Wellington Circle Study

WELLINGTON CIRCLE STUDY

massDOT Massachusetts Department of Transportation

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

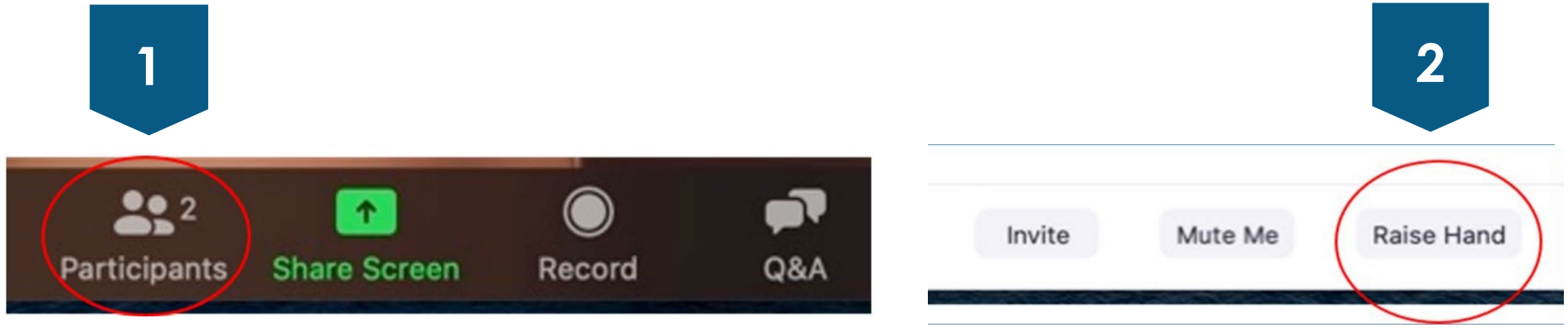
Working Group Meeting #2

May 27, 2021

Ground Rules

- This meeting is being recorded
- Technical Support: Leah Epstein – lepstein@hntb.com
- Working Group Members
  - Use "Raise Hand" button during clarification/discussion periods

Bottom Panel of Zoom Screen



Agenda

- Study Process
- Existing Conditions: Planning Context
- Existing Conditions: Multimodal Transportation Network
- Issues & Opportunities Discussion
- Next Steps

STUDY PROCESS

Study Overview

- Conceptual planning study to evaluate existing and future multimodal transportation conditions at Wellington Circle
- Examine ways to redesign Wellington Circle to provide better connectivity and improve multimodal mobility throughout the area of the City of Medford and surrounding region
- Develop short-, medium-, and long-term recommendations that will be included in a Final Report

Study Goals

1. Improve mobility and connectivity for all transportation modes and users in the Wellington Circle area

2. Improve safety conditions for all transportation modes and users in the Wellington Circle area

3. Improve quality of life for residents in the Wellington Circle area

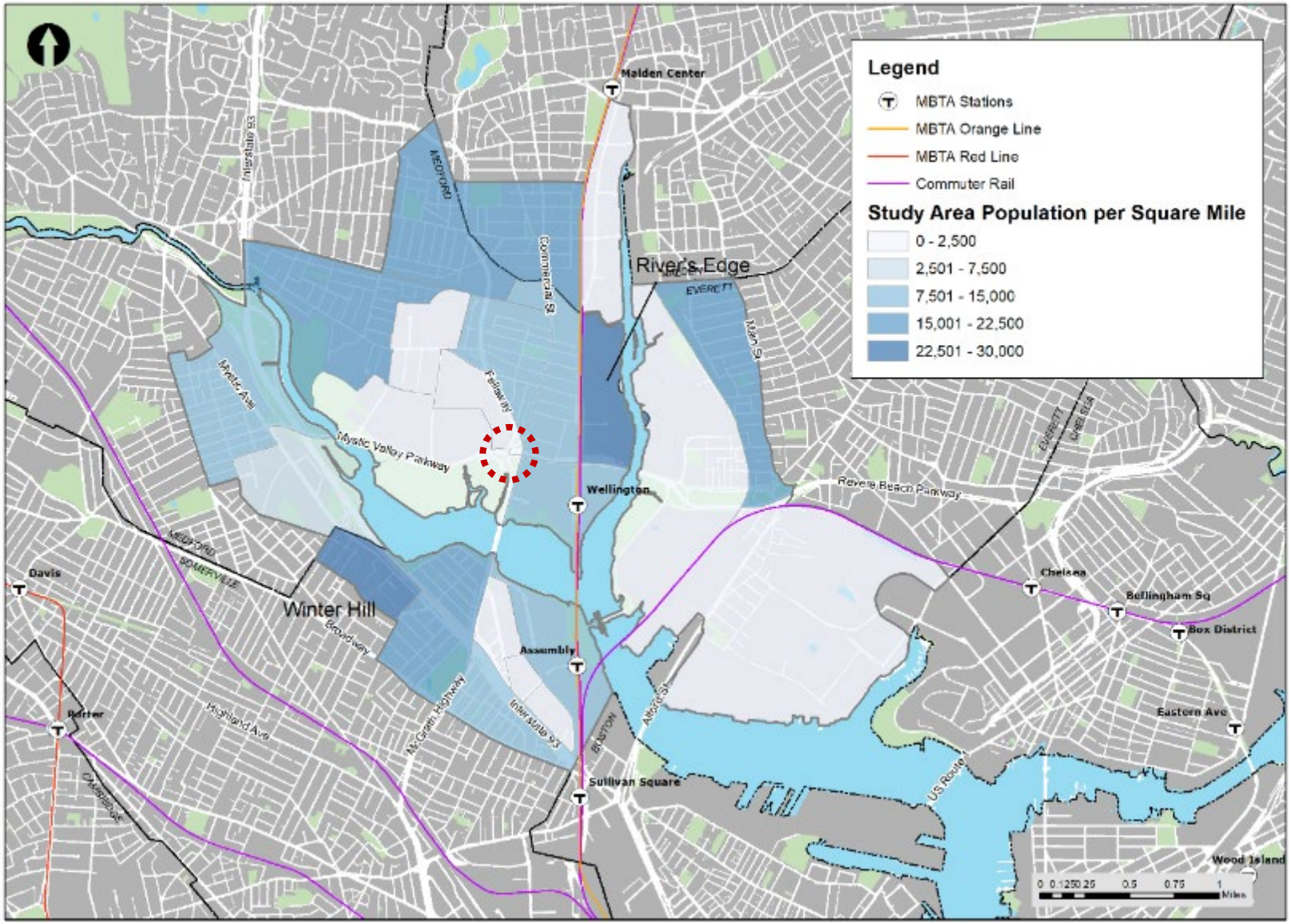
4. Improve local and regional connectivity to support businesses and future development

Study Process

1	• Public Participation, Study Area, Goals & Objectives, Evaluation Criteria	Public Involvement Plan, Study Area, Goals and Objectives, Evaluation Criteria
2	• **Existing Conditions, Future No-Build Conditions, Evaluation of Issues and Opportunities**	Data Collection, Existing Conditions Analysis, Future Year Scenarios, Constraints Identification
3	• Alternatives Development	Short-, Medium-, and Long-Term Alternatives
4	• Alternatives Analysis	Mobility & Accessibility, Safety, Environmental Effects, Land Use & Economic Development, Community Effects/Title VI/Environmental Justice
5	• Recommendations	Short-, Medium-, and Long-Term Recommendations, Implementation Plan
6	• Final Report	Draft and Final Report

EXISTING CONDITIONS: PLANNING CONTEXT

Existing Population Density



Wellington Circle

8,872
Persons per Square Mile in Study Area

Population densities around Wellington Circle are lower than the Study Area at large – there is an opportunity for denser, transit-oriented development given the proximity of the Orange Line Station.

CTPS Population Estimates by TAZ, 2020

Who Makes Up the Local Study Area?

36% of residents identify as non-white*

12% of the population has an income below the federal poverty level*

42% use a language other than English as their primary language*

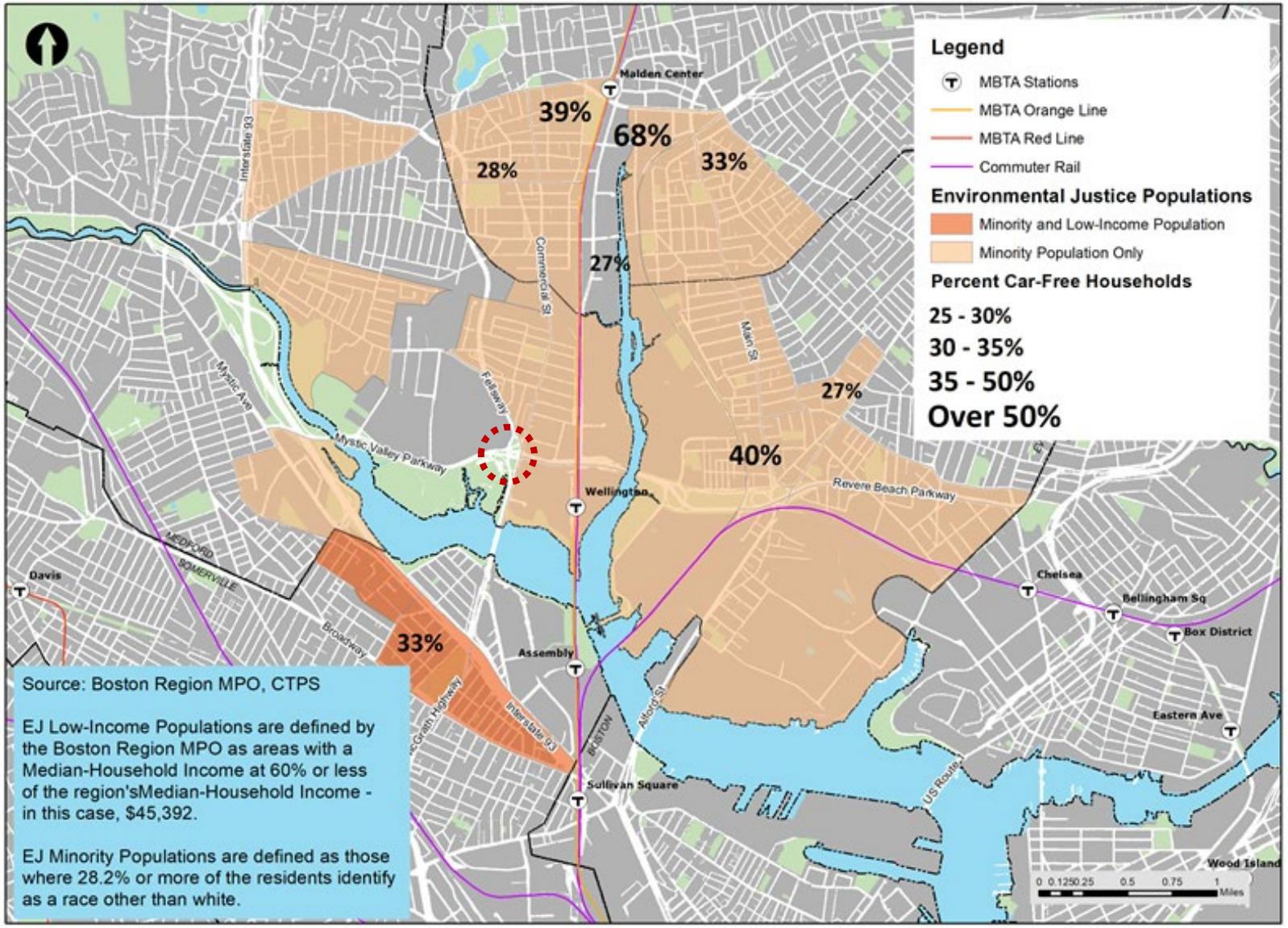
14% of households are car-free

Diversity in the study area goes beyond the environmental justice qualifiers: both Malden and Everett are majority-minority cities, and linguistic diversity is strong as well. Portuguese and French Creole are the most spoken languages other than English.

*Data provided at community level

Car-Free Households,
American Community Survey 5-year Estimates, 2019

Environmental Justice & Car-free Households



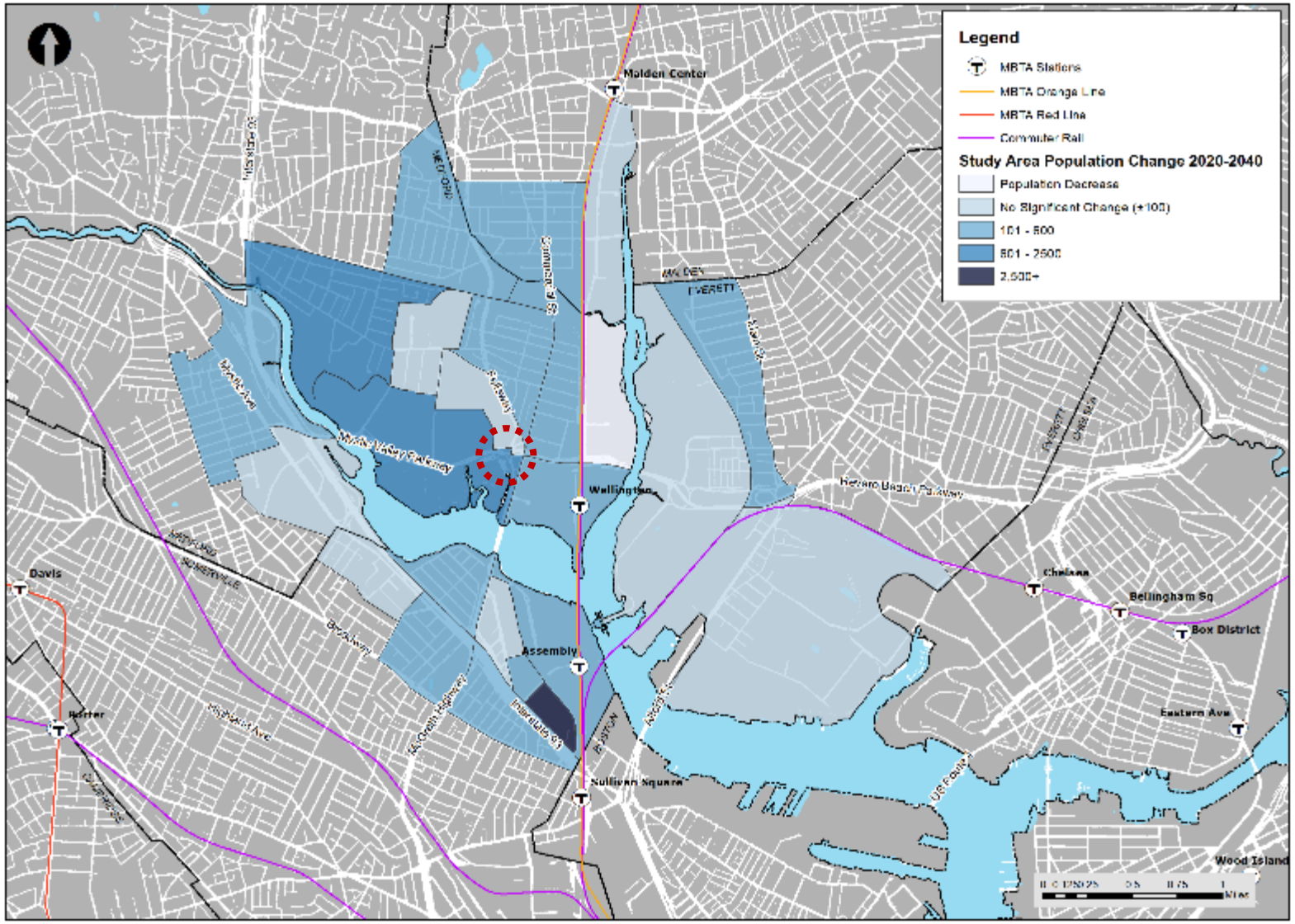
Wellington Circle

14%
Share of Car-Free Households

Improving multimodal connections to Wellington Circle may benefit car-free, minority, and low-income households.

Car-Free Households, American Community Survey 5-year Estimates, 2019

Population Change 2020-2040



CTPS Population Estimates by TAZ, 2020, 2040

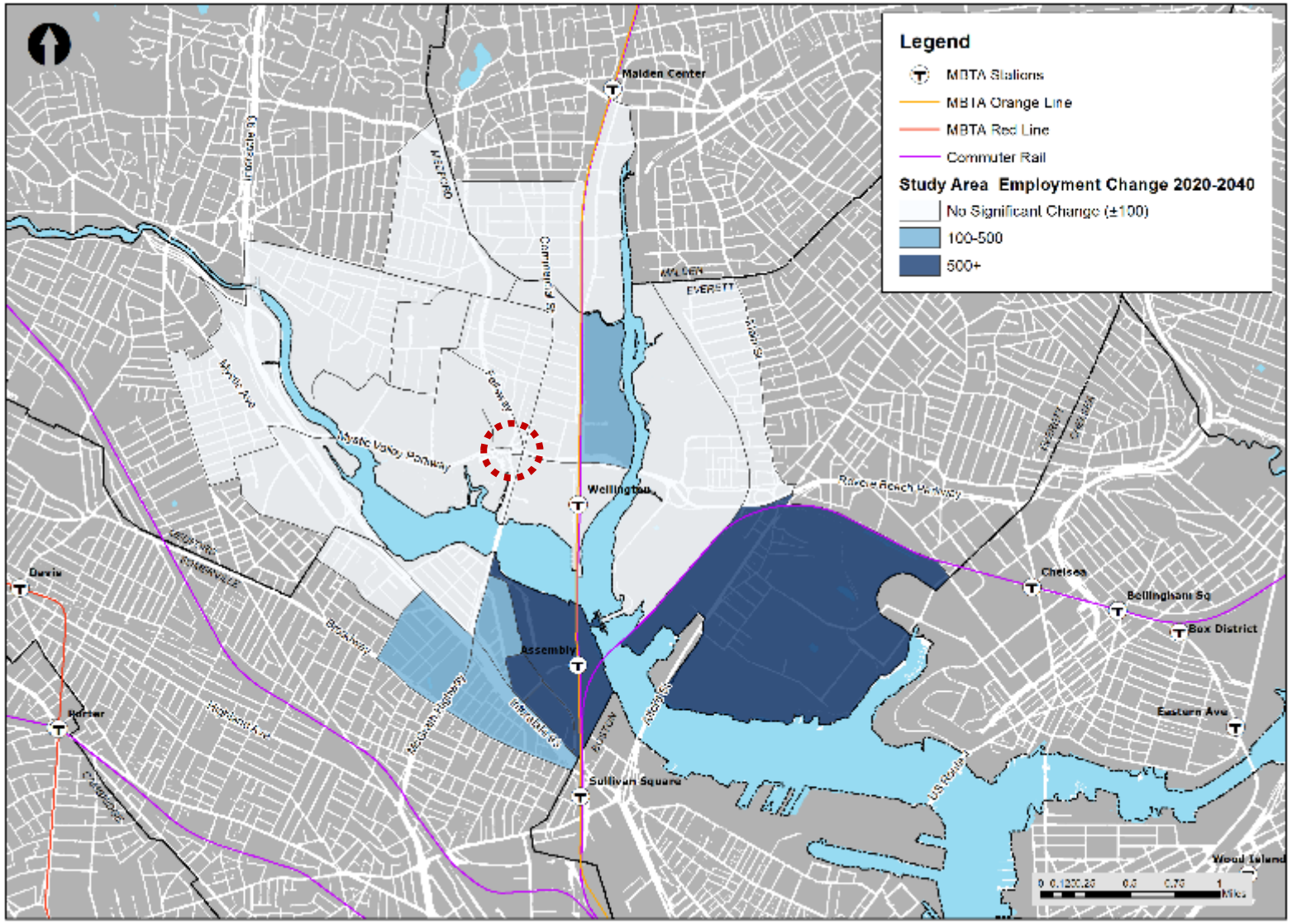
Wellington Circle

~6,700
New Residents in Study Area

36,534 in 2020
43,197 in 2040

As population demands change, increasing the use of multimodal transportation options may provide opportunities to minimize congestion and vehicular emissions.

Employment Change 2020-2040



Wellington Circle

+30%

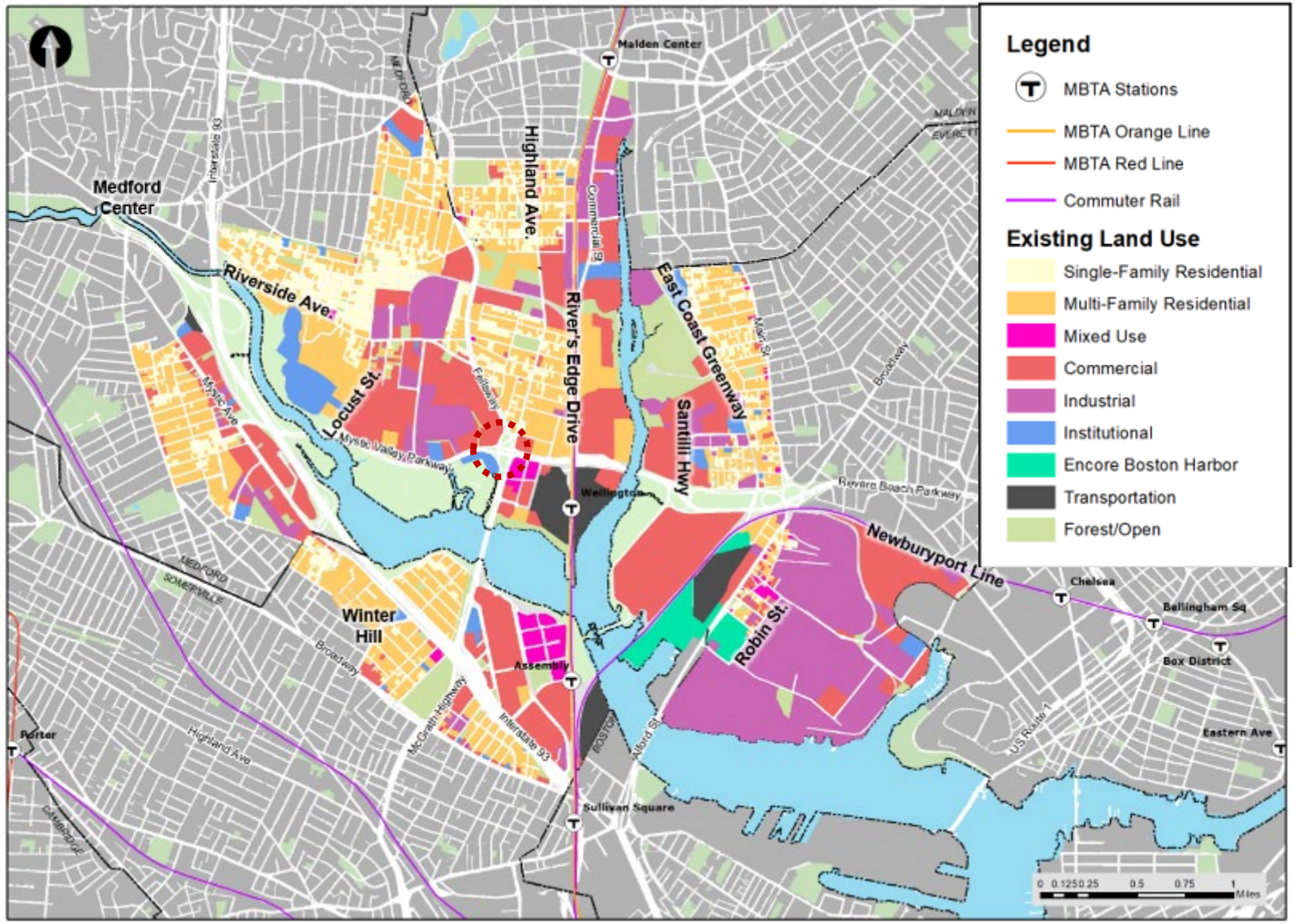
Growth in Study Area Employment

23,300 in 2020
30,254 in 2040

Employment growth in the local study area is driven by development in Everett and Somerville related to the Encore Casino, Silver Line Extension, and large-scale projects in Assembly Square.

CTPS Employment Estimates by TAZ, 2020, 2040

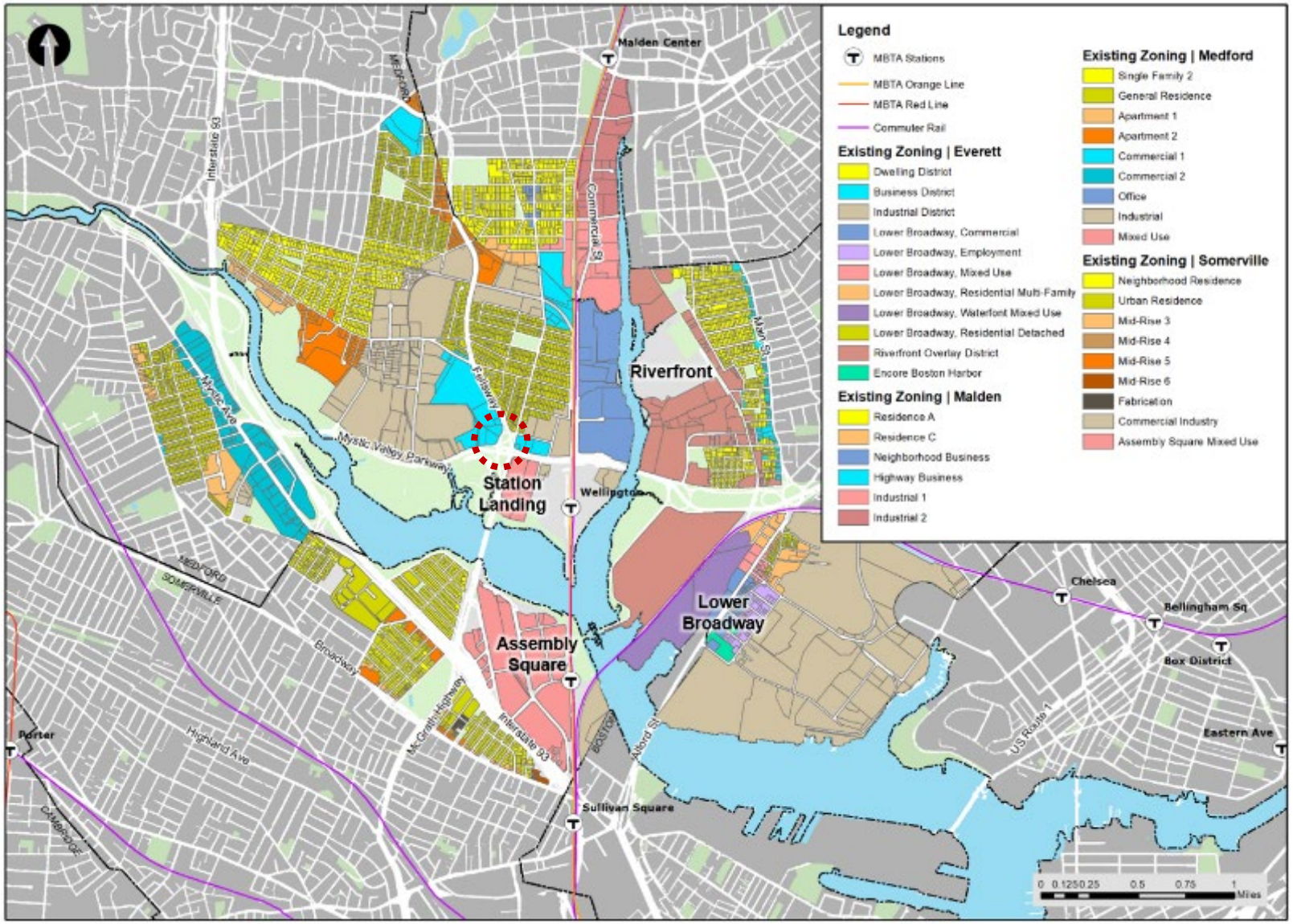
Existing Land Use



Wellington Circle

Single & multi-family residential with areas of low-density commercial/light industrial development characterize study area, creating opportunities to densify both commercial and residential uses through mixed use development.

Zoning

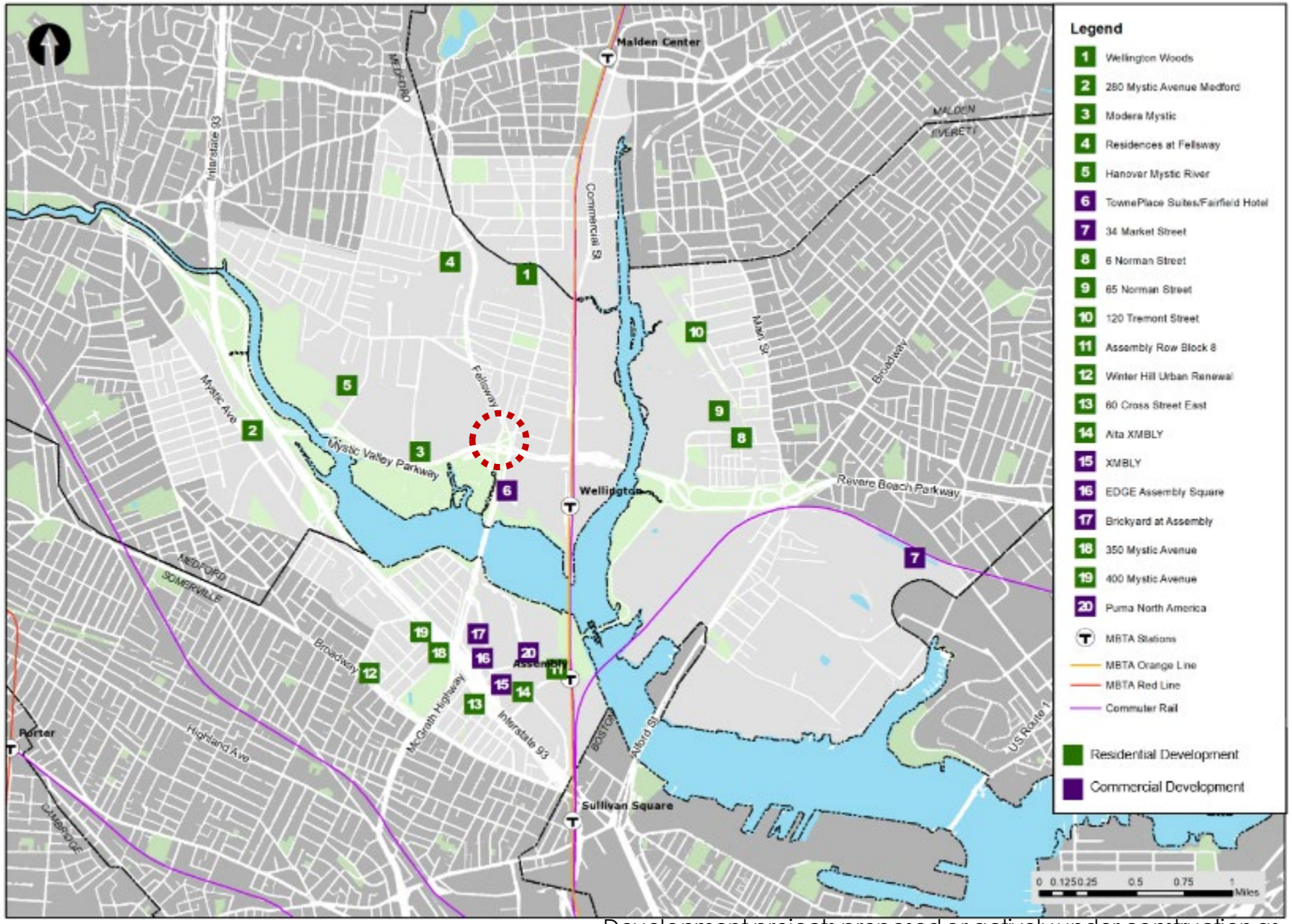


Wellington Circle

The study area is comprised of diverse zoning regulations from four different municipalities.

Commercial, open space, mixed use, residential, and industrial zones all abut the Circle. It will be important for the future roadway network to support these variety of uses by accommodating local and regional trips, and a variety of modes.

Planned Development



Development projects proposed or actively under construction as of 10/31/20

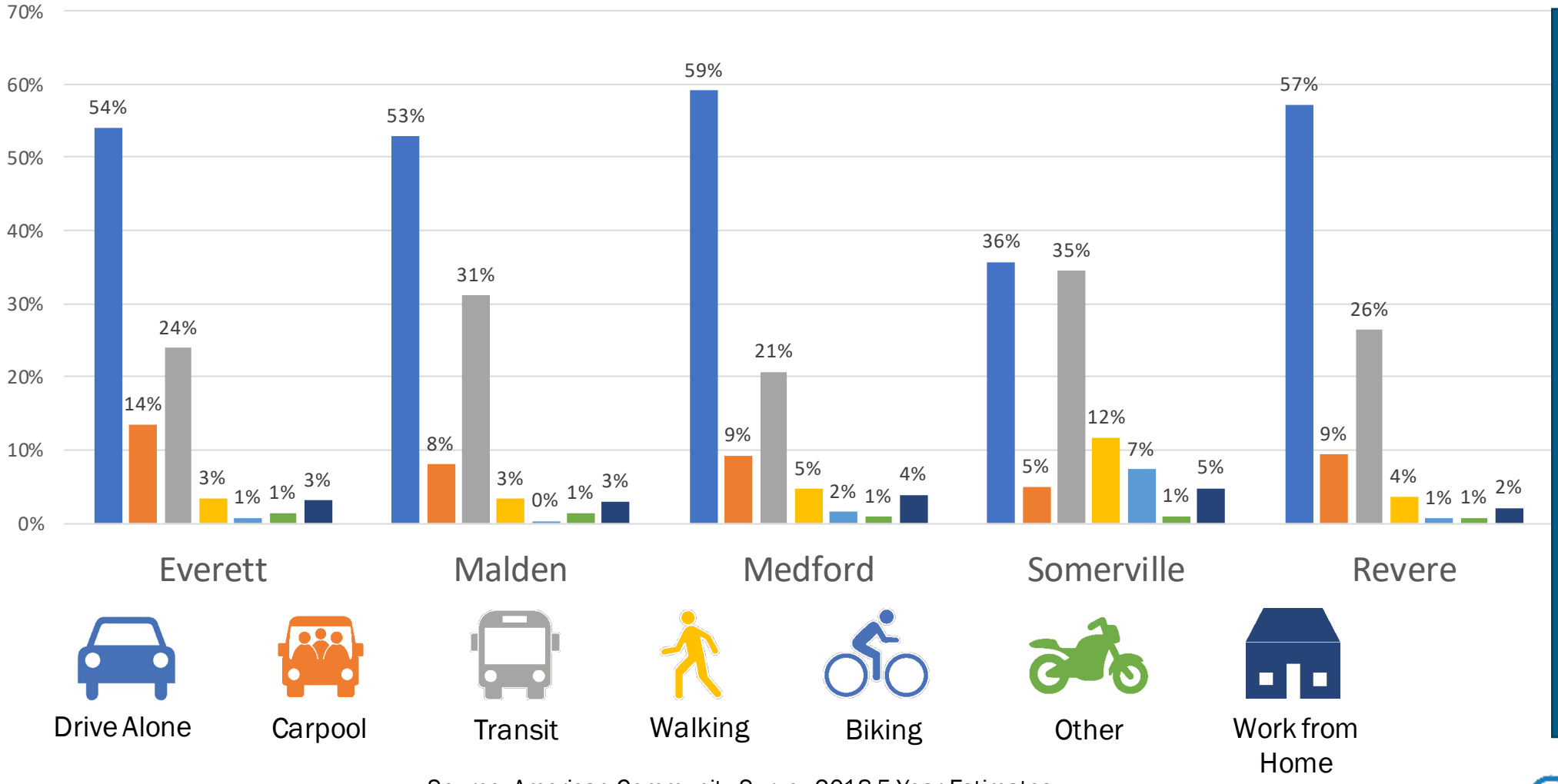
Wellington Circle

The largest residential projects are in areas where the existing land use is not primarily residential or zoned for residential, which contributes to future shifts in the population and employment. Activity is likely to increase in these areas, so it will be important to provide multimodal facilities to help reduce vehicular traffic

Clarifying Questions?

EXISTING CONDITIONS: MULTIMODAL TRANSPORTATION NETWORK

Regional Mode Share



Source: American Community Survey 2018 5-Year Estimates

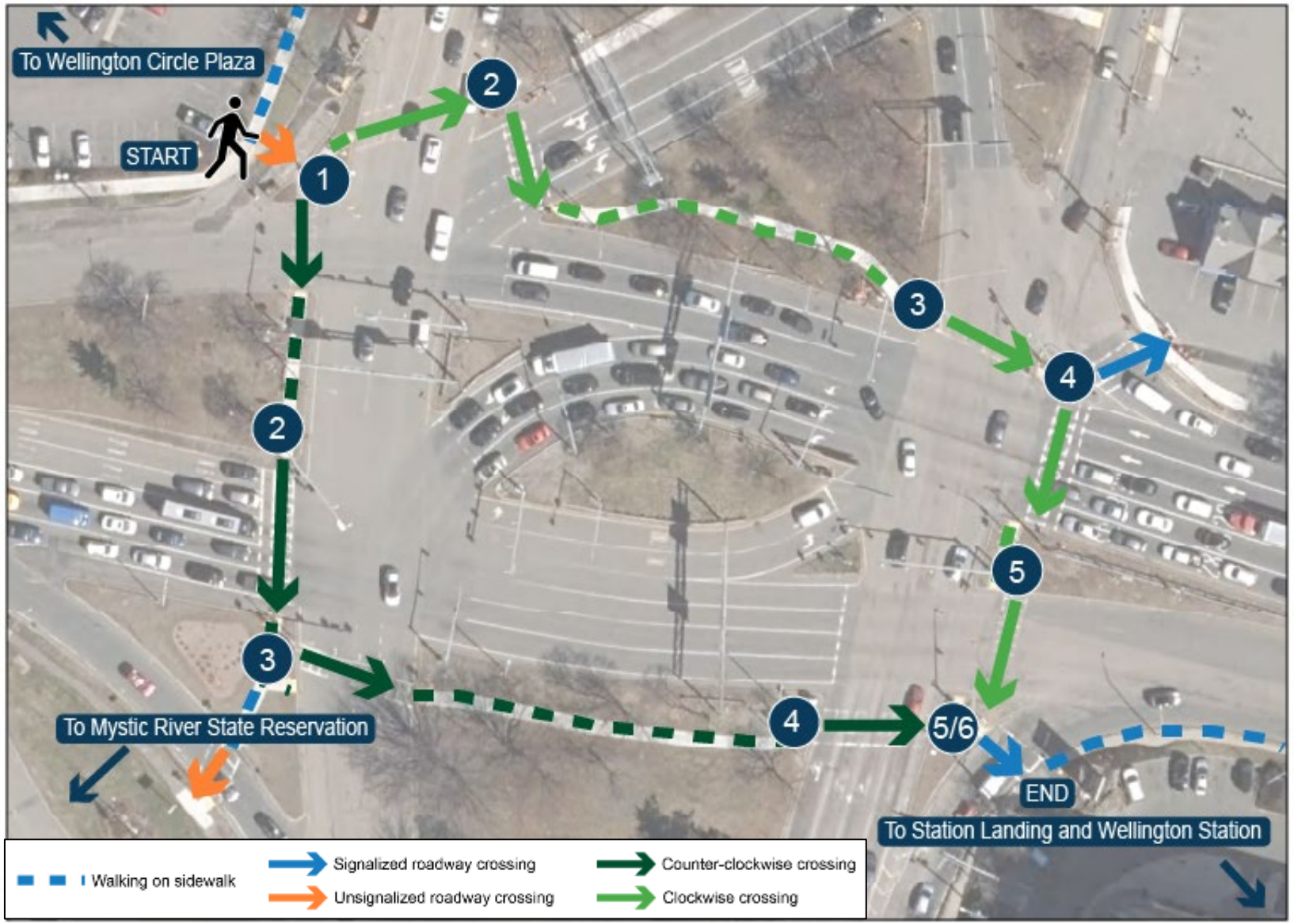
48%
Choose a sustainable mode of travel

Multimodal improvements in Wellington Circle can serve to increase the mode share for sustainable trips in the region by providing more comfortable facilities connecting from/to transit, green space, residences and commercial areas

Walking Conditions

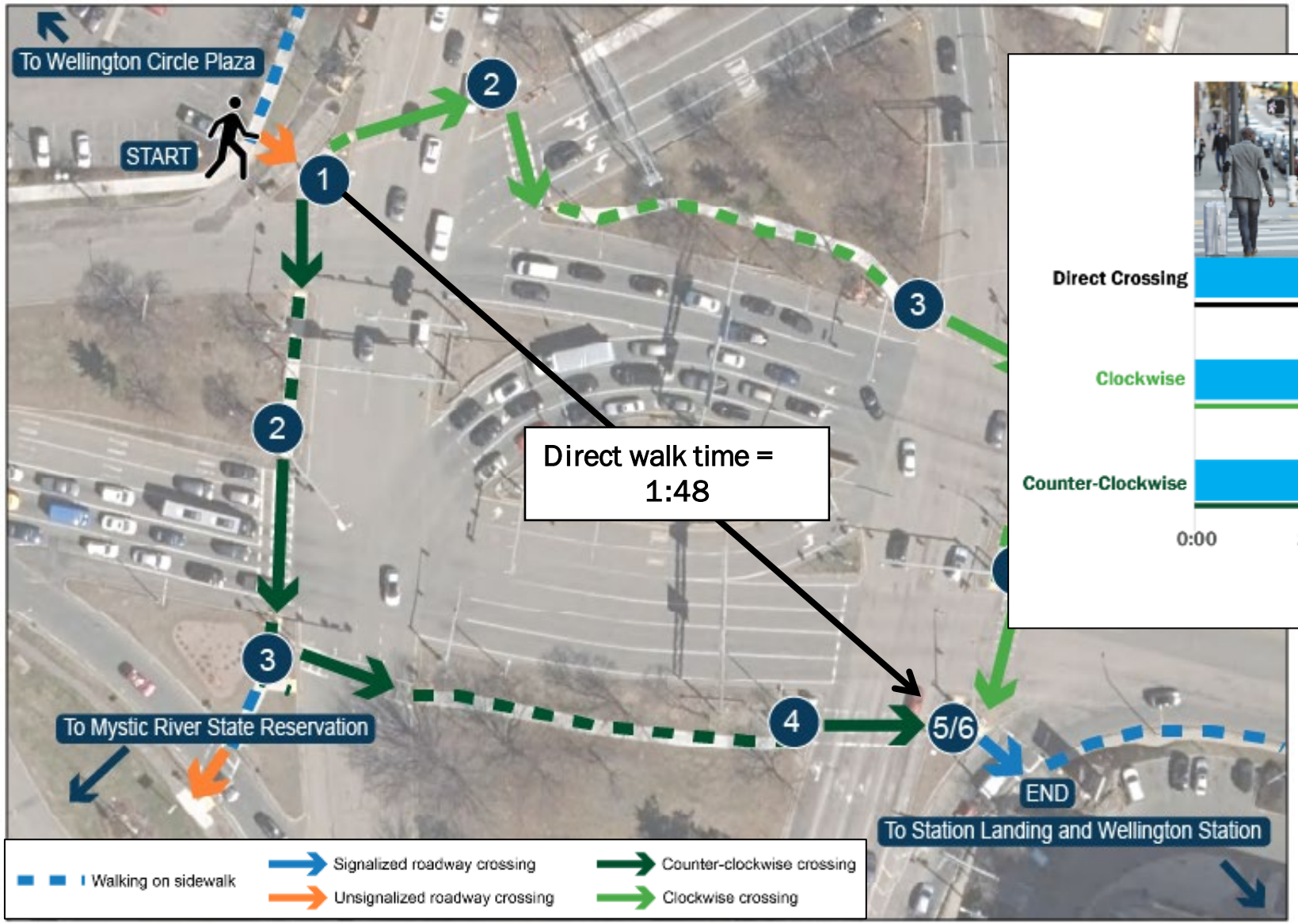
Walkability includes all types of pedestrians – facilities going beyond a basic sidewalk, like pedestrian signals and curb ramps at crosswalks, make streets safe and accessible for all.

Pedestrian Facilities



To cross from one corner of Wellington Circle to another may require 5 to 6 individual crossings, demanding prolonged attention, patience for delay, and stamina from pedestrians.

Pedestrian Facilities



Walk speed of 4 feet/second

Bicycle Facilities

Wellington Circle

Wellington Circle is a gap in the region's bicycle network.

New bicycle facilities should make all ages and abilities feel comfortable.

Legend

- Two-Way Buffered Bike Lane
- Dedicated Bike Lane
- Buffered Bike Lane
- Off-Street Path
- Planned Bike Lane
- Planned Off-Street Path

Walking & Biking Demand

Wellington Circle

All major roadways leading to Wellington Circle have high potential to serve walking and biking trips because they provide access to amenities such as schools, shops, restaurants, transit, and parks.

It will be important for this study to address gaps in the biking network that have high demand for walking and biking trips.

Walking & Biking - State Goals

MassDOT Pedestrian Plan

Vision
All people in Massachusetts will have a **safe, comfortable, and convenient** option to walk for short trips.

Goal 1
Eliminate pedestrian fatalities and serious injuries.

Goal 2
Increase the percentage of short trips made by walking.

MassDOT Bicycle Plan

Vision
Biking in Massachusetts will be a **safe, comfortable, and convenient** option for everyday travel.

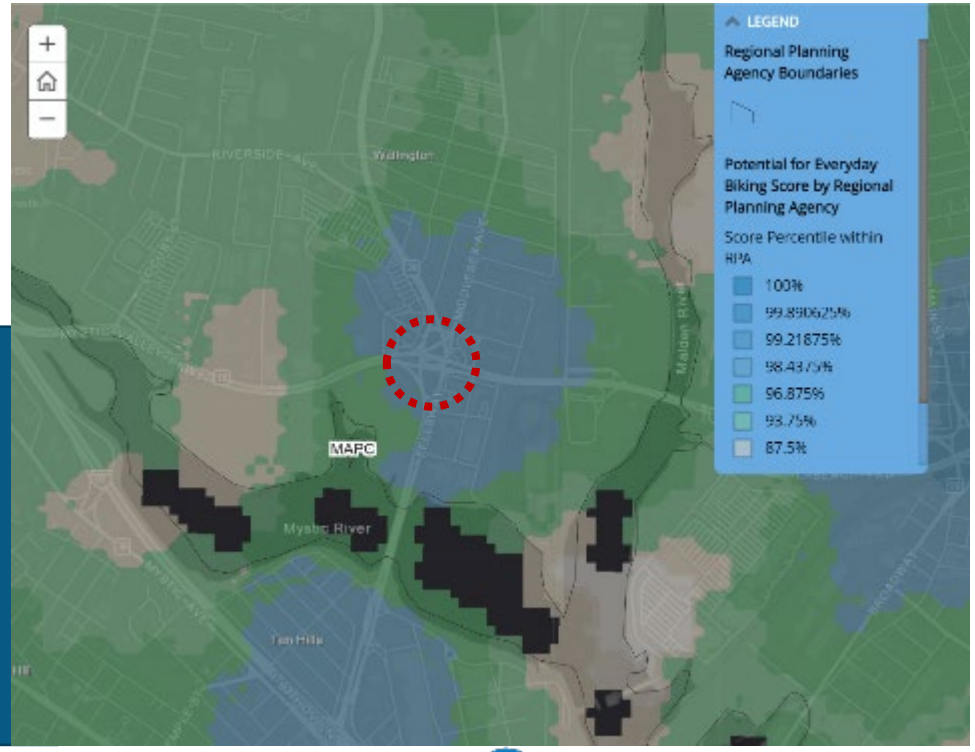
Goal 1
Eliminate bicyclist fatalities and serious injuries.

Goal 2
Increase the percentage of everyday trips made by bicycling.

MassDOT Bicycle Plan – Network Gaps and Demand

Wellington Circle and surrounding roads are gaps in the state's High-Comfort Bike Network

Wellington Circle



Area identified by state as having high potential for everyday biking trips

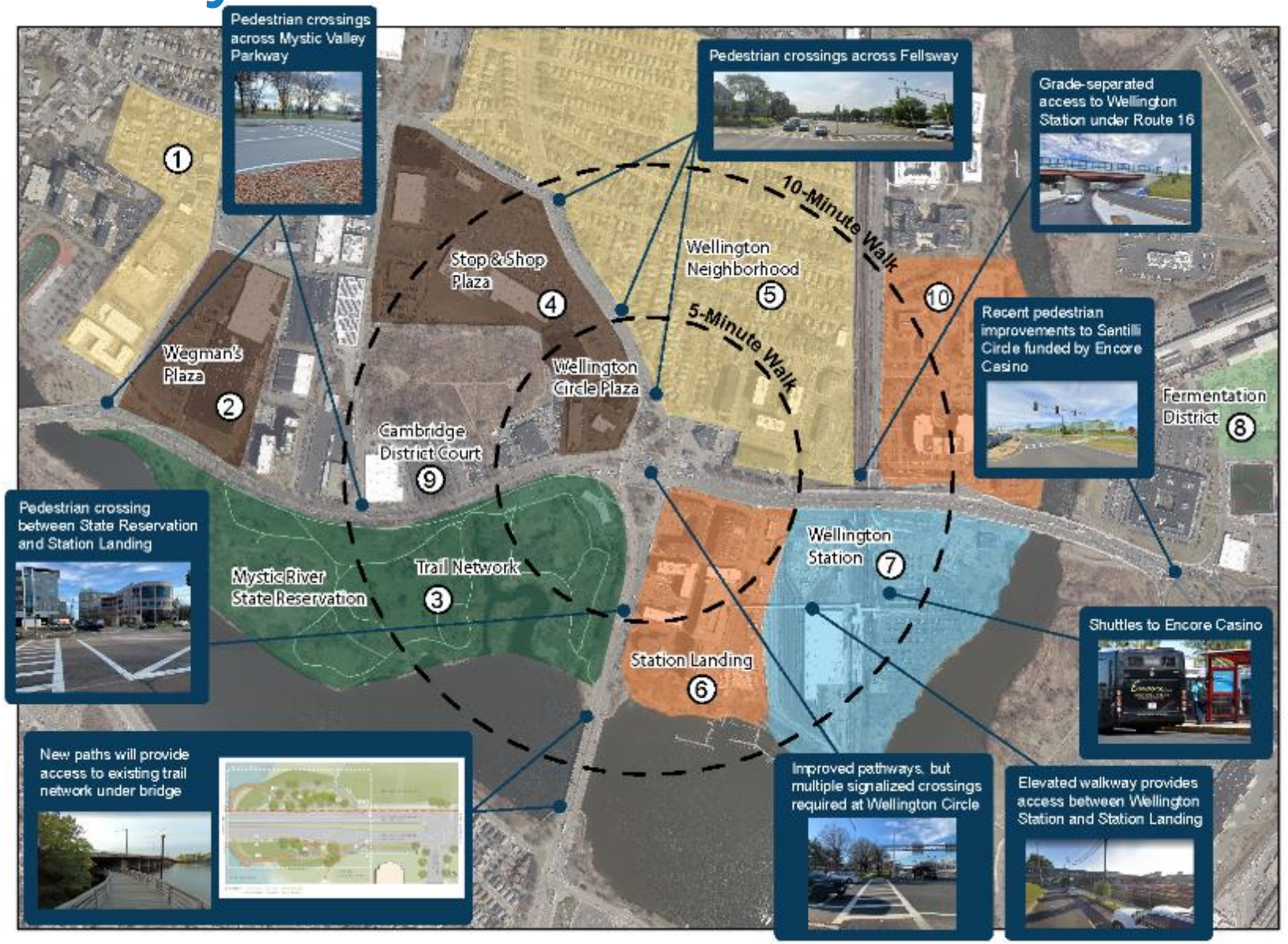
Working Group Discussion

- Where do you want to walk or bike but are currently unable to due to lack of facilities, physical barriers, or feeling uncomfortable?
- Where are your priorities for walking and biking connections?

Use the maps on the following two slides to help inform and communicate your priorities for connectivity

Where do you want to walk?

Existing Conditions: Multimodal Transportation Network



Pedestrian Destinations

- Open Space
- Commercial
- Residential
- Transit
- Entertainment
- Mixed-Use

Where do you want to bike?

Legend

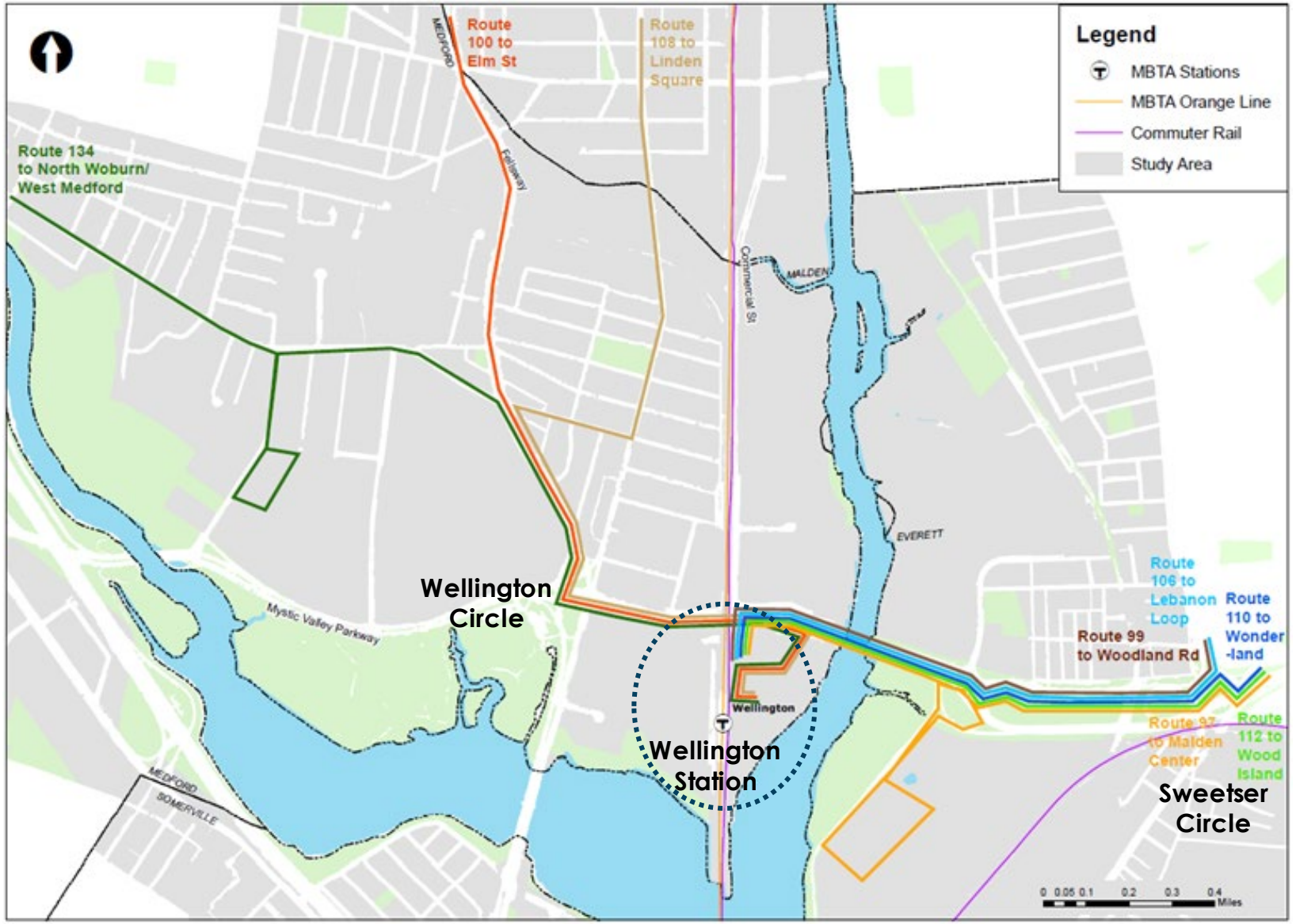
- Two-Way Buffered Bike Lane
- Dedicated Bike Lane
- Buffered Bike Lane
- Off-Street Path
- Planned Bike Lane
- Planned Off-Street Path

Bus Service in Local Study Area

- Buses in the study area operate in the same lanes as general traffic
- This makes bus speed and reliability dependent on the quality of general traffic flow
- The MBTA has used these to measure the impact of traffic on transit riders (see table)

MBTA Automatic Passenger Counter Data is Used to Assess Bus Service between Stops	
Travel Time – Quality of Service (QOS)	Letter grade (A-F) for passengers' perception of travel time
Travel Time Variability – Quality of Service (QOS)	Letter grade (A-F) for how much passenger travel time varies between trips or days
Excess Passenger Time (XPT)	Weighted evaluation of bus delay and number of passengers, ranked by percentile

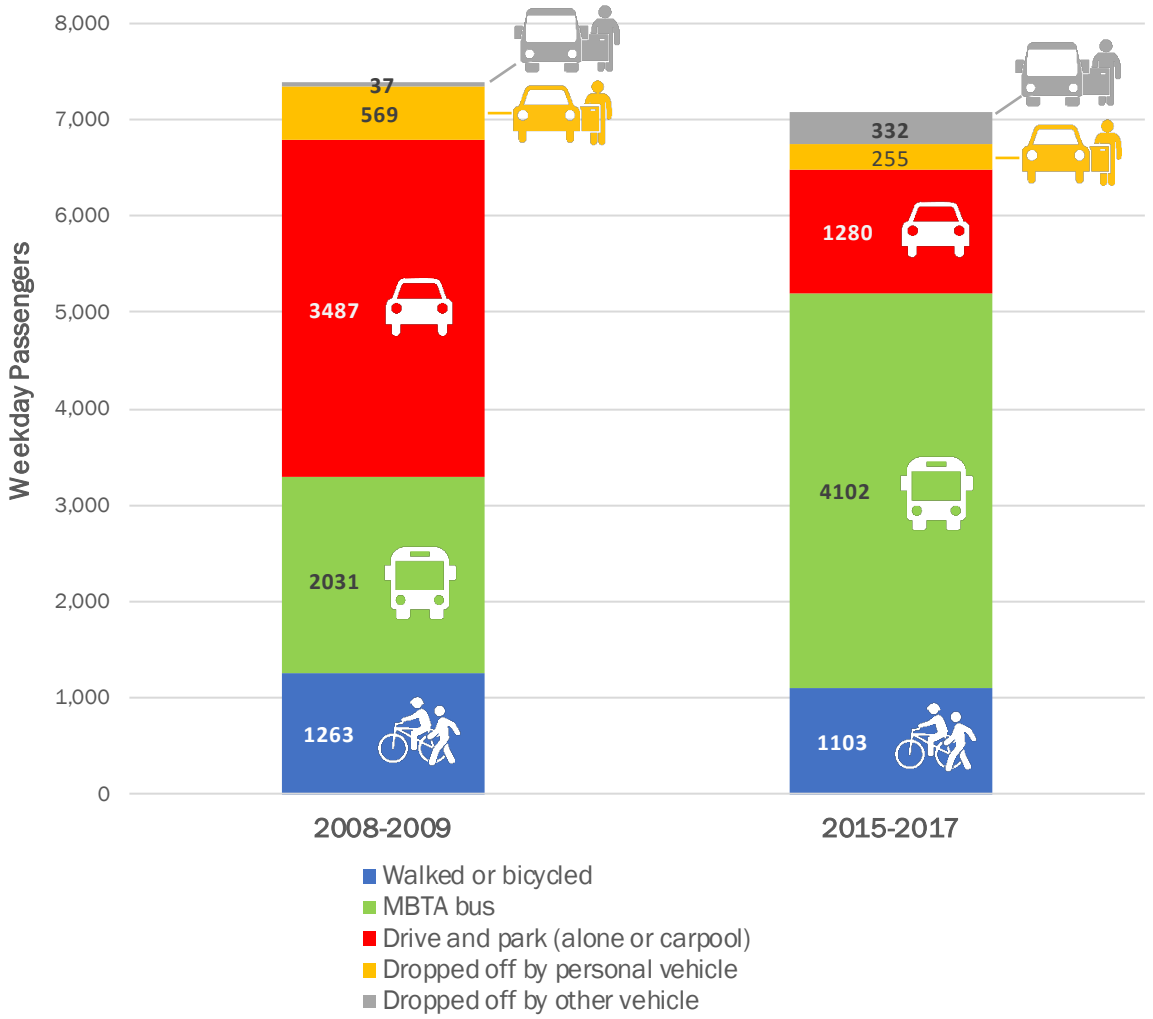
Bus Service in Local Study Area



Almost 70% of bus riders in the study area board or alight at Wellington Station.

This shows the potential for improving multimodal connectivity to Wellington Station to support the use of transit.

Access Modes to Orange Line at Wellington



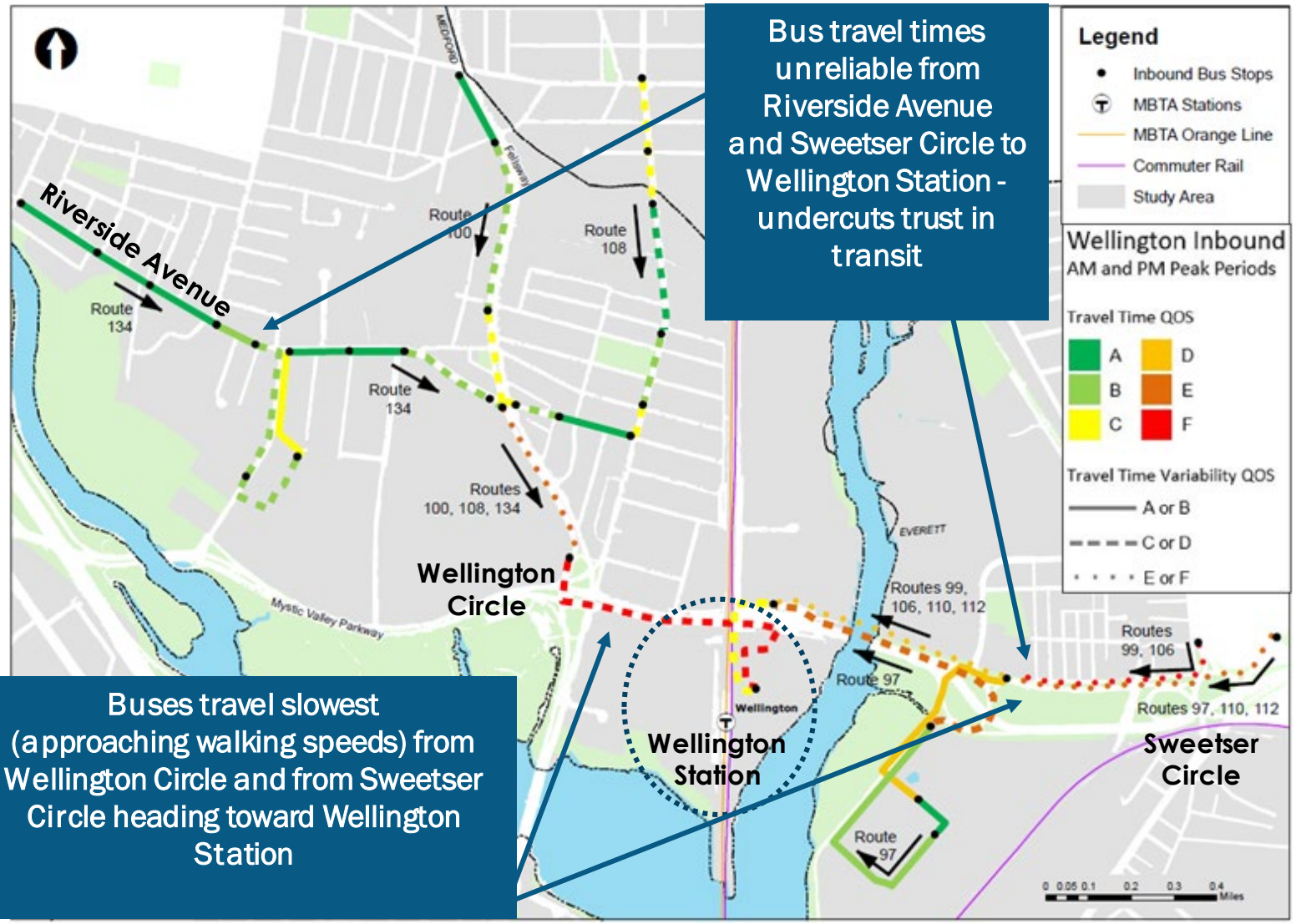
At Wellington Station from 2009-2017:

- Slight decrease in boardings as a fraction of total Orange Line boardings (5.3% to 4.6%)
- Shift from auto-based access to bus
- Share of drop offs roughly the same, but grew as a share of total auto-based access
- Non-motorized access dropped slightly

Access Mode	2008-2009	2015-2017	Change
Walked or bicycled	17.1%	15.6%	-1.5%
MBTA Bus	27.5%	58.0%	30.5%
Drive and park (alone or carpool)	47.2%	18.1%	-29.1%
Dropped off by personal vehicle	7.7%	3.6%	-4.1%
Dropped off by other vehicle	0.5%	4.7%	4.2%

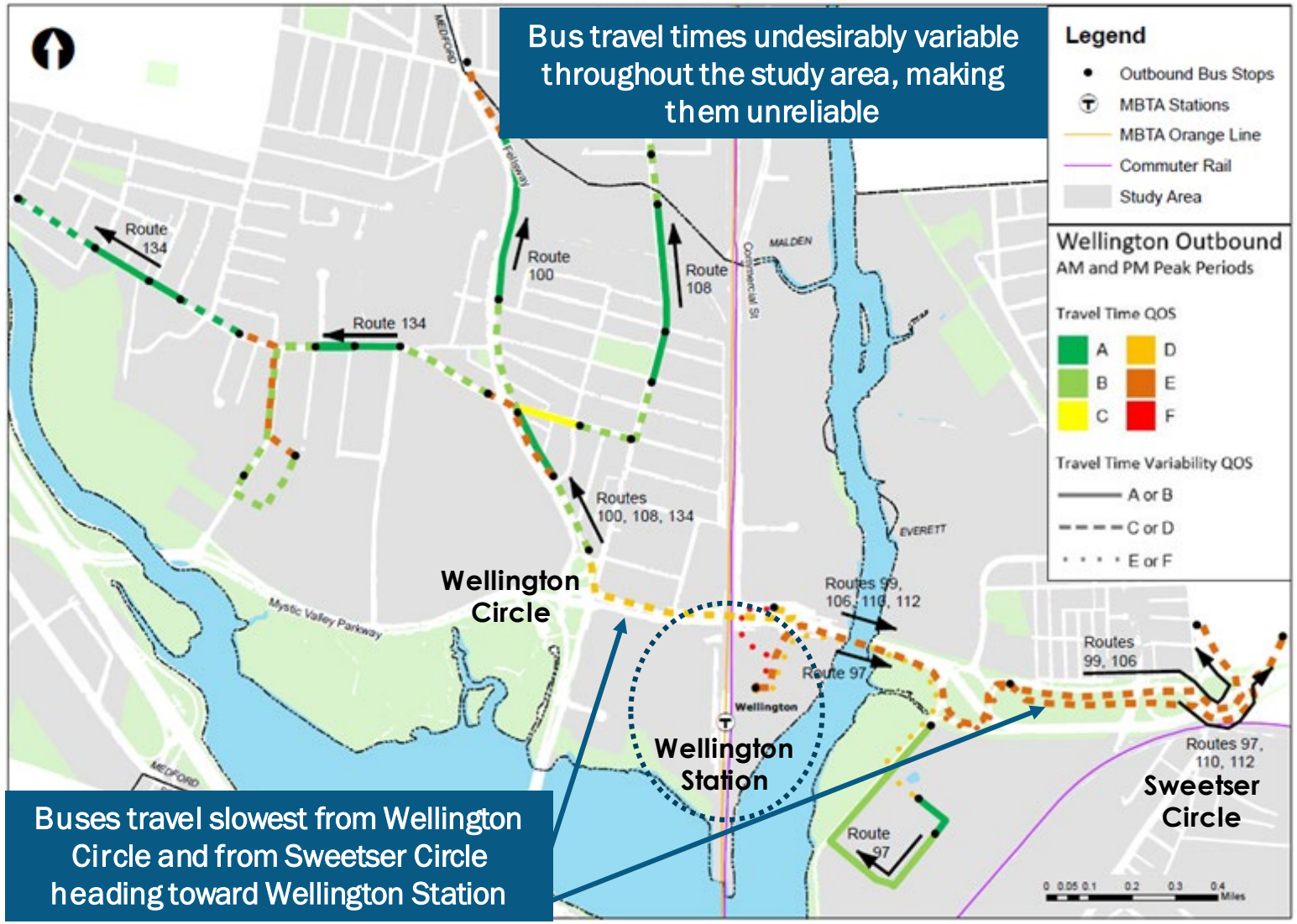
Source: 2008-09 and 2015-17 MBTA Systemwide Passenger Survey reports.

Inbound Travel Time and Travel Time Variability QOS Grades



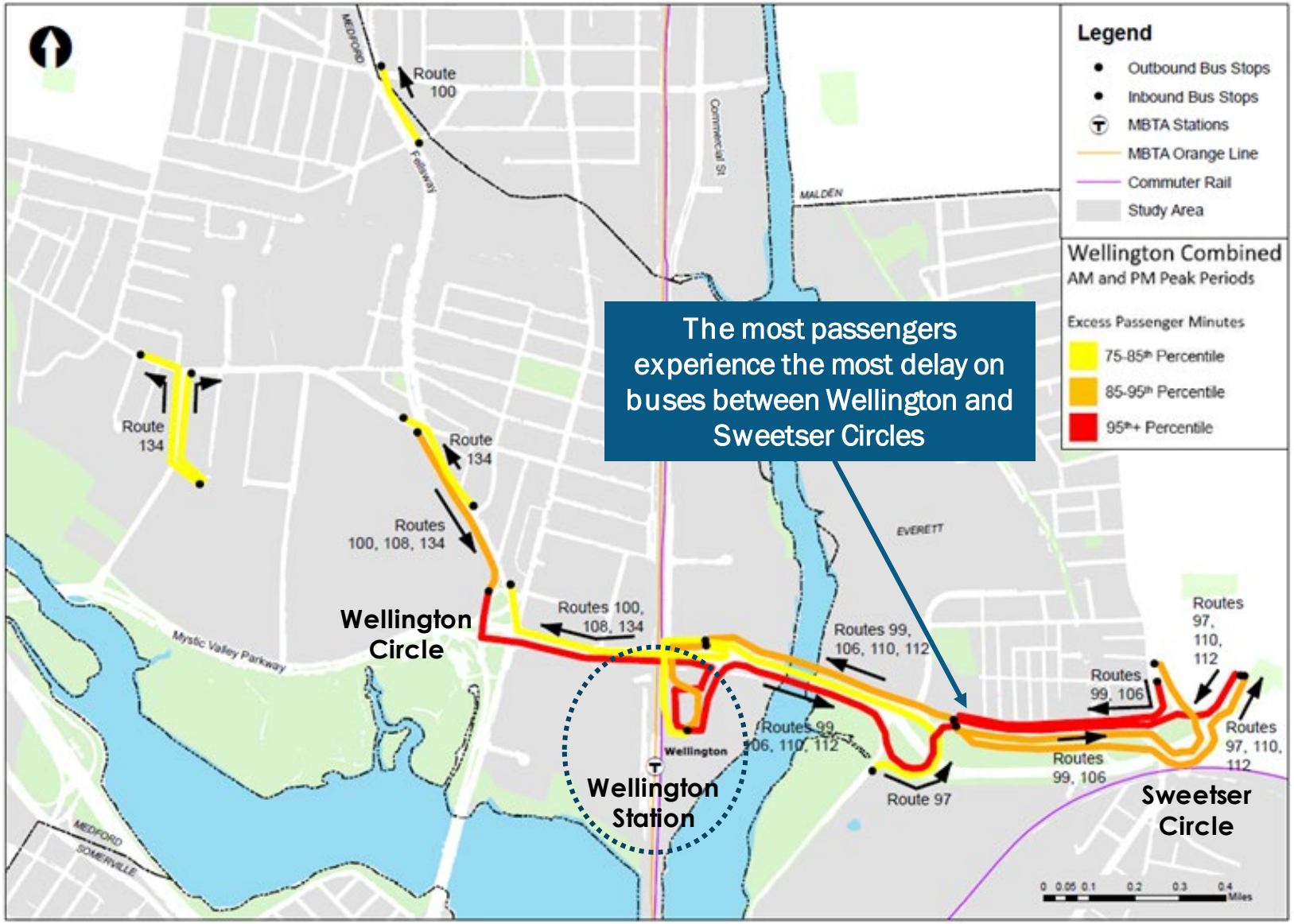
- QOS = Quality of Service
- AM peak inbound: Poor travel time QOS through most routes. This means passengers experience delay and unreliable service.
- At route level, conditions in inbound AM peak are more severe than in inbound PM peak.

Outbound Travel Time and Travel Time Variability QOS Grades



- QOS = Quality of Service
- AM peak outbound: Poor travel time QOS through most routes. This means passengers experience delay and unreliable service.
- At route level, conditions in outbound AM peak are more severe than in outbound PM peak.

Excess Passenger Time (XPT)



- Excess passenger time (XPT) is the difference between the observed travel time and expected travel time multiplied by the number of passengers on board the vehicle.
- Under free flow conditions there would typically be no (0%) XPT.
- Most XPT is experienced within ¼ mile of Wellington Station to the east and west.
- 95th percentile segments are the top 5% of segments with the highest rate of excess passenger time (XPT).

Working Group Discussion

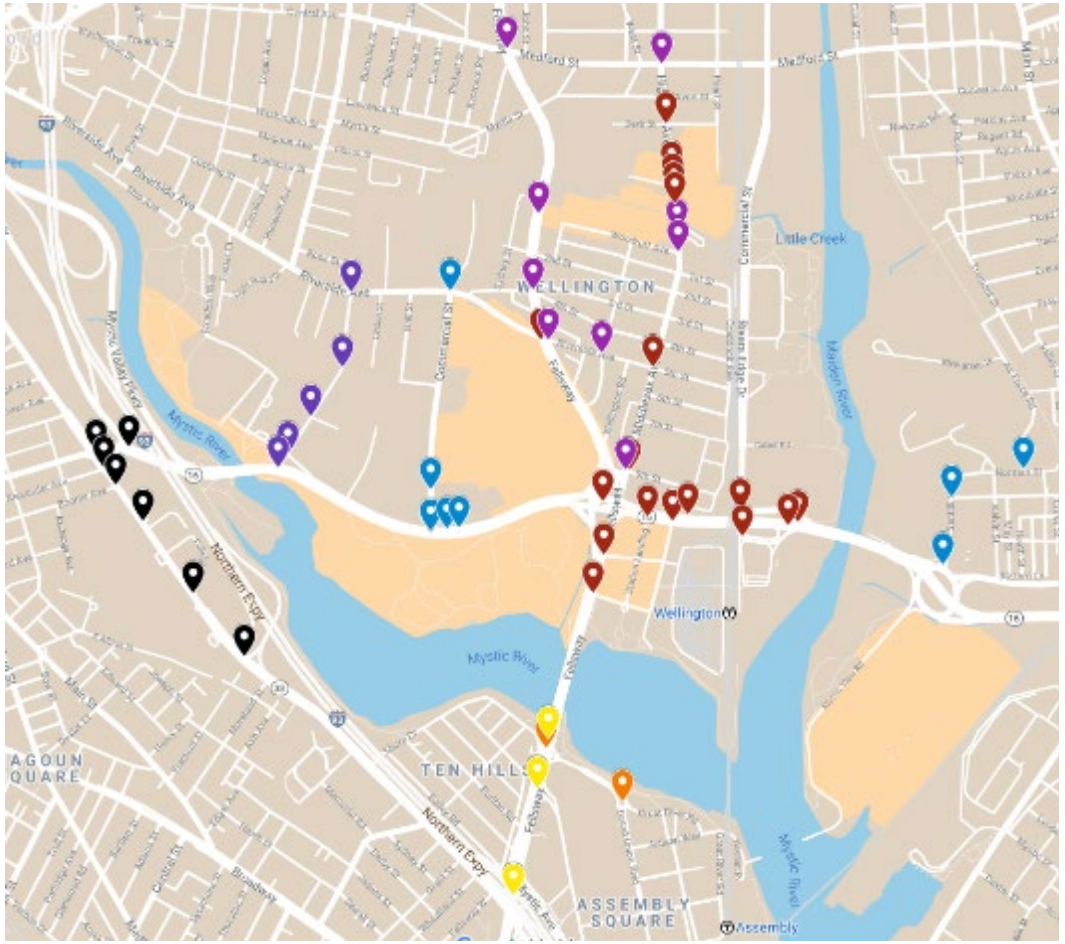
- If accessing Wellington Station, what would be your preferred mode?
- How easy/comfortable is it for you to access Wellington Station by your mode of choice today?

Local Traffic Intersections

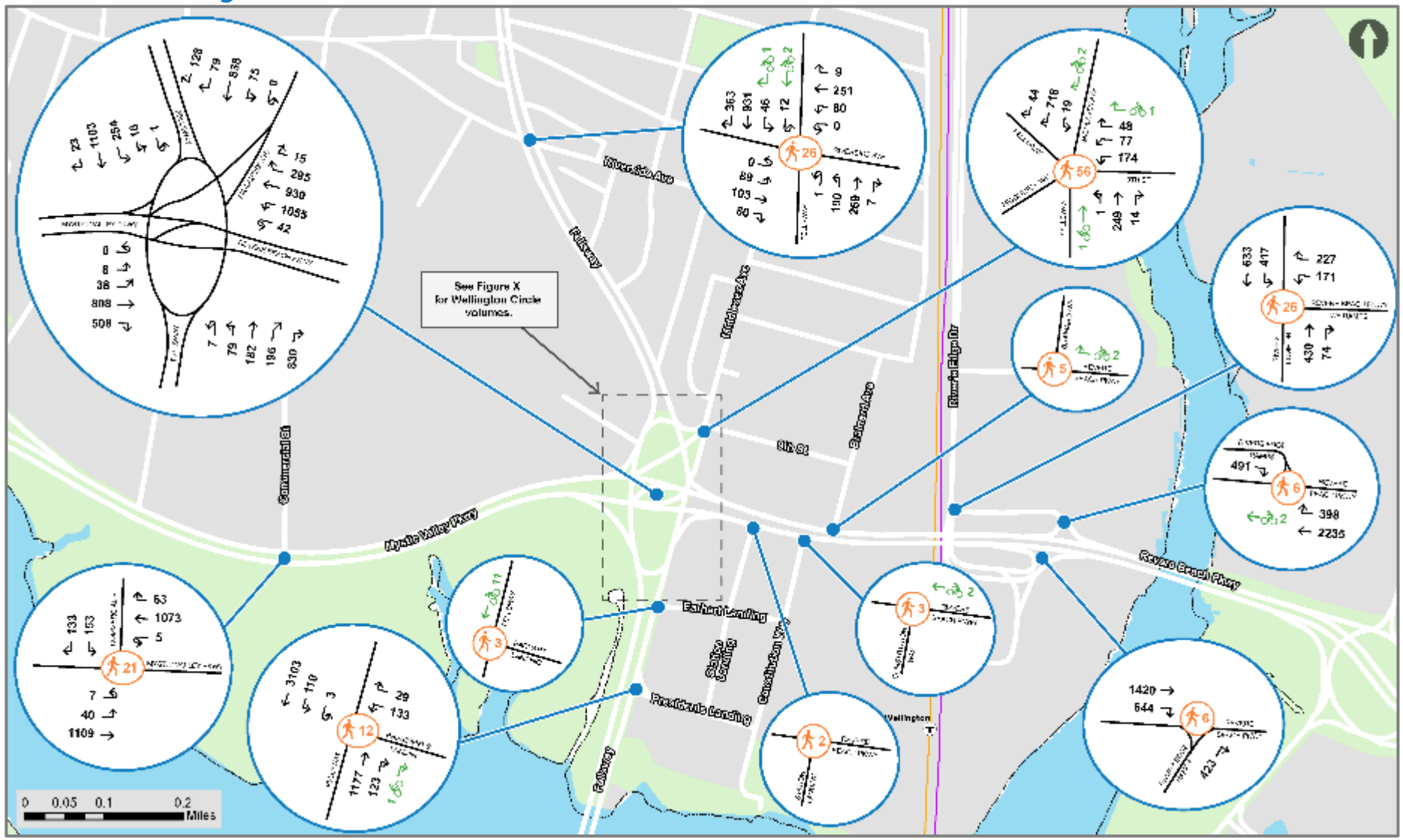
- Focused on Wellington Circle
- 13 total intersections:
  - Five signalized intersections
  - Eight unsignalized intersections (one with signals on flash)

Establishing Vehicle Volumes

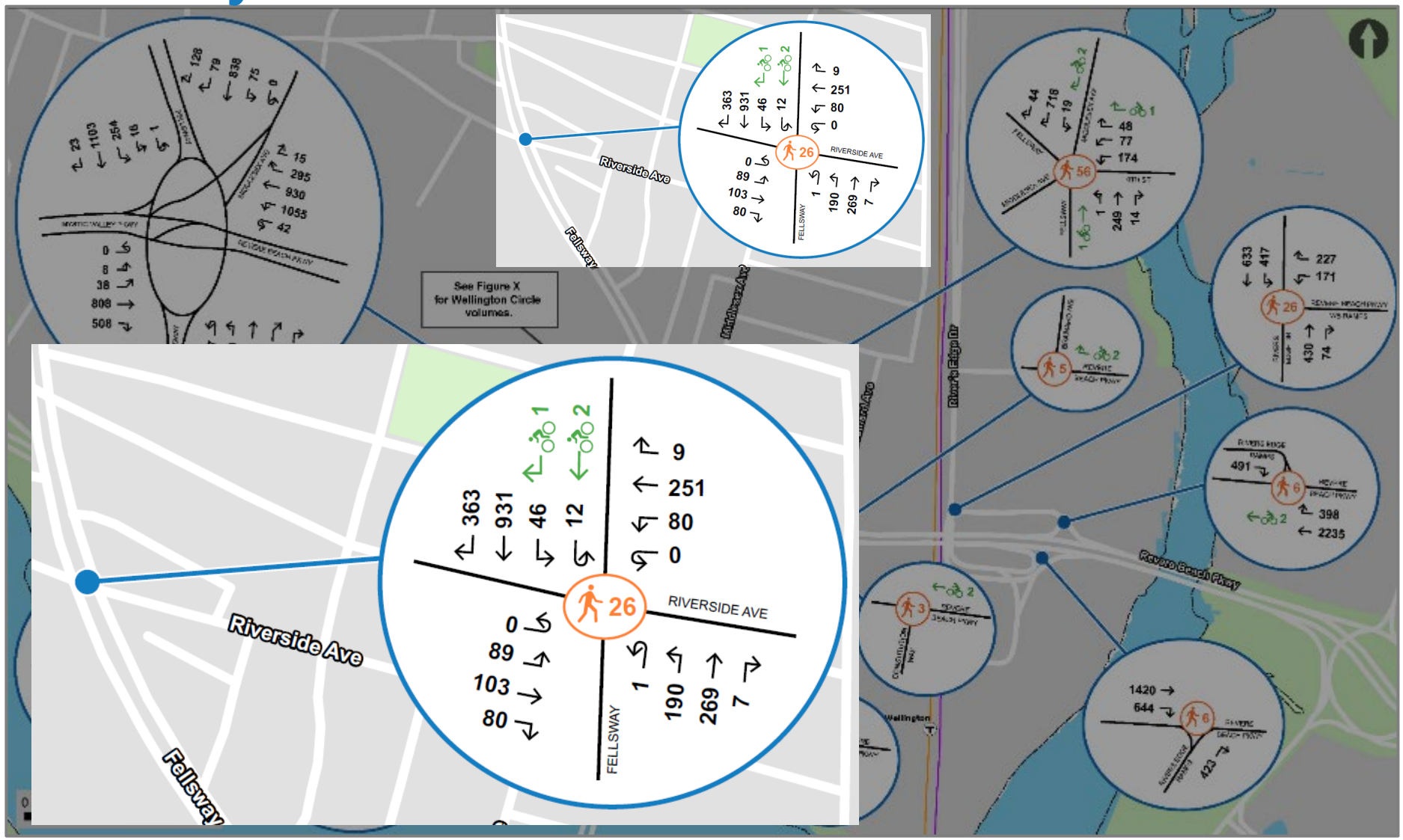
- Volumes have been impacted by COVID-19
- Pre-pandemic count data obtained
  - 9+ different studies
  - Data from MassDOT and CTPS
  - Volumes at Circle primarily from February 2020 Encore traffic monitoring and February 2018 study for Route 1 viaduct in Chelsea
- Volumes adjusted to reflect “typical” conditions



Vehicle, Bike, Pedestrian Weekday AM Peak Hour Volumes

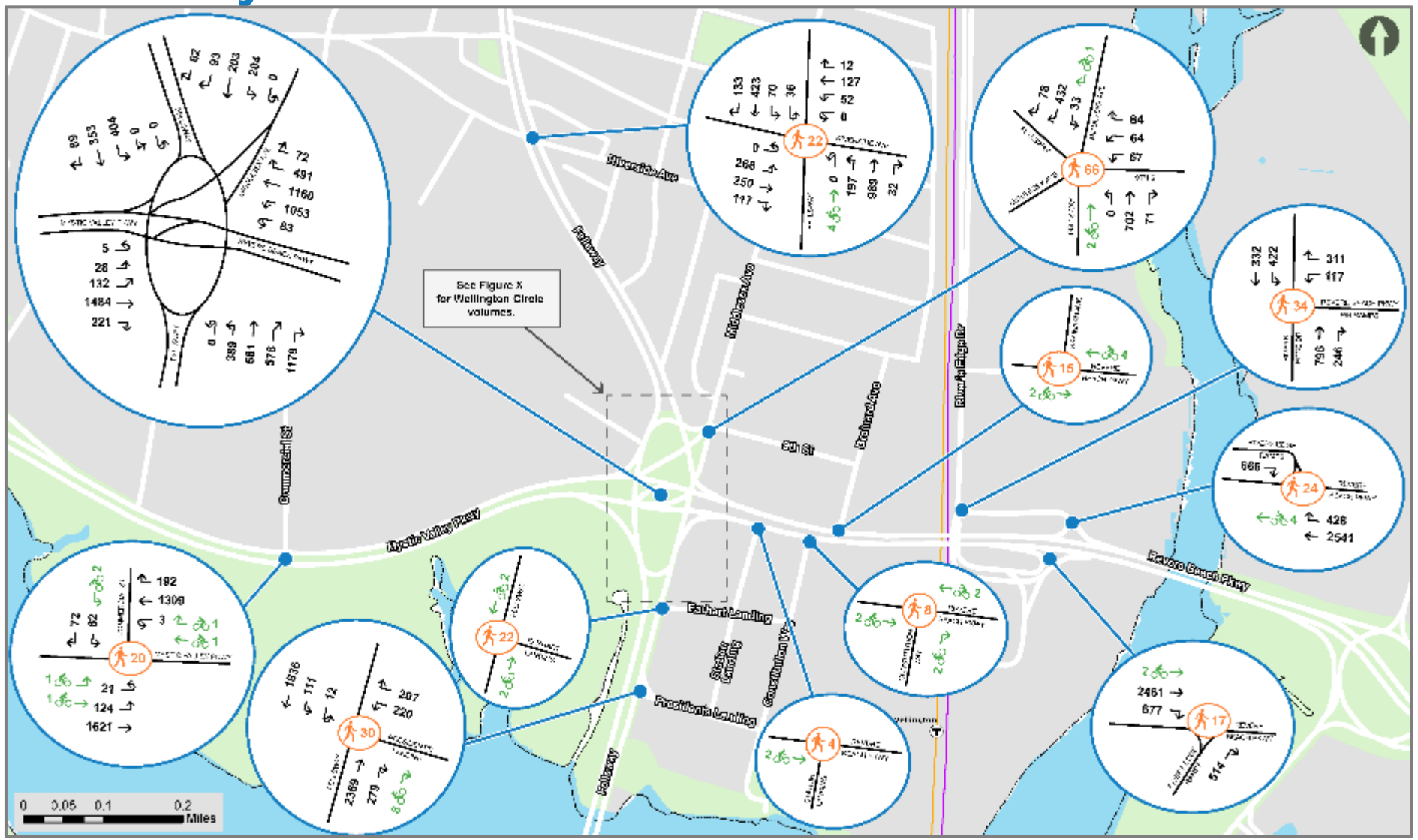


Vehicle, Bike, Pedestrian Weekday AM Peak Hour Volumes

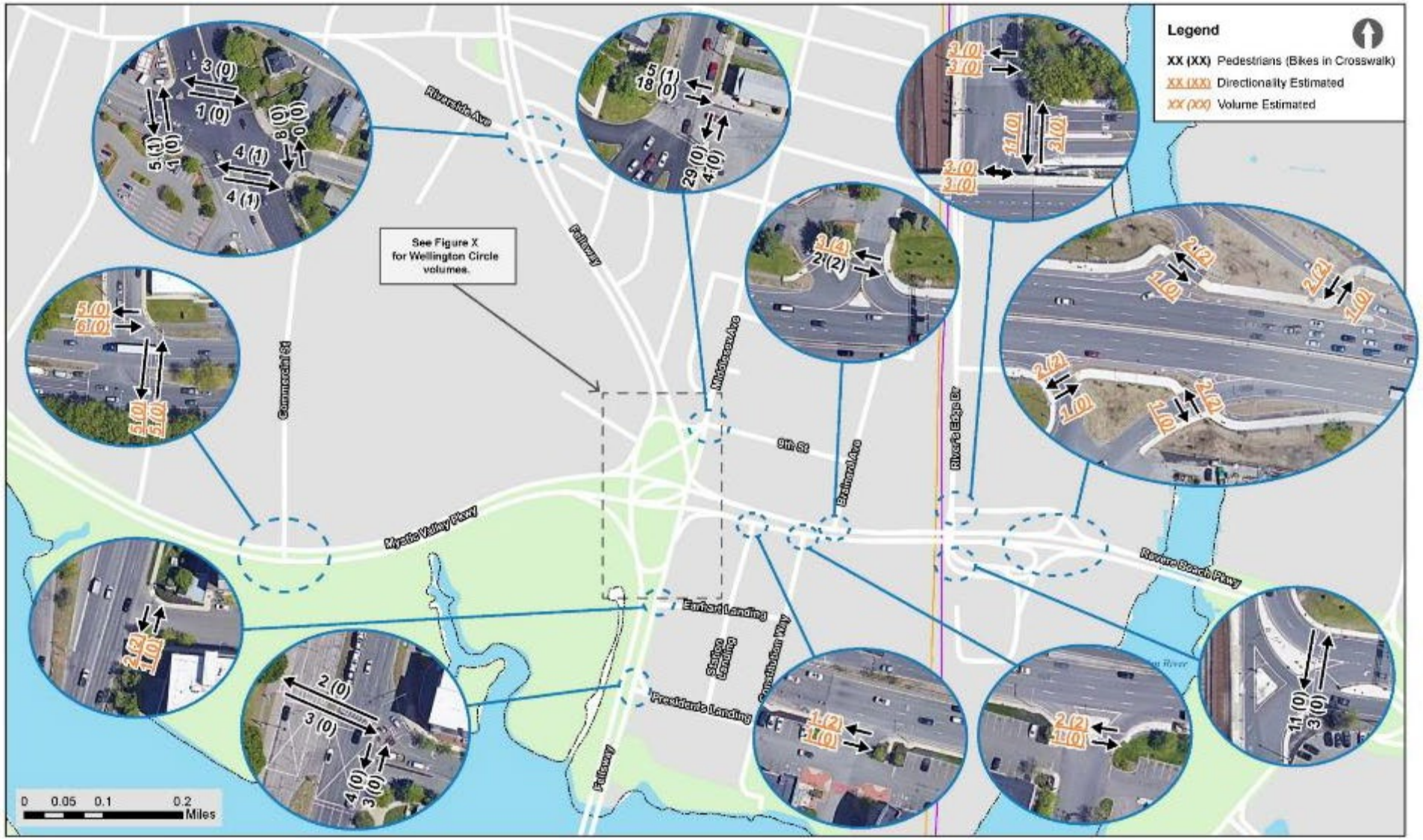


- Vehicle volumes – Black
- Bicycle volumes – Green
- Total pedestrian crossings at intersection – Orange

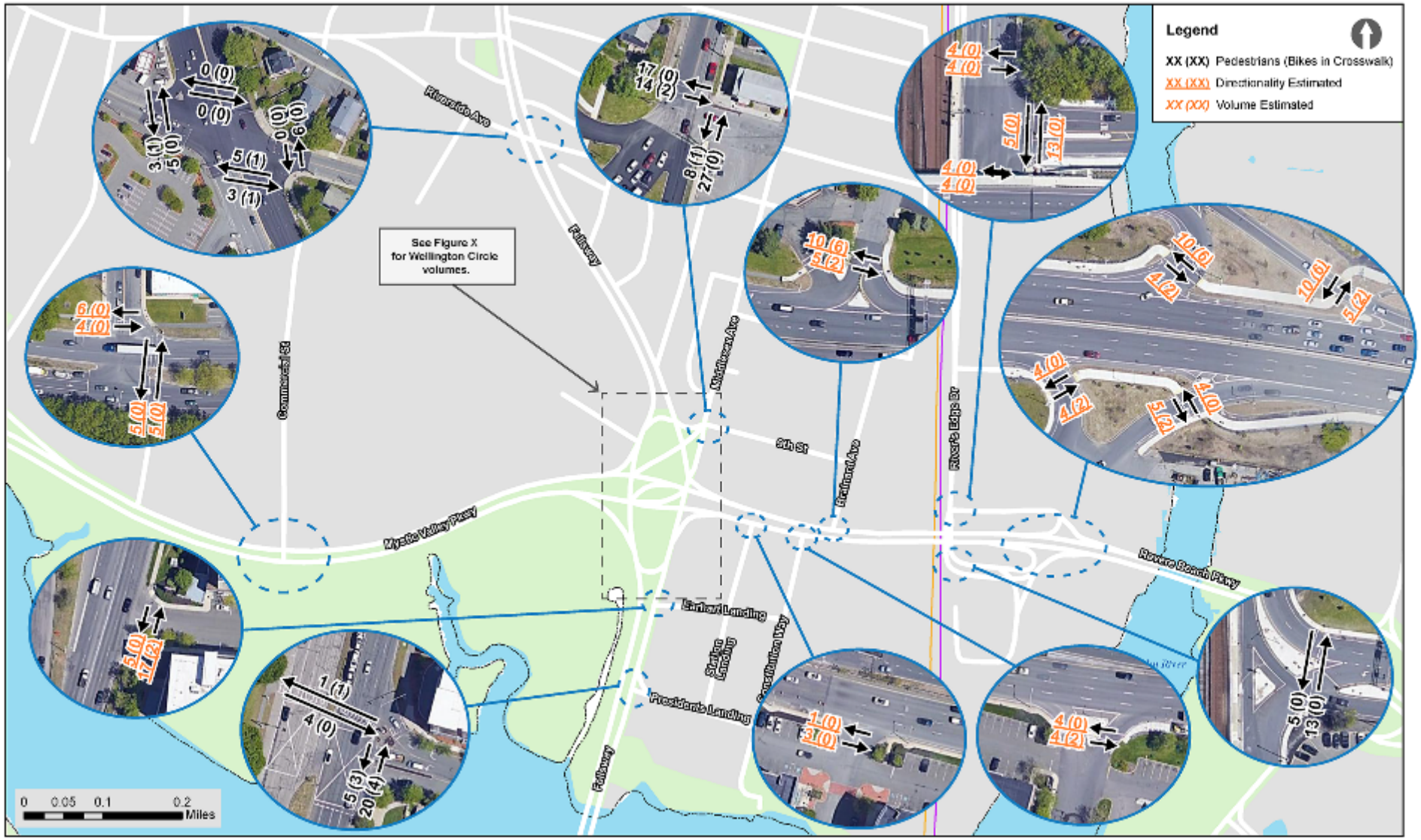
Vehicle, Bike, Pedestrian Weekday PM Peak Hour Volumes



Detailed Pedestrian Data
Weekday AM Peak Hour Volumes

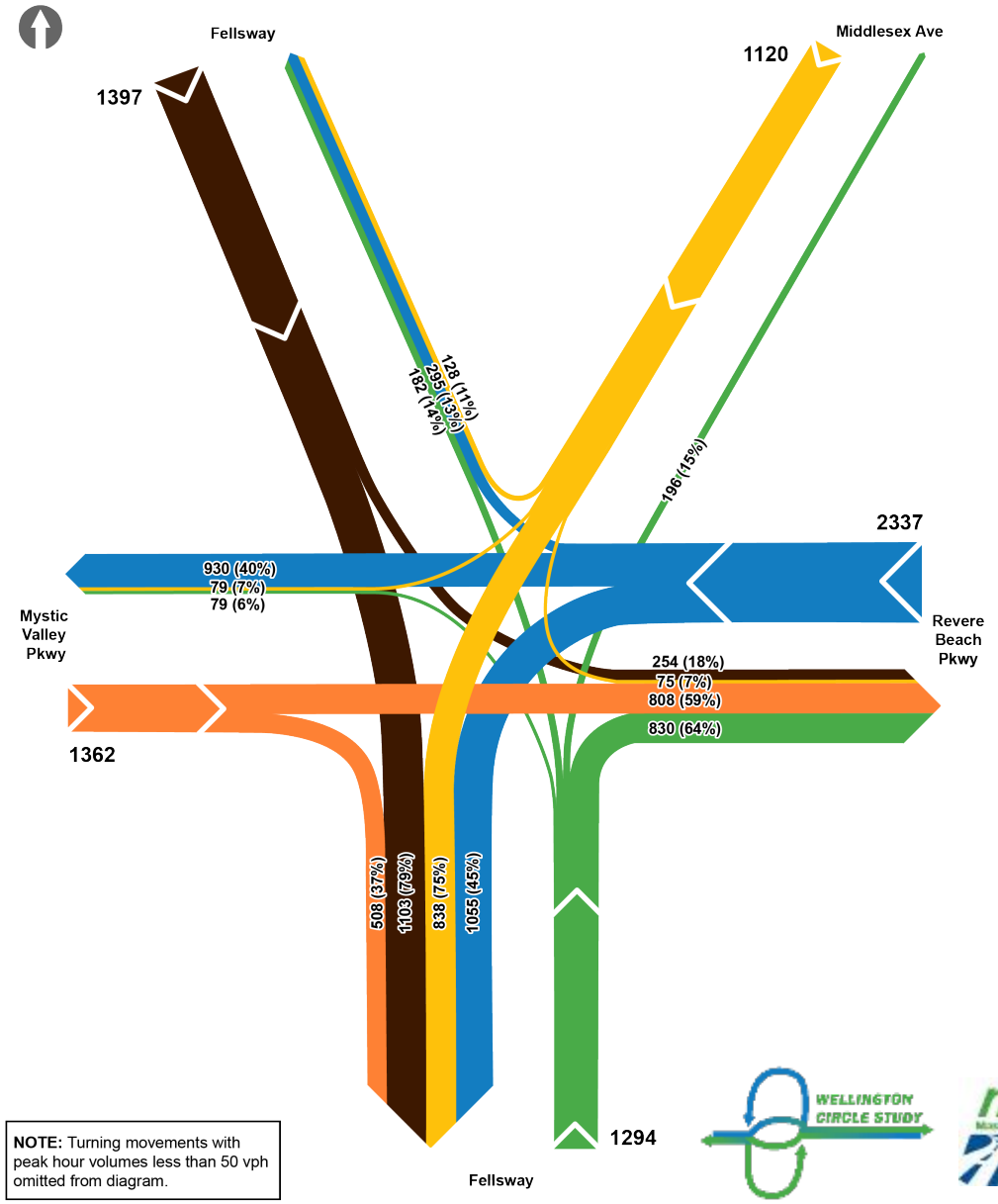


Detailed Pedestrian Data
Weekday PM Peak Hour Volumes



Vehicle Volumes – Weekday Morning

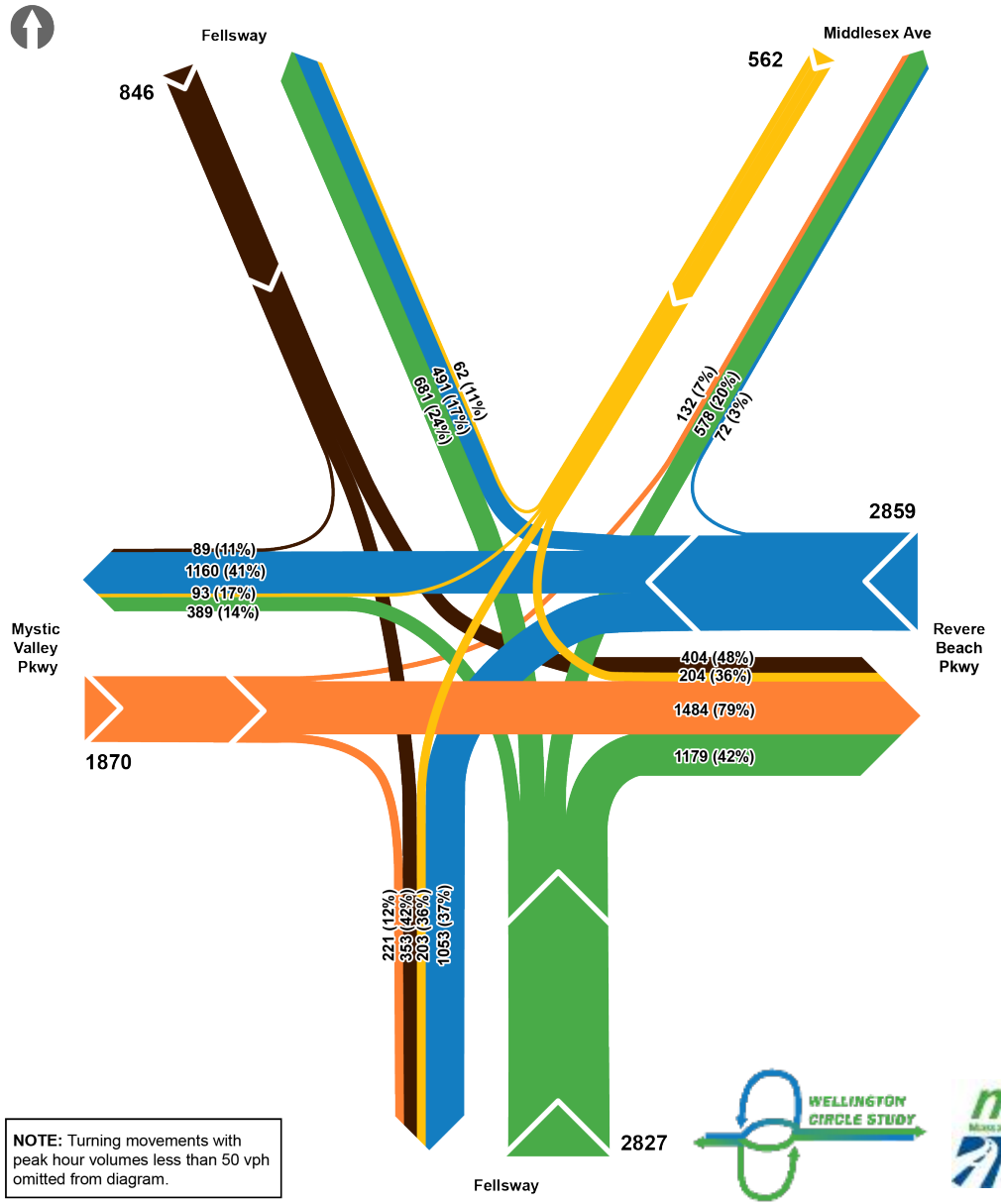
- Key takeaways:
  - High directional distribution in the north to south direction
  - Heaviest entering move is westbound
  - Majority of northbound traffic making a right turn
  - Low number of left turns except for westbound to southbound



NOTE: Turning movements with peak hour volumes less than 50 vph omitted from diagram.

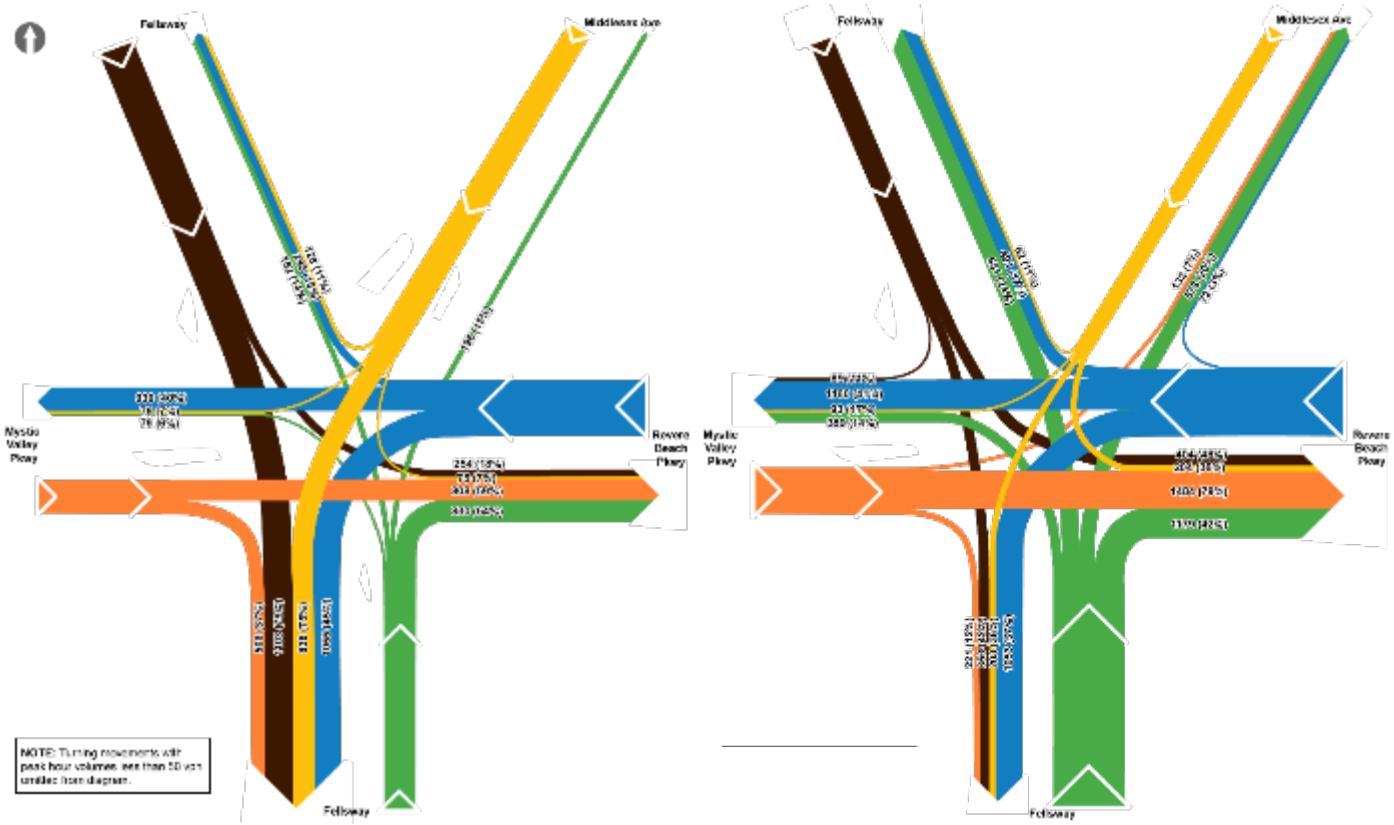
Vehicle Volumes – Weekday Afternoon

- Key takeaways:
  - High northbound and westbound volumes
  - Heavy northbound to eastbound right turn and westbound to southbound left
  - Higher overall left turn volumes

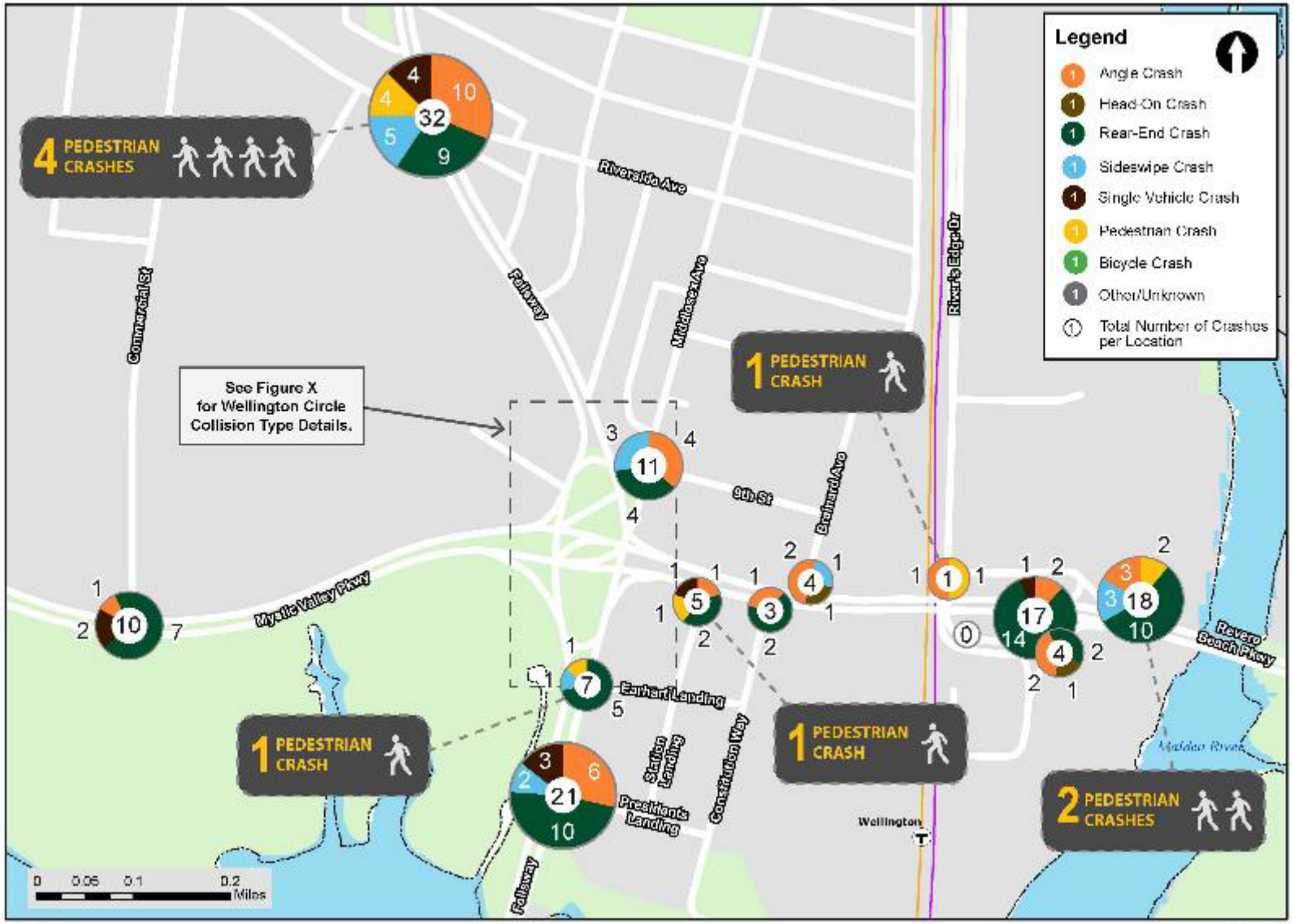


Vehicle Volumes – Peak Hours Comparison

- Key takeaways:
  - Dominant pattern between south and east
  - Highest overall volume on Revere Beach Parkway east of Circle
  - Typical commuter patterns not seen on east/west roadways



Crash History – Study Area



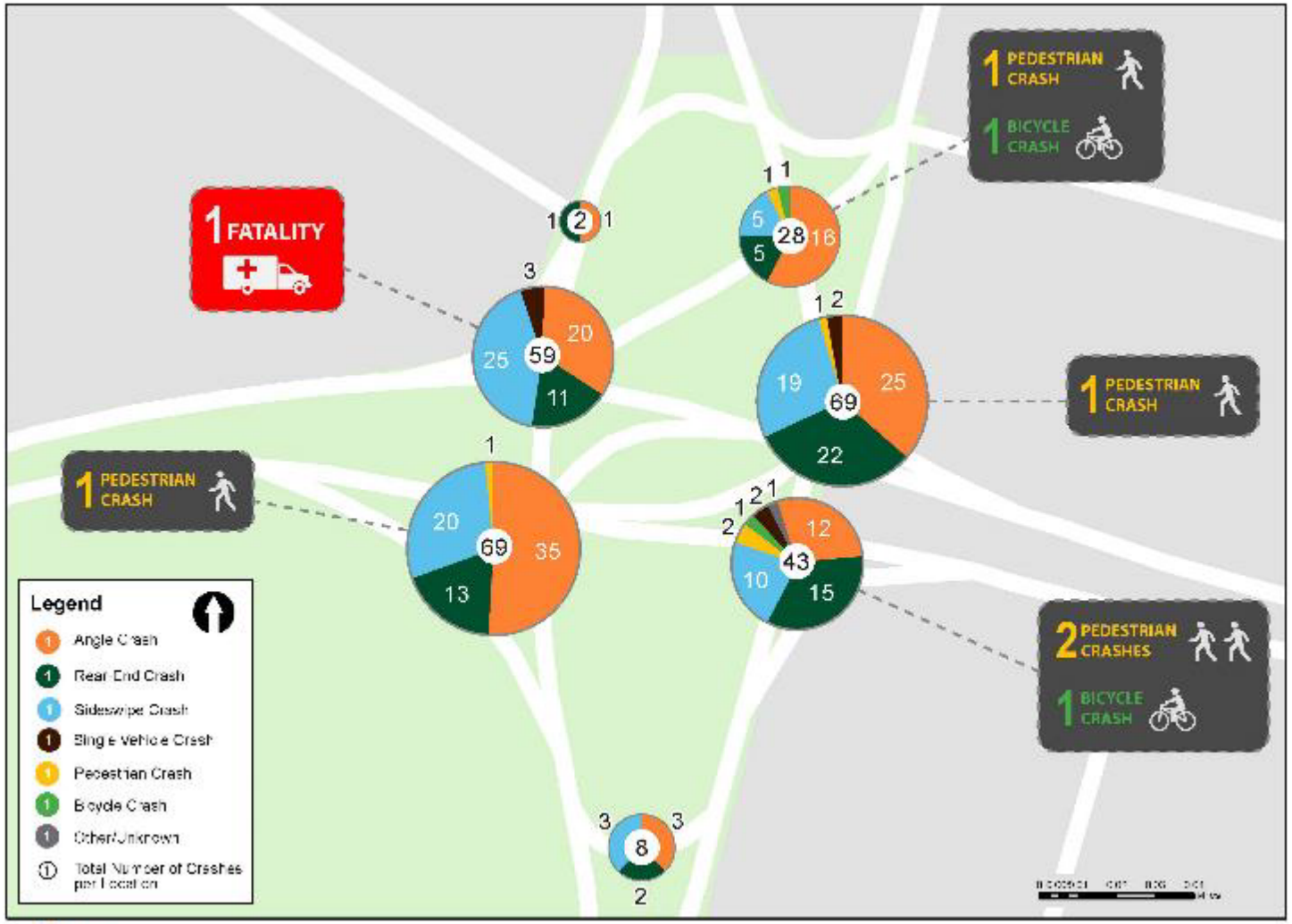
- Crash data from MassDOT for the years 2015-2017 (most recent years with available data).
- Circles scaled based on total number of crashes.

Crash History – Study Area

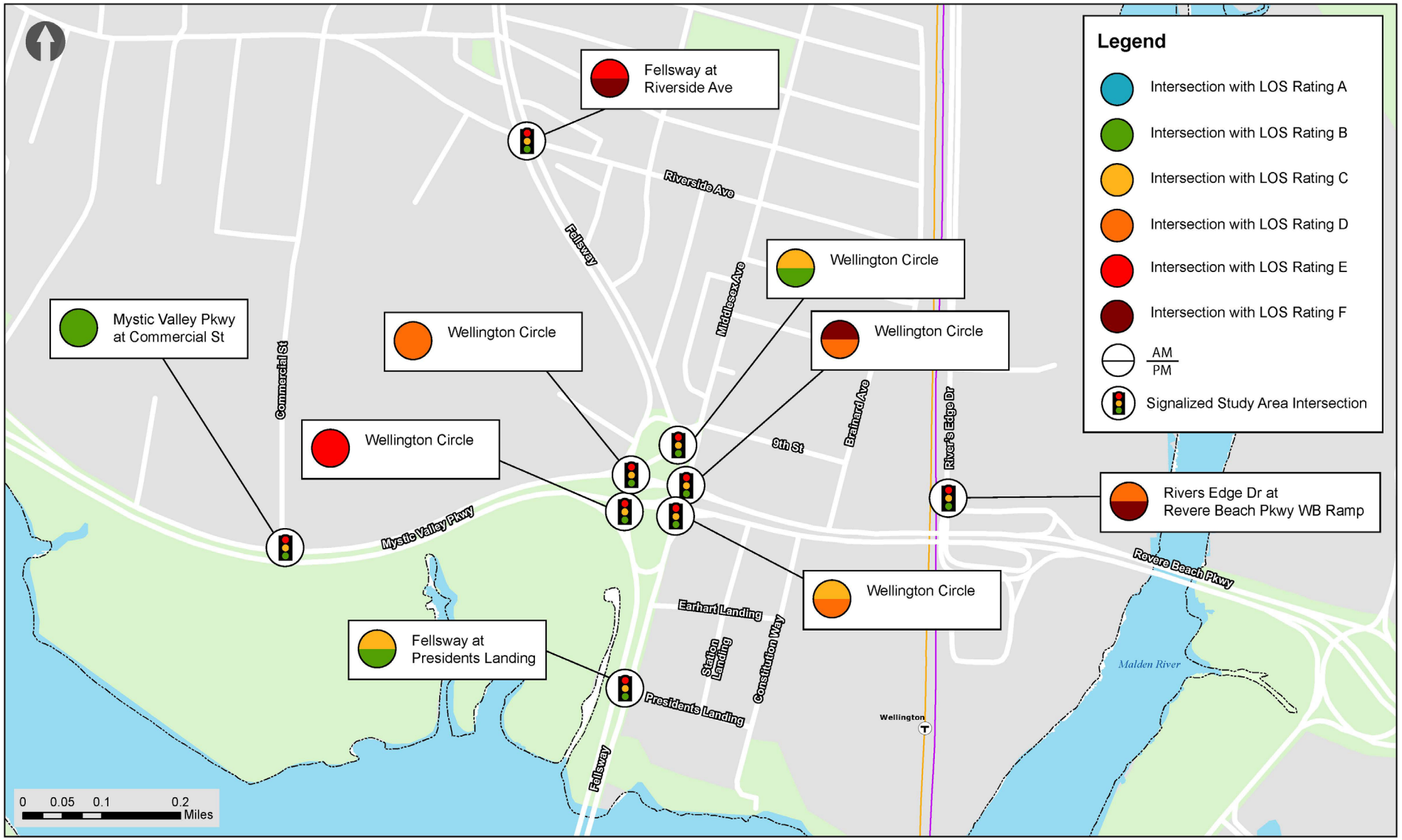
- Crash data from MassDOT for the years 2015-2017 (most recent years with available data).
- Circles scaled based on total number of crashes.

Crash History – Wellington Circle

- Key takeaways:
  - 278 total crashes over three-year period at Circle intersections
  - High frequency of angle and sideswipe crashes
  - Relatively low proportion of rear-end crashes
  - Low number of bike crashes correlates with low volume
  - Pedestrian crashes at most intersections

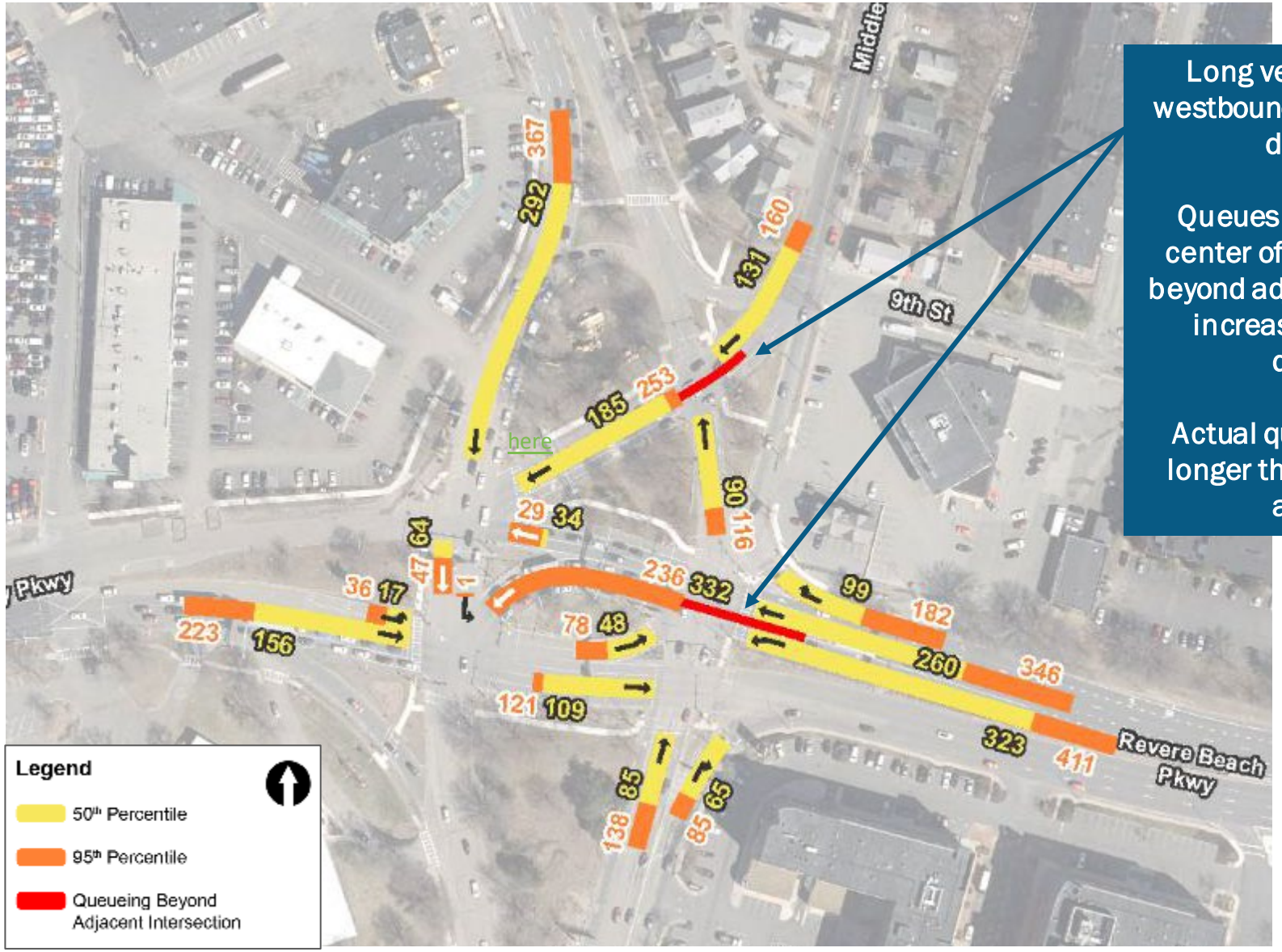


Vehicle Operations



- Vehicle operations vary across the study area intersections and peak hours.
- Vehicle delay through Wellington Circle may exceed reported delay due to multiple closely spaced intersections.

Vehicle Queuing – Weekday AM

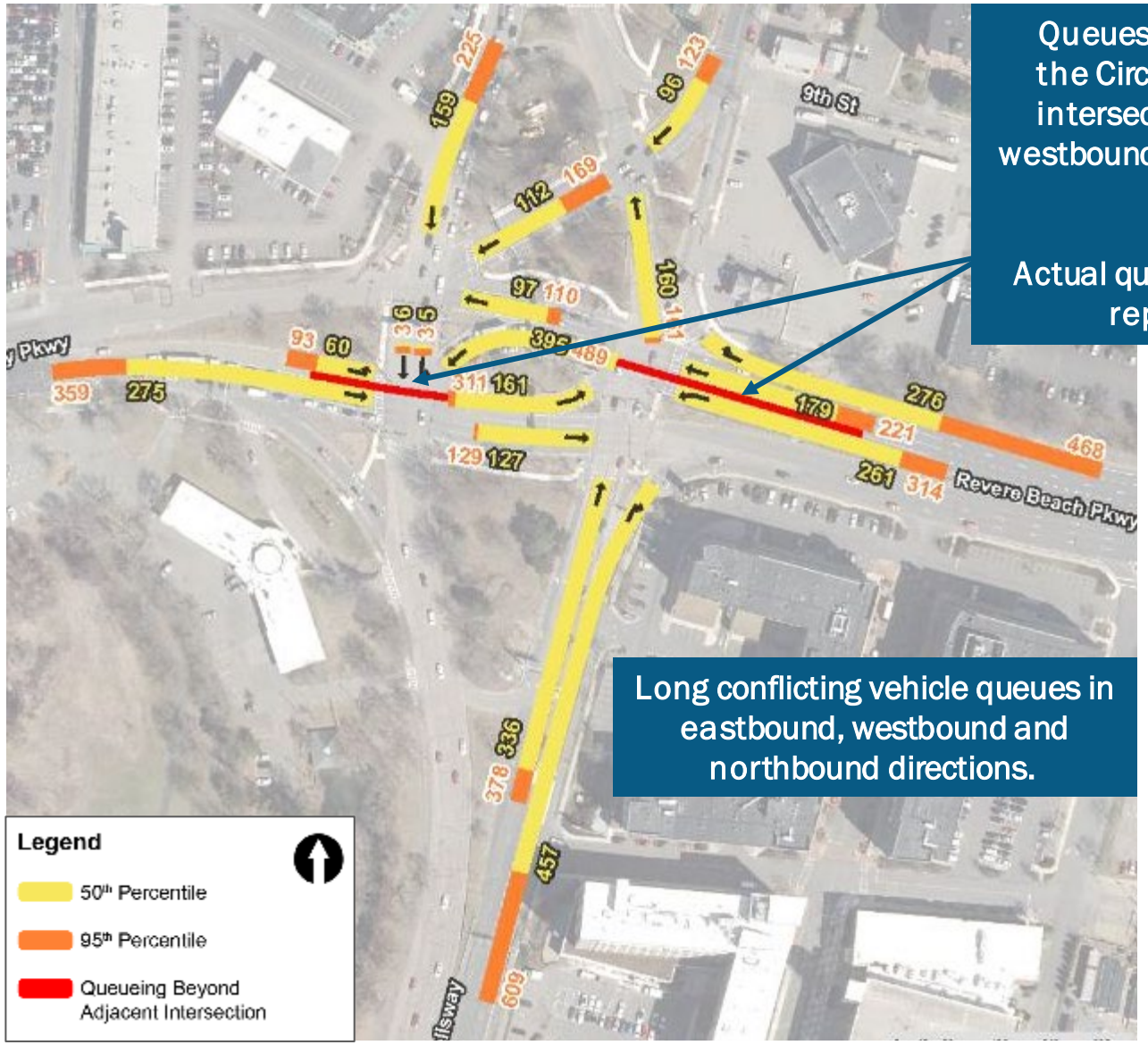


Long vehicle queues in westbound and southbound directions.

Queues at signals in the center of the Circle extend beyond adjacent intersection increasing delays and queuing.

Actual queuing and delay longer than reported from analysis.

Vehicle Queuing – Weekday PM



Origin-Destination Analysis

- Location-Based Services (LBS)
  - *Anonymized* device locations
  - Point-to-point, or can be generalized into "analysis zones"
  - Data is from 2019, before COVID
- We drew boxes around three locations
  - Wellington Circle
  - Wellington Station
  - Encore Boston Harbor
- **Where are the people flowing through these locations coming from, and where are they going?**

Origin-Destination Select Link AM Findings

- 60% of the trips through the Circle originate locally
  - Local (local to local, potentially active transportation): 22%
  - Downtown Commute (local to Boston/Cambridge): 27%
  - Other Commute (local to other): 11%
- 32% of trips are from outside of Local Area and Boston/Cambridge
  - Work Local: 13%
  - Pass Through Commute: 12%
  - Pass Through Other 7%

AM PEAK	Core	Bos/Cam	Other	Total
Core	21.8%	27.0%	11.3%	60.0%
Bos/Cam	5.7%	0.8%	1.5%	8.0%
Other	13.3%	11.9%	6.8%	32.0%
Total	40.8%	39.7%	19.6%	100.0%

- Local Towns: Medford, Malden, Everett, Somerville and Melrose
- Bos/Cam: Cambridge, Boston
- Other: All Other Communities

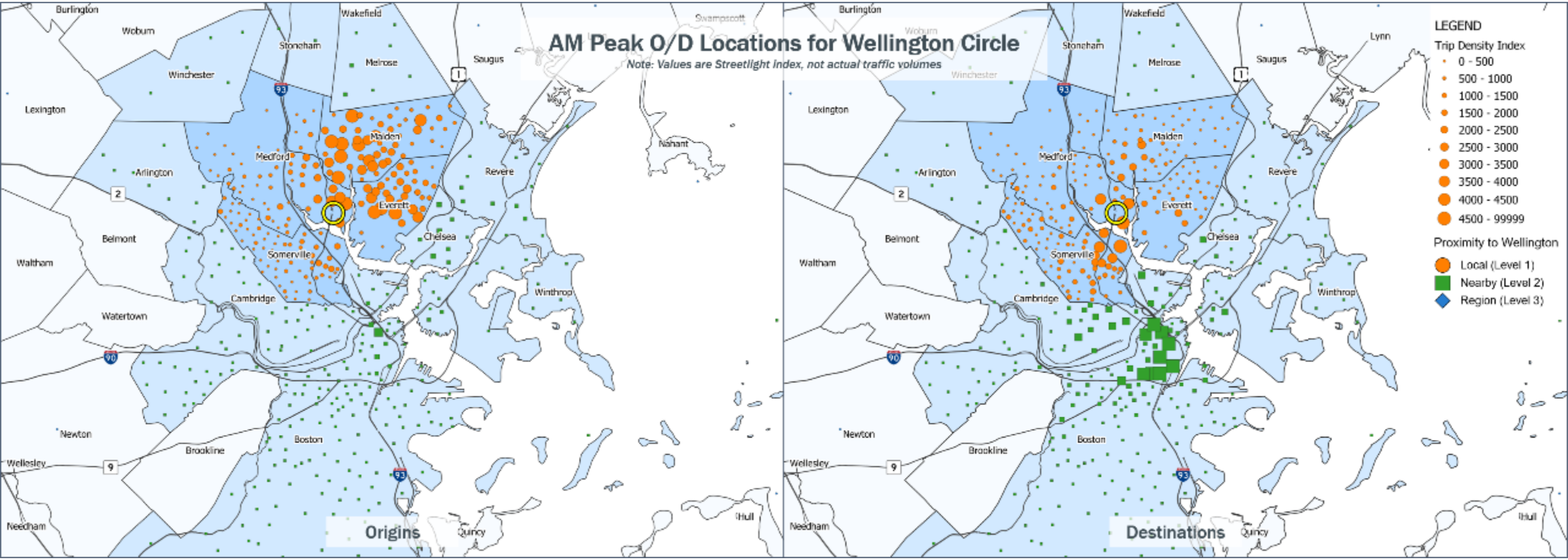
Origin-Destination Select Link PM Findings

- 64% of the trips through the circle have local destinations
  - Local (local to local): 32%
  - Downtown Commute Return (Boston/Cambridge to local): 20%
  - Other Commute (other to local): 12%
- 25% of trips are from outside of Local Area and Boston/Cambridge
  - Trip to Local: 11%
  - Pass through trip to Boston/ Cambridge: 7.5%
  - Pass through Other 6%

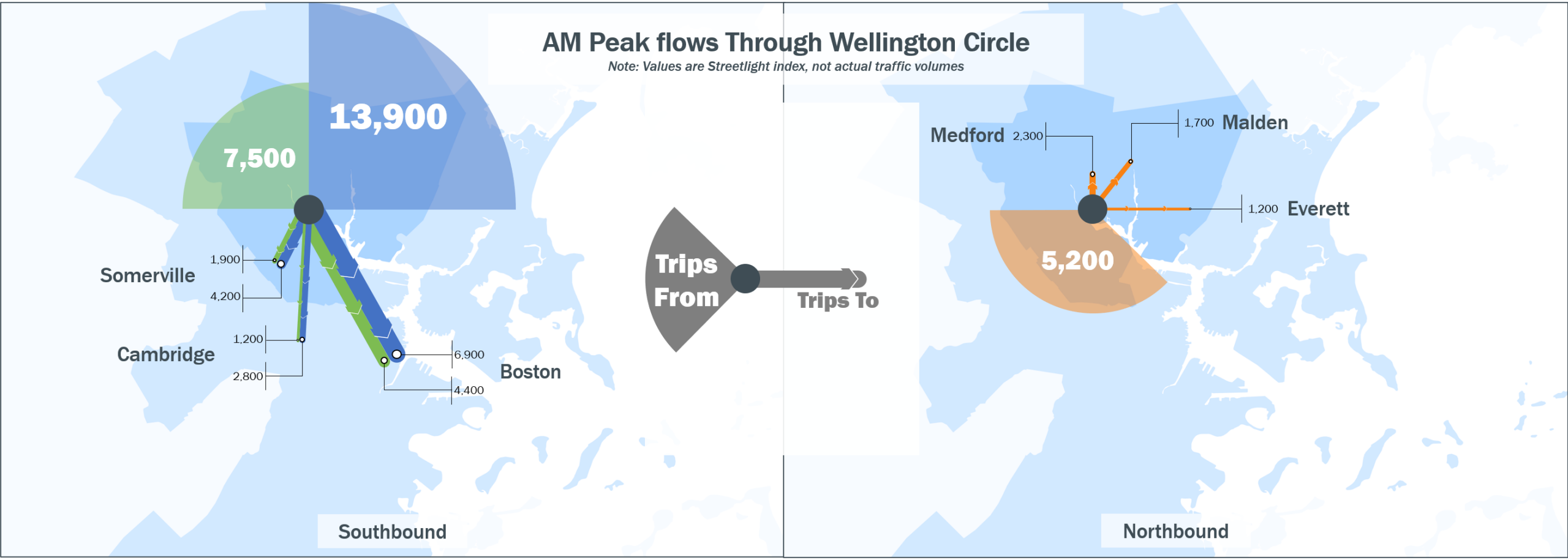
PM Peak	Core	Bos/Cam	Other	Total
Core	32.0%	8.2%	11.1%	51.2%
Bos/Cam	20.0%	0.8%	7.5%	28.2%
Other	12.3%	2.2%	6.0%	20.5%
Total	64.2%	11.2%	24.5%	100.0%

- Local Towns: Medford, Malden, Everett, Somerville and Melrose
- Bos/Cam: Cambridge, Boston
- Other: All Other Communities

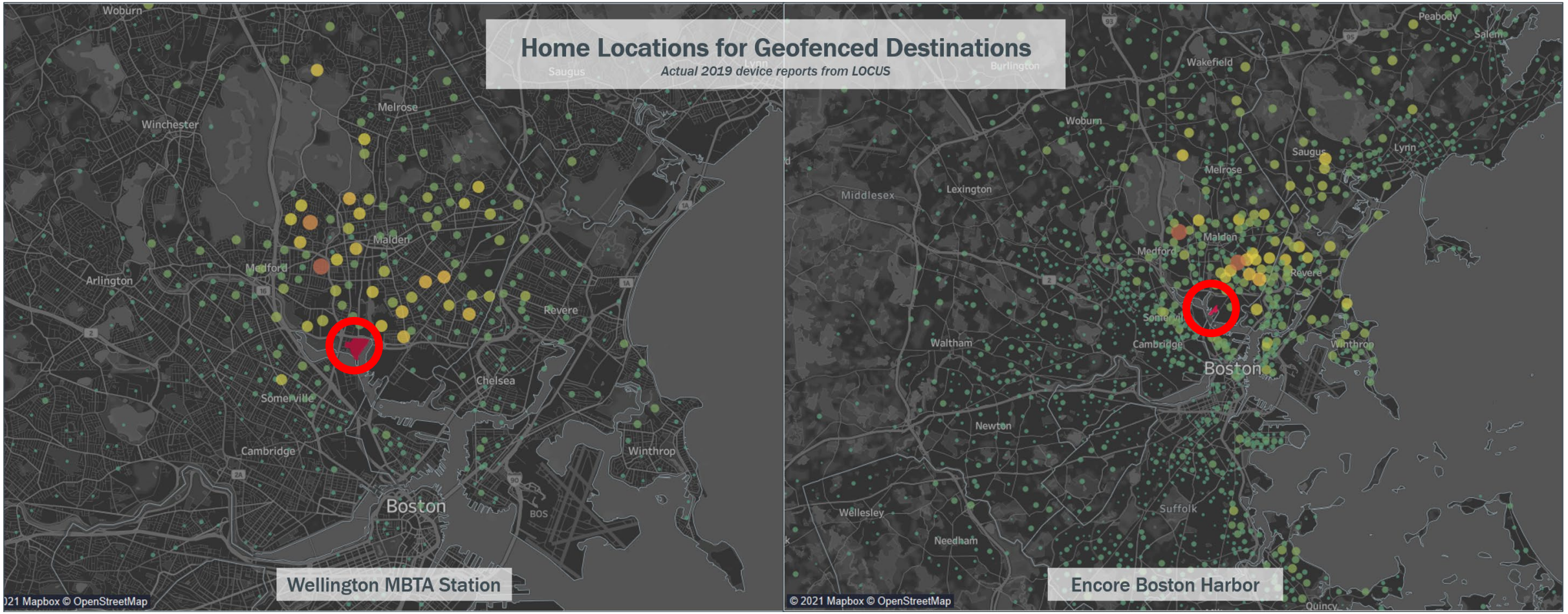
Origin-Destination Select Link AM Locations



Origin-Destination Select Link AM Flows

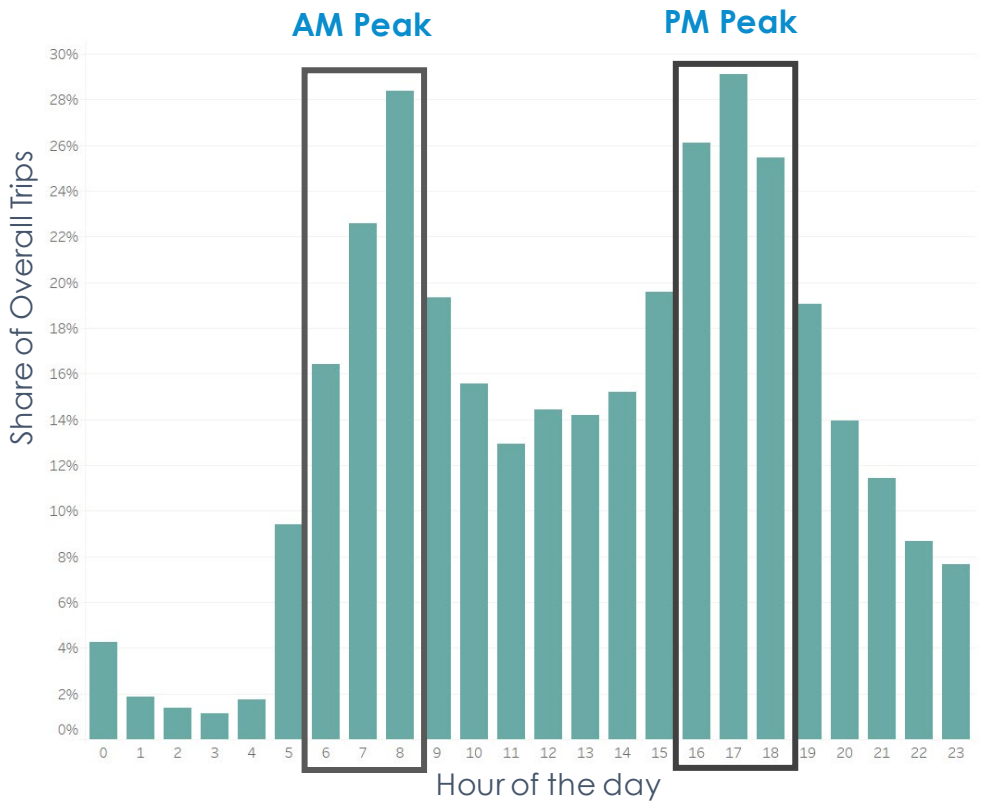


Geofence Analysis – Home Locations

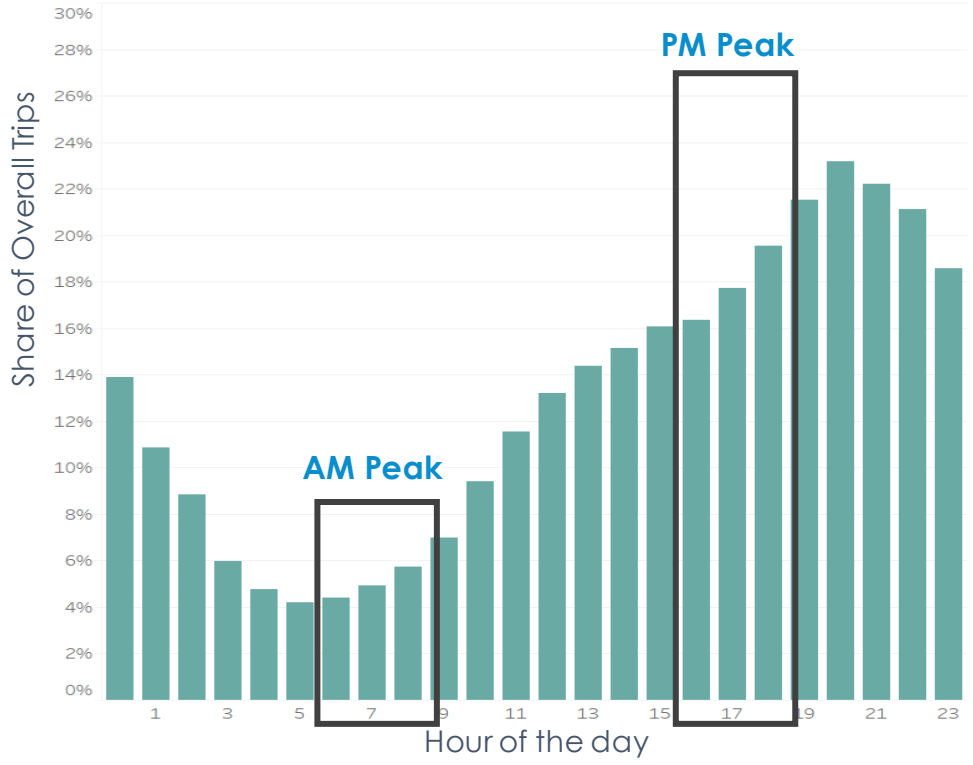


Geofence Analysis – Time of Day

Station Trips Time of Day



Casino Trips Time of Day



- Peak is around AM and PM periods.
- Highest peak around AM and PM for frequent visitors, suggesting they are workers who commute by transit.

Geofence Findings

- Wellington Station has a distinct service area, peak hours
  - Medford, Everett, some of Chelsea, Revere
  - Clear AM and PM peaks, some midday volume
- Encore draws from areas with easy access
  - Trips still cluster in Everett, Revere, Chelsea, East Boston
  - More demand from northern suburbs than others
  - Demand clustered along I-93, harbor
  - Demand climbs throughout the day to peak in late evening

Working Group Discussion

- Does our analysis match your experience with vehicle operations and safety?
  - Pre-pandemic vs. today (post-pandemic)

- How well do the presented origin-destination patterns reflect your local knowledge?

ISSUES, CONSTRAINTS & OPPORTUNITIES DISCUSSION

Issues

- Safety – crashes involving a pedestrian occurred at most Circle intersections
- Multimodal connectivity – limited by wide roadways and multiple lanes of traffic
- Multimodal accommodations – lack of accommodations are a barrier to local destinations, including Wellington Station
- Vehicular congestion – particularly east of the Circle, causing delay for both private vehicles and buses

Constraints & Considerations

1. Waterway
2. New electrical transformers as part of Station Landing development
3. Slope impacts due to elevated parking close to sidewalk
4. Outfall
5. Large mature trees
6. Telecommunications cabinet; possibly fiberoptic
7. Underground vault; size and contents unknown
8. Underground gas transmission line

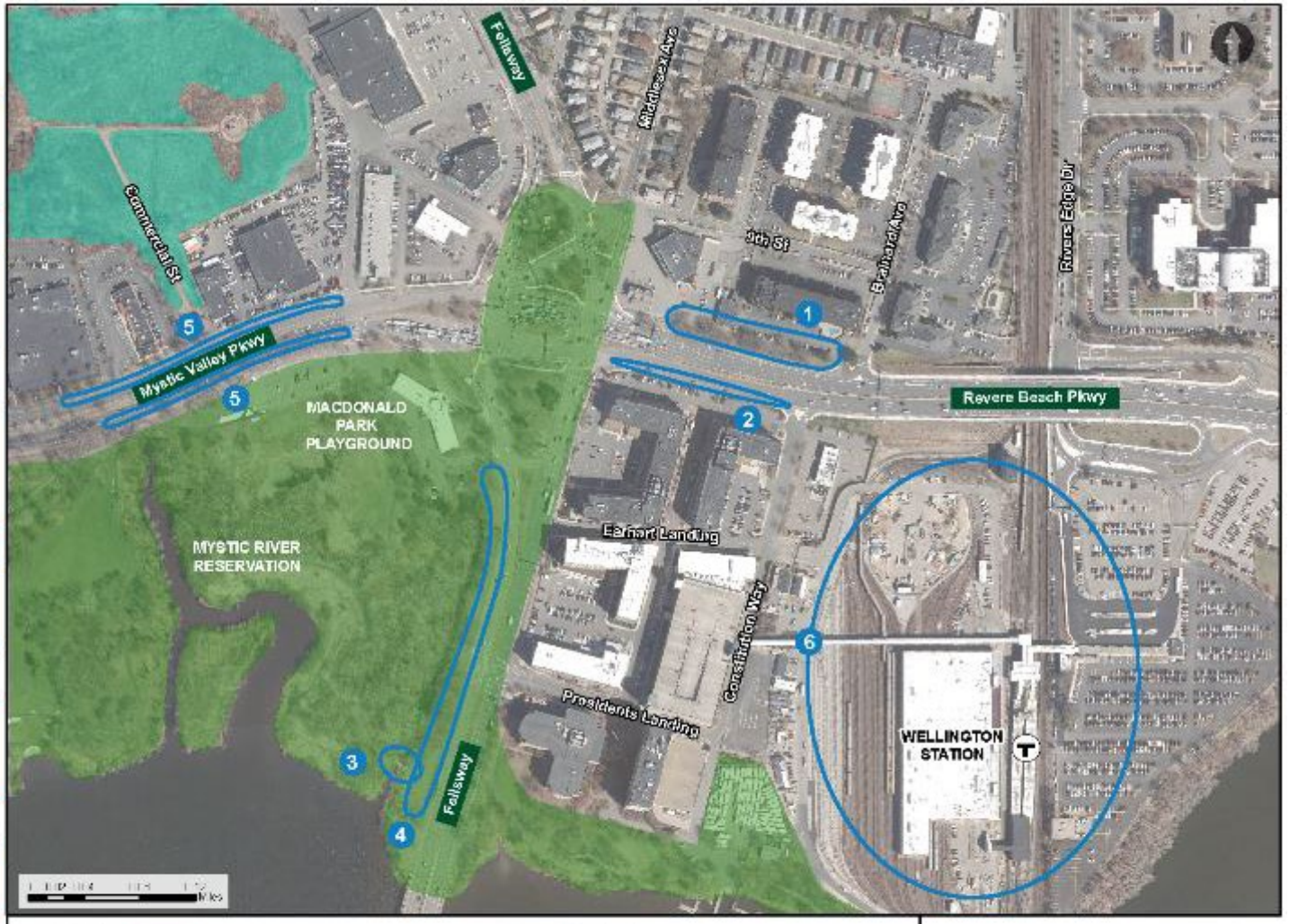
9. Potential telecommunications line; possibly fiberoptic
10. Telecommunications vault
11. Stone retaining walls potential grading impacts
12. On-street parking (some residences lack driveways)

The roadways comprising Wellington Circle are parkways under historic designation.

The alternatives development process will need to consider impacts to natural elements such as waterways and mature trees.

Conceptual Design Considerations and Opportunities

1. Wide buffer/sidewalk area provides opportunity for mixed use path or separated bicycle facility
2. Provide accel/decel lanes with three lane roadway (based on traffic analysis)
3. Connection to existing reservation trails (will require improvements to existing bridge)
4. Widen sidewalk to convert into mixed use path
5. Reduce wide shoulders to provide mixed use path or protected bicycle lanes
6. Connections to Wellington Station

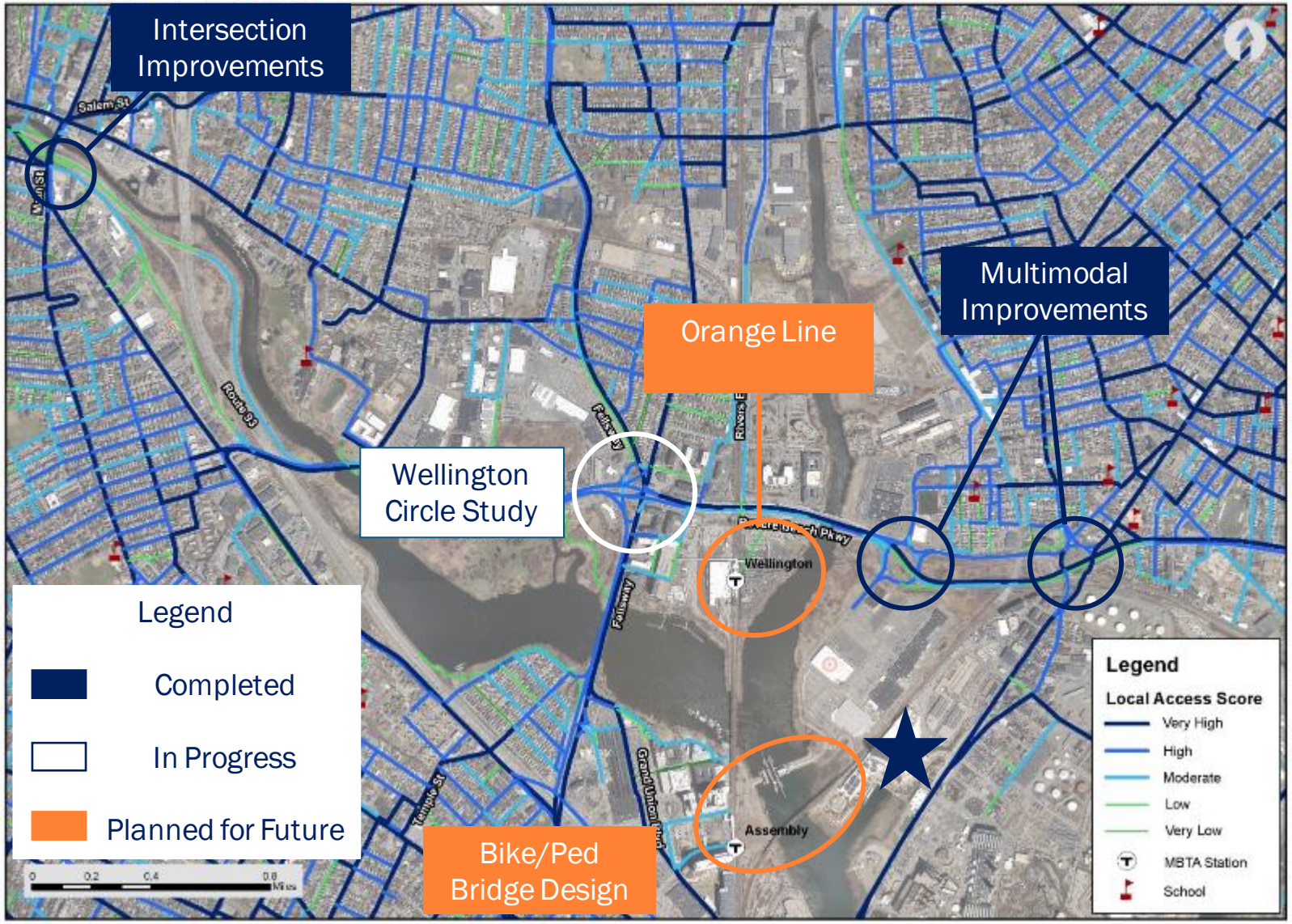


Beyond physical roadway design opportunities, there are opportunities for mixed-used redevelopment and increasing population density.

Together, these can improve public health outcomes and better connect neighborhoods on each side of the circle.

Encore Casino Mitigation Commitments

Existing Conditions: Multimodal Transportation Network



Encore Commitments

- Santilli Circle: traffic flow and pedestrian improvements
- Sweetser Circle: vehicle and pedestrian efficiency and safety improvements
- Bike/Ped Bridge: design funding to enhance connectivity
- Variety of infrastructure and TDM services: water transportation, shuttle buses, Orange Line service improvements

Encore Casino

Project Goals & Objectives Inform Alternatives Development

Mobility/Access

- Mitigate traffic congestion
- Provide facilities for pedestrians, bicyclists, and transit
- Improve connectivity to Wellington Station

Safety

- Reduce speeds
- Reduce conflict points between modes
- Dedicated space for pedestrians & bicyclists

Quality of Life

- Enhance attractiveness
- Minimize public health & environmental impacts
- Provide fair and equitable treatment for EJ populations

Connectivity

- Reduce travel delays
- Improve access and circulation
- Promote active transportation

Key Take-Aways

- The long-term effects of COVID-19 on travel patterns are still to be determined. The study will consider those effects through scenario testing
- Safety, multimodal connectivity, multimodal accommodations, and vehicular congestion are key issues in the study area
- The study will need to take into account existing constraints and considerations:
  - Roadways comprising Wellington Circle are parkways under historic designation
  - Consider impacts to natural elements such as waterways and mature trees
- Opportunities exist to address key issues:
  - Wide roadways, buffers, and sidewalks may provide space for multimodal facilities
  - Increasing mixed-used redevelopment may increase opportunity for short trips to be taken by walking and biking
  - Together, safety and connectivity improvements may also reduce congestion, improve public health, and improve the experience for walkers, bikers, and transit users

Working Group Discussion

- Feedback on issues and opportunities

Click Here for Interactive Map

Public Comment

- Use Q&A to submit questions/comments in writing
- Press the “Raise Hand” button to share a question/comment verbally

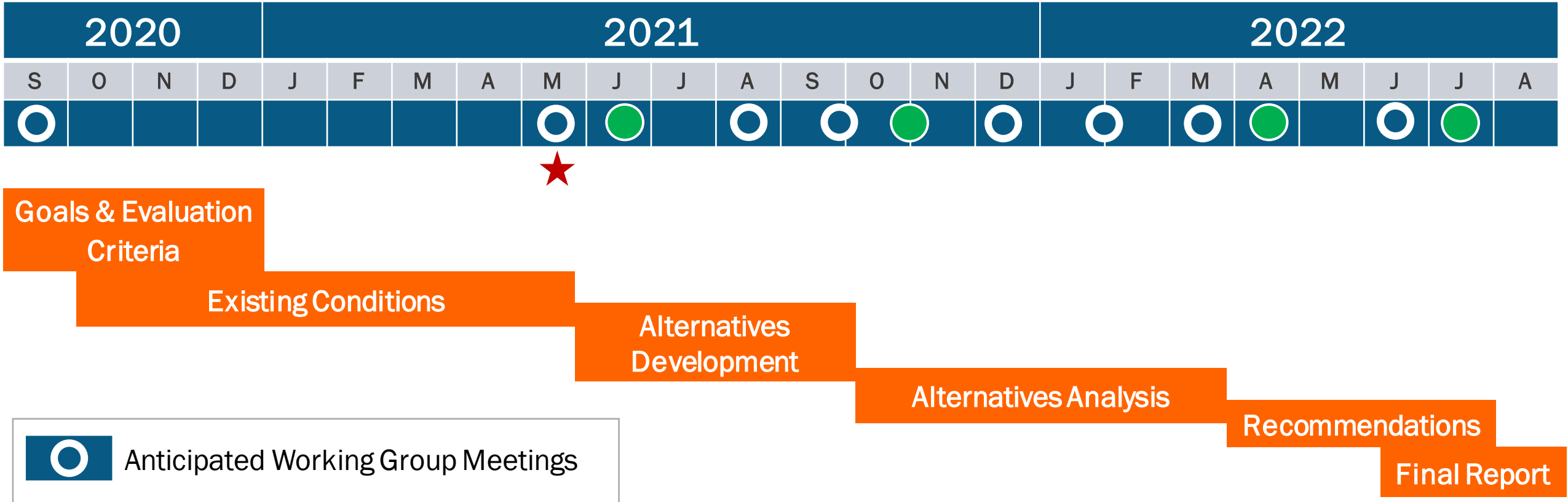
Bottom Panel of Zoom Screen

- If you are participating by phone only, you can press the star button then nine (*9) to raise your hand

- Comments may also be shared throughout the process via the study comment form

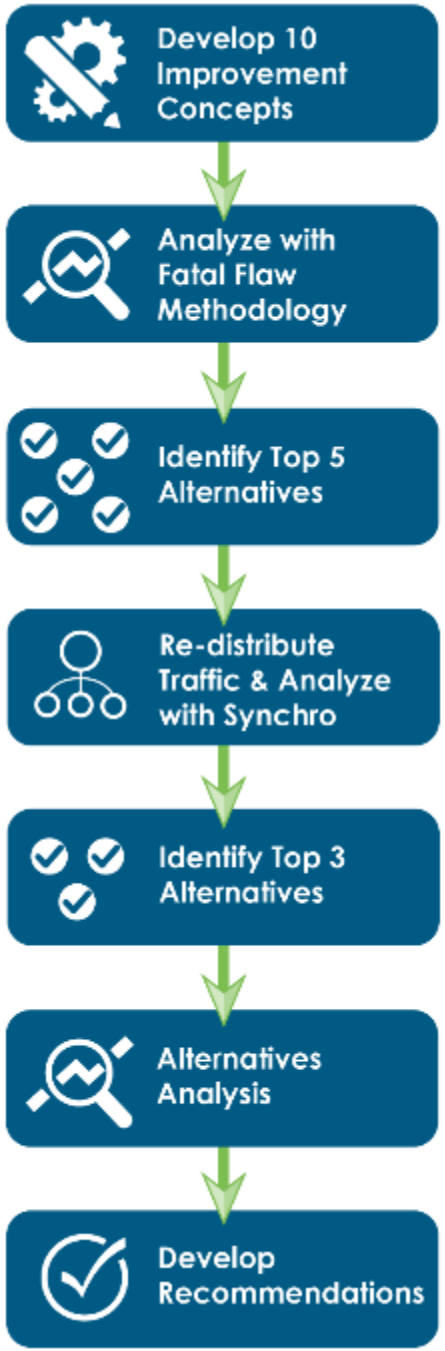
NEXT STEPS

Draft Study Schedule



Next Steps

- Public Meeting
- Future Conditions
- Improvement Concepts and Screening
- Working Group Input



Next Steps

- Public Meeting #1: Summer 2021
  - Present existing conditions and solicit feedback
- Next Working Group Meeting: Summer 2021
  - Present initial improvement concepts and screening

More Information:

Makaela Niles, MassDOT Project Manager
makaela.niles@state.ma.us

Project Website: https://www.mass.gov/wellington-circle-study