition to be confirmed

Off-peak parking within southbound bus lane

P

Porter Square (Somerville Ave)

Protected concurrent phasing for crosswalks

Signal separation and hardened buffer to reduce conflicts

Porter Station
(Red Line and Commuter Rail)

DESIGN UNDER DEVELOPMENT

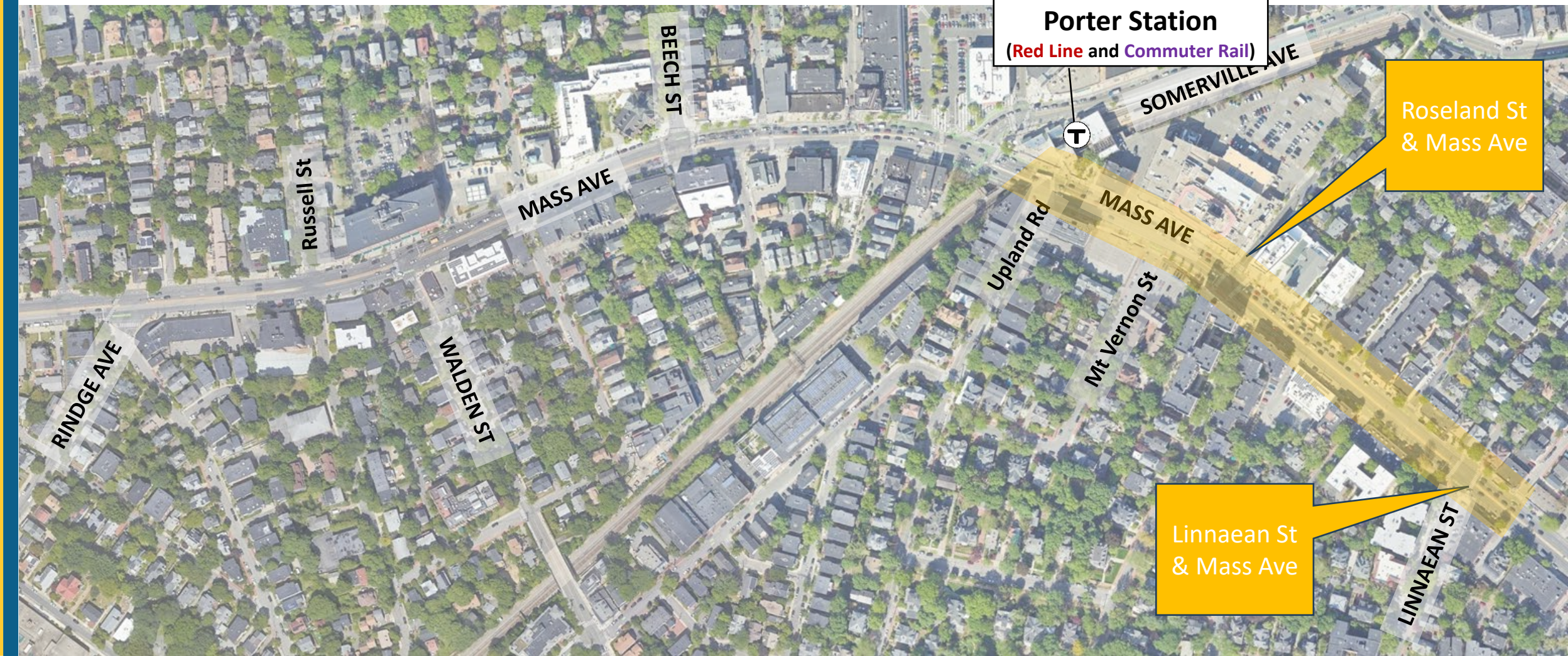
All day dedicated bus lanes in both directions to improve bus efficiency

Dedicated turn lanes provided to reduce friction

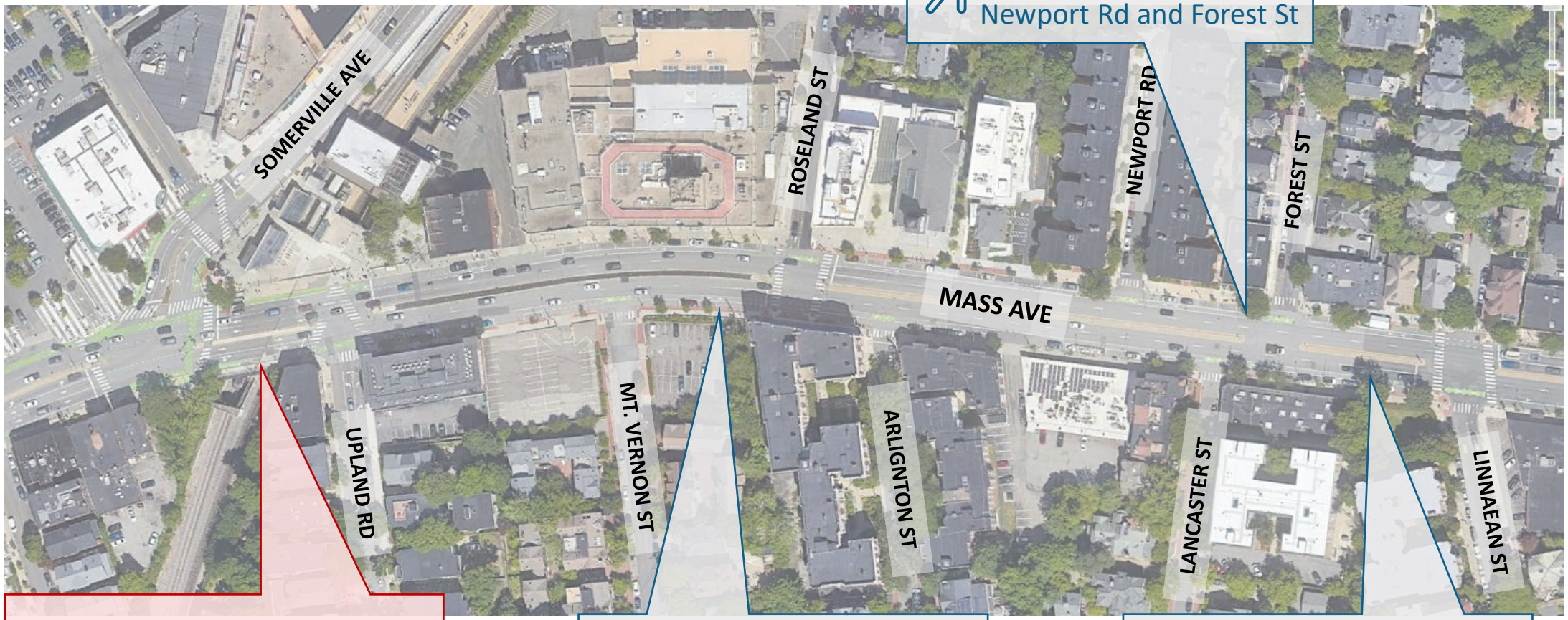
Working Group Q&A

Porter Square to Linnaean St
Design Direction

Porter Square to Linnaean St



Issues and Opportunities



Potential for new crosswalk between Newport Rd and Forest St

Bridge over MBTA tracks creates challenges for floating bus stops

Potential for a three-lane cross section with parking on both sides

Dedicated turn lanes can be provided to reduce friction

Working Group Q&A

Linnaean St to Waterhouse St
50% Design Update

Linnaean St to Waterhouse St

50% Design

Linnaean St to Waterhouse St Status

- Public Workshop – Dec 2023
  - Approx. 100 in-person attendees
  - Over 100 roll plan comments
  - Over 100 online survey responses
  - *Key Themes*:
    - Support for how the design accommodates all modes
    - Materials used for bike lane separation (e.g., concrete curbs vs. flex posts)
    - Considerations for curb use needs (e.g., loading zones)
    - Bus lane operations
- 50% design submitted to City for review – first week of April

Online survey revealed general support for the design…

~ 75% said it meets needs of different users

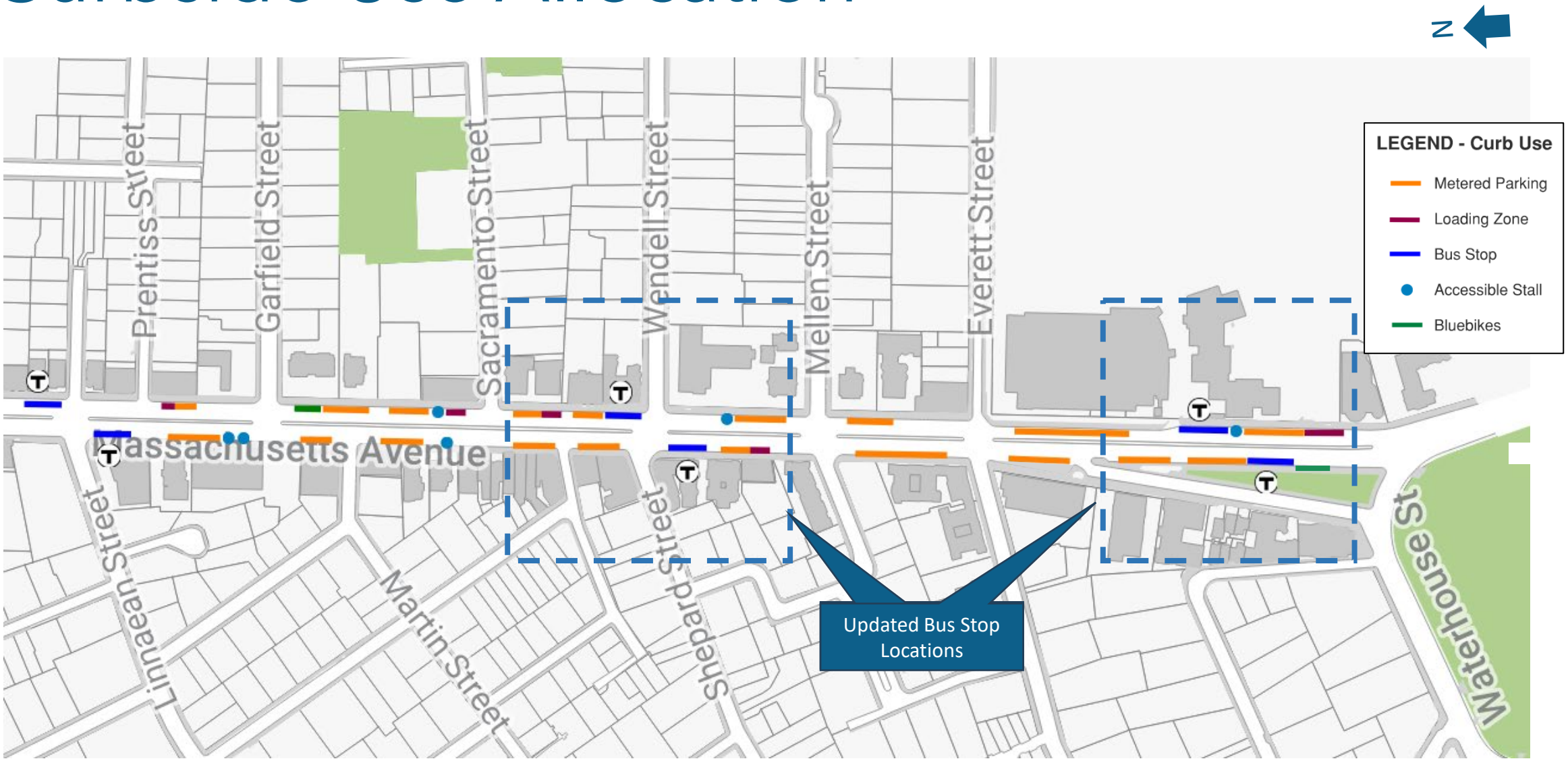
~ 67% said it meets curb access needs

~ 95% said it meets pedestrian needs

~ 95% said it meets transit rider needs

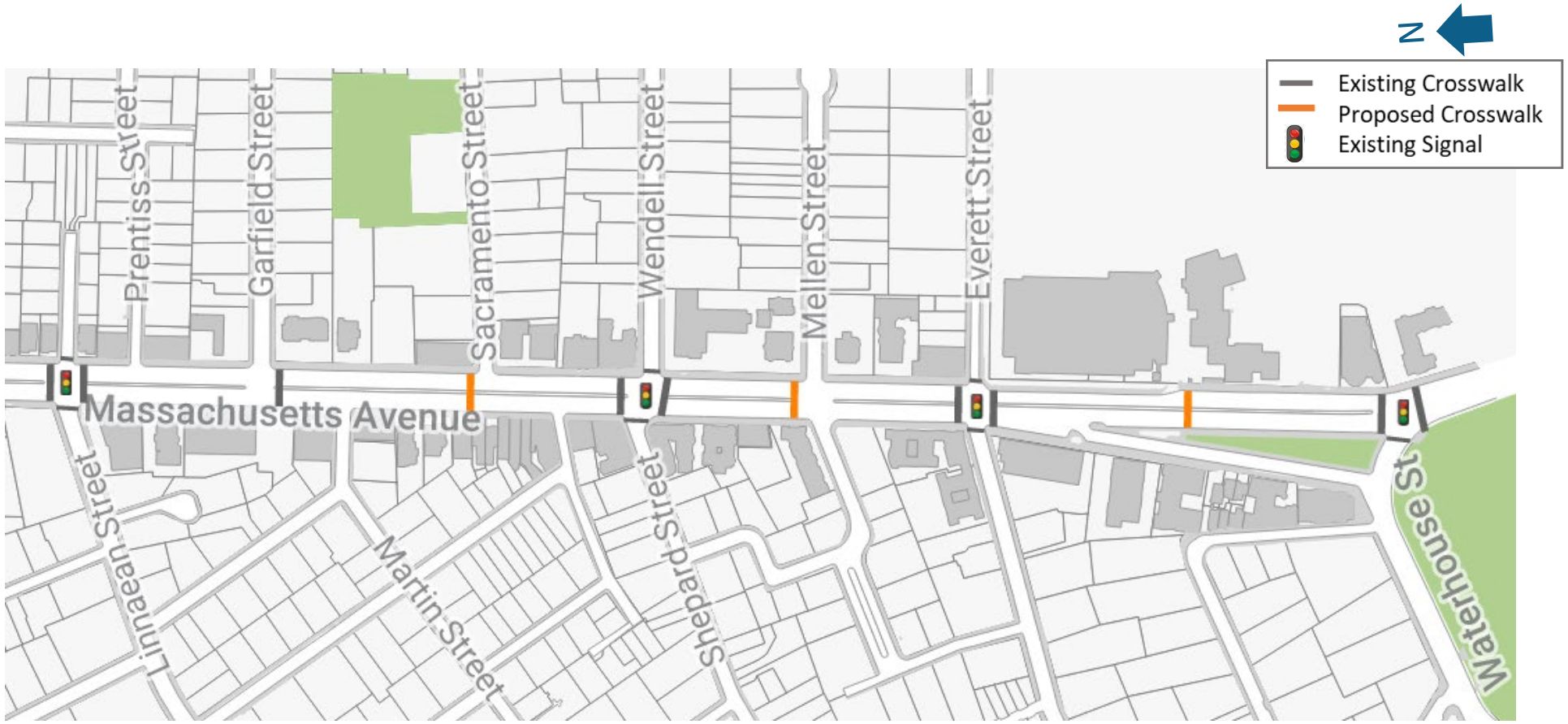
Most respondents supported Option 1 at Chauncy Street/Everett Street (southbound bus lane and mid-block bus stops), but support for both options in the survey and at public workshop.

Curbside Use Allocation



Bicycle Facilities

Crosswalks*



** No change since December 2023 Concept Plan*

Working Group Q&A

Next Steps

Expected Timeline and Next Steps

April

- Working Group #4
- Business outreach

May

- Share draft concepts Rindge to Linnaean with City's joint transportation committee
- City reviewing 50% design south of Linnaean

June

- Public Open House

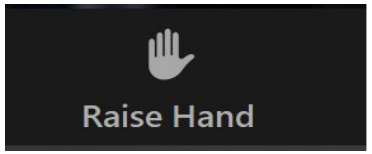
Working Group Discussion

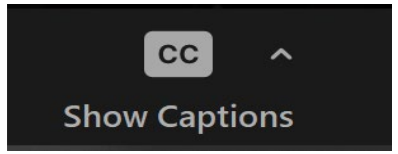
Public Comment

Public Comment

- Use "Raise Hand" button to signal you have a question or press *9 if you are joining by phone only
- Please be kind to each other and help us hear from as many people as possible
- Technical support: MassAve4@Cambridgema.gov

Bottom Panel of Zoom Screen





Questions?

Please reach out to our Project Team at

Email: MassAve4@Cambridgema.gov.

Webpage: cambridgema.gov/massavepartialconstruction