

Appendices



Appendices

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Appendix B: Corridor Evaluations Memo

Appendix C: Public Engagement Memo

Appendix D: Active Transportation Audits

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Appendix F: Bus Stop Renderings

Appendix G: Public Comments and Feedback on Draft Recommendations Report

Metro Hartford **RapidRoutes**

Transit Priority Corridors Study



Appendix A

Existing Conditions and Corridor Selection

April 2021

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1 Introduction




























This document presents a high-level compilation of available data regarding the current and anticipated market for public transportation in Metro Hartford, focused within six priority corridors. Understanding the market for transit services is crucial as it provides insights on the density and distribution of people travelling throughout the area. It also puts equity at the center of the analysis, highlighting potential mismatches between areas of need and available transportation services. The six priority corridors were adjusted based on this review of the supply and demand for transit and consultation with the Study's Working Group. Data was sourced from the US Census, CRCOG, and CT *transit*.

2 Market Review

Figure 1 illustrates the relationship between land use and transit demand, which shows how the market for transit increases as land use intensifies and density rises. As a rule, places with very low-density land uses such as rural areas do not successfully support fixed-route transit service, though certain portions of low-density areas may be able to support demand-response services.

Fixed-route transit can be supported in suburban communities and in town centers while denser environments can support higher-capacity transit. In the City of Hartford, the densest part of the metro region, high-frequency services including bus rapid transit are supported.

Figure 1 | Land Use and Transit Demand Infographic

LAND USE			TRANSIT	
Land Use Type	Residents per Acre	Jobs per Acre	Appropriate Types of Transit	Frequency of Service
 Downtowns & High Density Corridors	>45	>25	   	 10 mins or better
 Urban Mixed-Use	30-45	15-25	  	 10-15 minutes
 Neighborhood & Suburban Mixed-Use	15-30	10-15		 15-30 minutes
 Mixed Neighborhoods	10-15	5-10	 	 30-60 minutes
 Low Density	2-10	2-5	  	 60 mins or less or On Demand
 Rural	<2	<2	 	 On Demand

Source: Composite data compiled by Nelson\Nygaard from various sources

Population-Based Demand

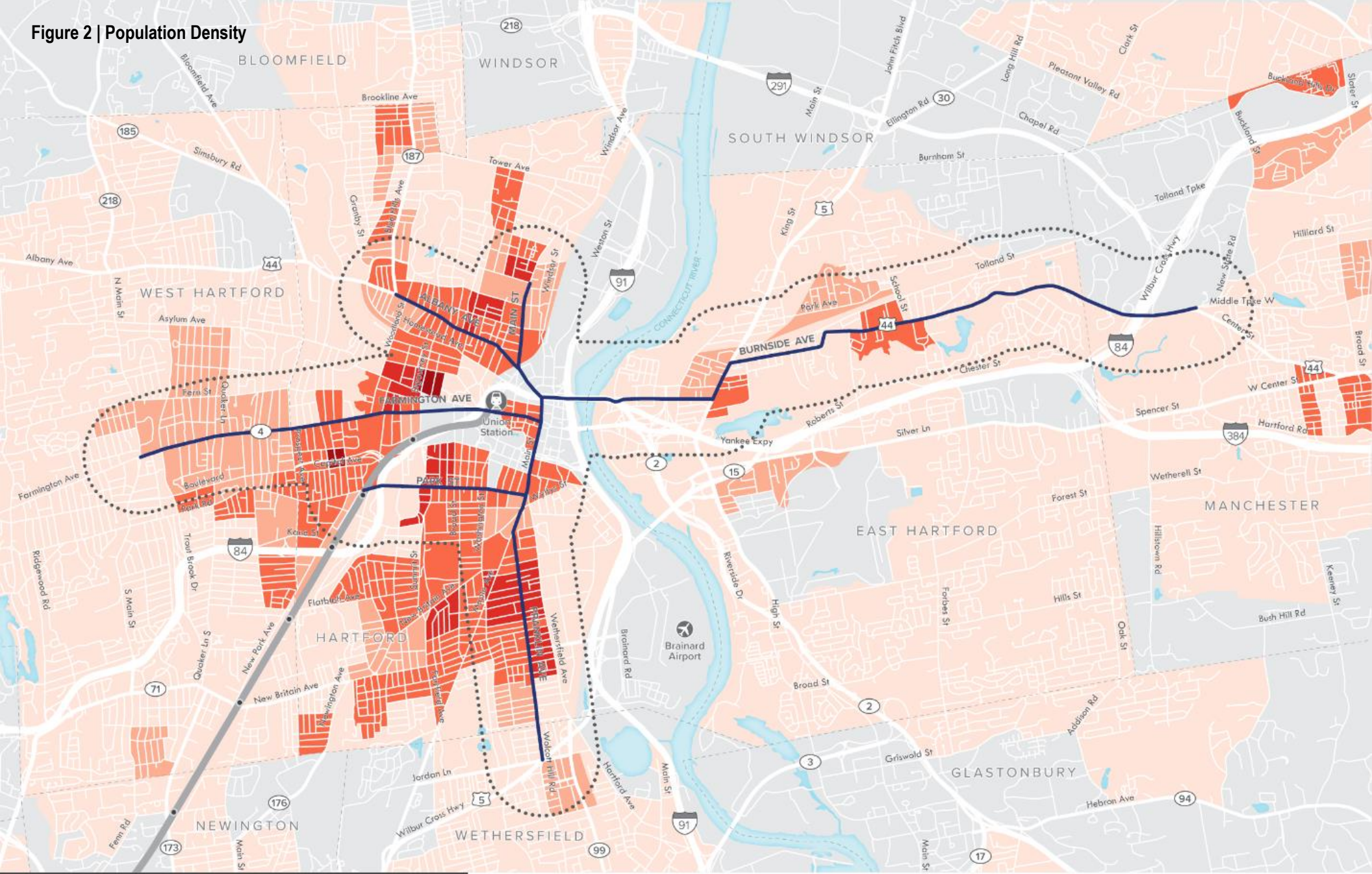
In Metro Hartford, the areas with the highest population density that support frequent transit service (15-minute service and better) are found in Hartford (Figure 2, highlighted in maroon and red), including blocks adjacent to:

- Albany Avenue and Main Street
- Farmington Avenue
- Park Street and Capital Avenue
- Franklin Avenue and New Britain Avenue

Outside of the densest sections, the metro region includes corridors and clusters of medium-density development as well as lower-density expanses. Within the medium-density areas, the following locations could support less-frequent transit service (30-minute service) (Figure 2, highlighted in salmon and pink):

- Hartford neighborhoods:
 - Blue Hills Avenue
 - Northeast and Upper Albany
 - Asylum Hill
 - Parkville and Frog Hollow
 - South End and Maple Avenue
- West Hartford Center
- East Hartford along Burnside Avenue
- Manchester along Buckland Hills Drive, and Keeney Street & West Center Street

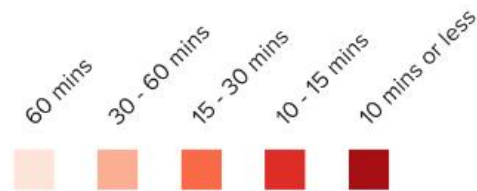
Figure 2 | Population Density



Population Density

Potential transit demand based on population density

Potential service frequency supported based on residents per acre



- Priority Corridors
- CTfastrak Stations
- CTfastrak Busway



- Water
- Study Area
- 1 Mile



Data Sources: ACS 5-Year Estimates, 2019

Relative Transit Propensity

A variety of socioeconomic characteristics speak to how likely someone is to use transit, including race, income, and vehicle ownership. Nelson\Nygaard employs a Transit Propensity Index Factor (TPI) to evaluate the collective impacts of the socioeconomic characteristics on transit demand (Figure 3). Figure 4 shows the TPI of places where the combined population and employment density is greater than or equal to two people per acre. The TPI is an equally weighted balance of the densities of the following groups of people/households:

1. Race/Ethnicity
2. Vehicle Ownership
3. Income
4. Country of Origin

In Metro Hartford, the areas that score highest on the TPI, highlighted in red, include¹:

- All of Hartford
- Southeastern West Hartford
- Western half of East Hartford
- Western and central sections of Manchester
- Southeastern Bloomfield
- Windsor near the Connecticut River

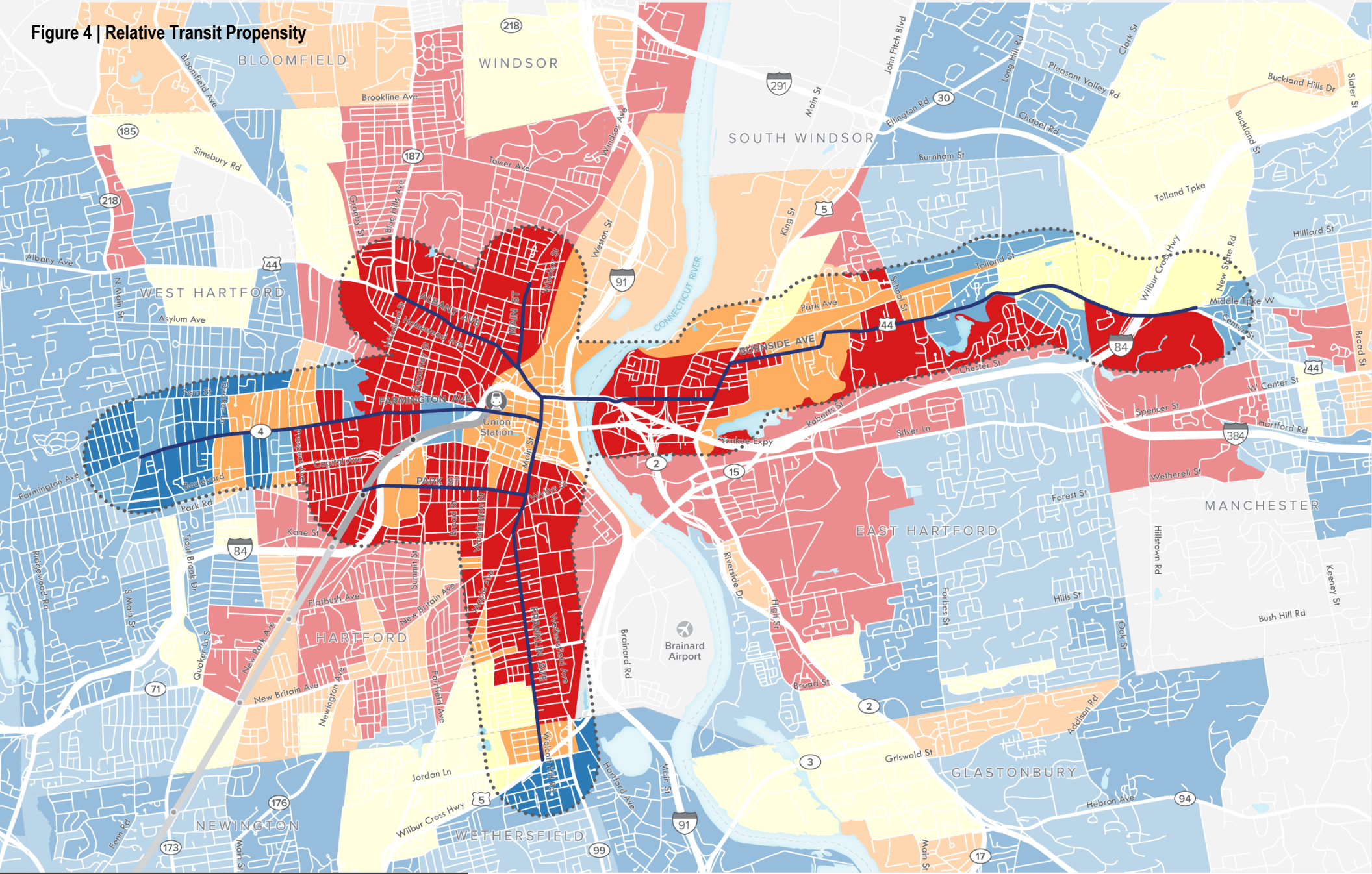
Figure 3 | Transit Propensity Index Factor

Demographic Group	Transit Propensity Index Factor
Race / Ethnicity	
Asian (not Hispanic or Latino)	1.01
Black or African-American (not Hispanic or Latino)	3.09
Hispanic or Latino	1.95
White (not Hispanic or Latino)	0.47
Other Race (not Hispanic or Latino)	2.37
Household Vehicle Ownership	
No Vehicle	9.58
1 Vehicle	1.52
More than 2 Vehicles	0.43
Household Income	
Less Than \$10,000	2.77
\$10,000 - \$15,000	1.54
\$15,000 to \$25,000	1.41
\$25,000 to \$50,000	0.79
More than \$50,000	0.41
Country of Origin	
Native Born	0.85
Foreign Born	1.66

Source: Calculations developed using 2019 American Community Survey 5-Year Estimates for Hartford County residents

¹ This assessment focuses on areas with higher densities of people and jobs. Therefore, areas with the lowest densities are not included on the map

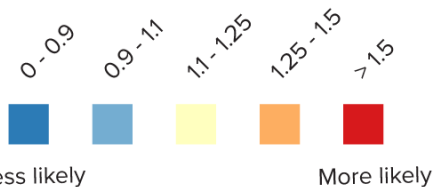
Figure 4 | Relative Transit Propensity



Relative Transit Propensity

Likelihood to ride transit as compared to the total population

The weighted likelihood to ride transit as compared to the total population, in denser areas



- Priority Corridors
- CTfastrak Stations
- CTfastrak Busway



Transit Priority Corridors Study

- Water
- Study Area

1 Mile

Data Sources: ACS 5-Year Estimates, 2019



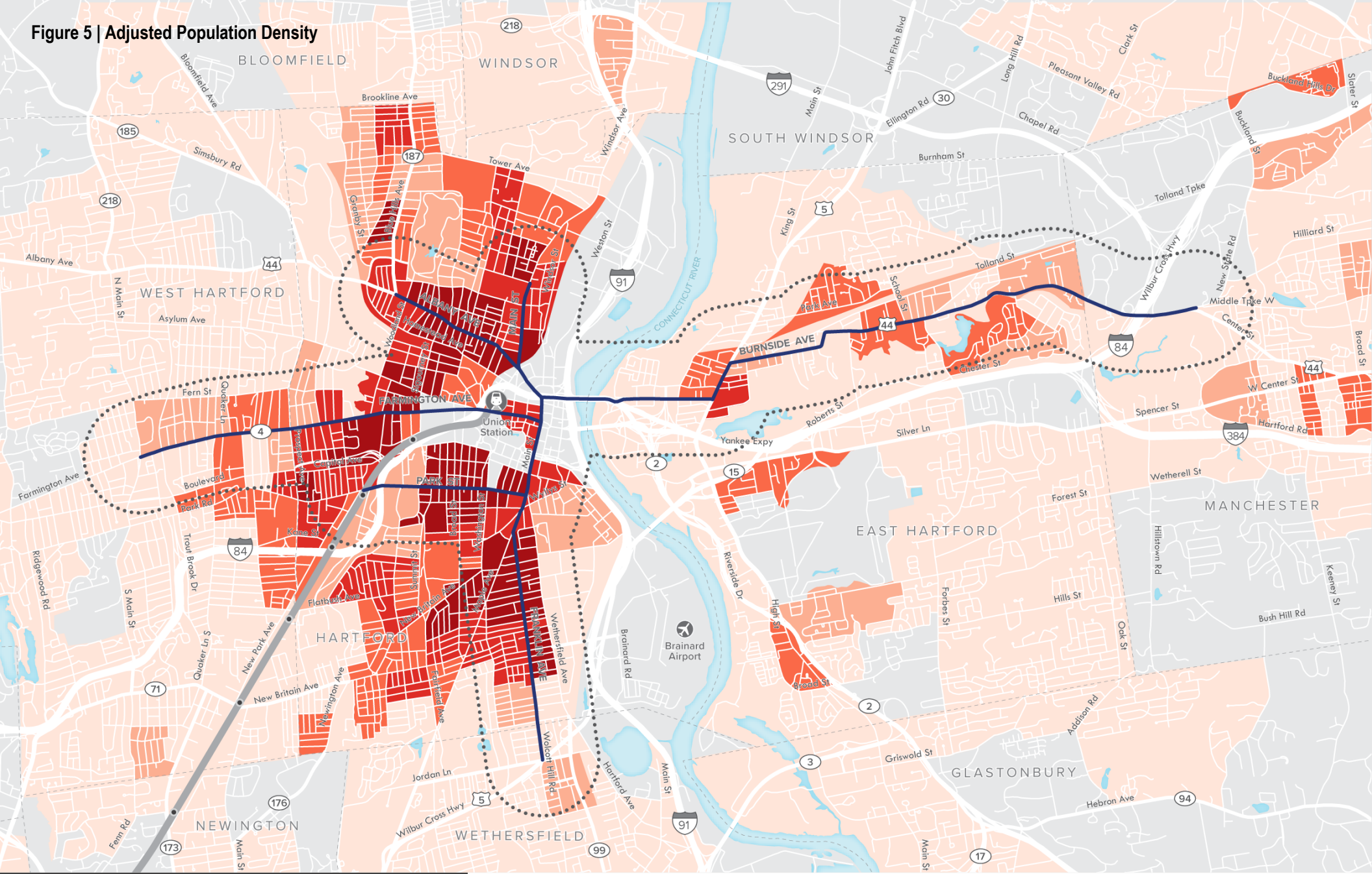
Adjusted Population-Based Demand

When demographic factors are considered in the context of population density, the effective underlying demand is higher in some areas and lower in others. Population density is weighted using the TPI to adjust the picture of demand so that this dimension becomes visible.

Areas that have a very high underlying demand for transit (Figure 5, highlighted in maroon and red) include:

- The entire core of Hartford outside the CBD
- Blue Hills Avenue
- Farmington Avenue into West Hartford
- Franklin Avenue towards Wethersfield
- East Hartford around Burnside Avenue

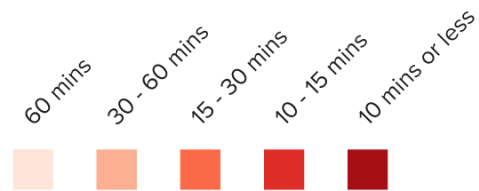
Figure 5 | Adjusted Population Density



Adjusted Population Density

Potential transit demand based on population density and socioeconomic characteristics

Potential service frequency supported based on residents per acre, weighted by likelihood to use transit as compared to the total population



- Priority Corridors
- CTfastrak Stations
- CTfastrak Busway



- Water
- Study Area

1 Mile



Data Sources: ACS 5-Year Estimates, 2019

Employment-Based Demand

The concentration of jobs also affects transit demand since some people commute by bus. Like population density, the underlying demand for transit typically grows with an increase in employment density. As shown previously in **Error! Reference source not found.**, an area with 2-5 jobs per acre generally supports 60-minute transit service. Areas with 5-10 jobs per acre typically support 30-minute transit service.

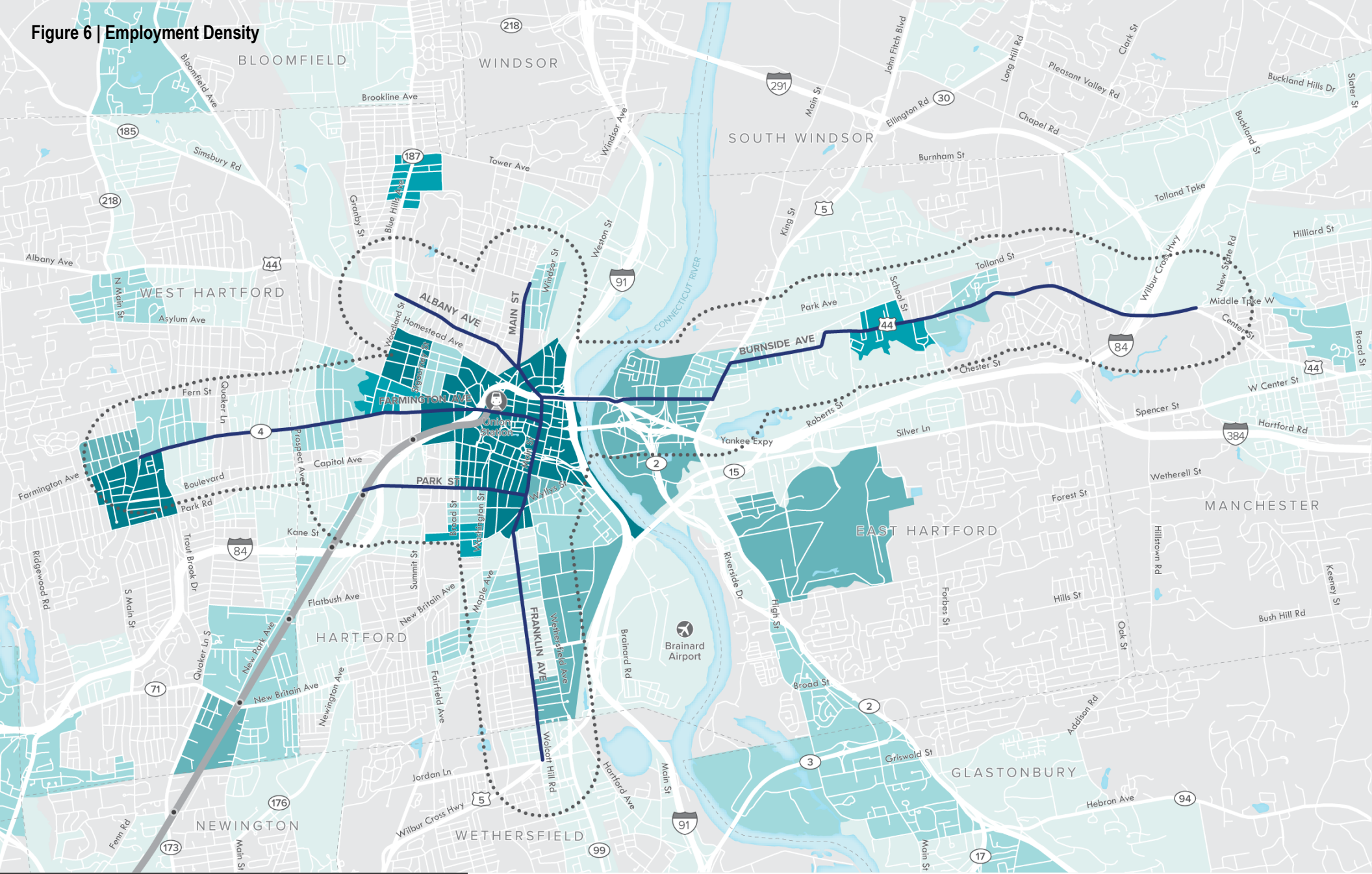
In Metro Hartford, transit-supportive employment clusters are concentrated in a few areas. Locations with the highest employment density (Figure 6, highlighted in teal and turquoise) include:

- Hartford
 - Downtown and core
 - Blue Hills Avenue & Tower Avenue
- West Hartford Center
- East Hartford Center

Outside of these areas, only a few other clusters within the metro region have significant employment density, including:

- Hartford east of Wethersfield Avenue
- West Hartford east of Route 173
- East Hartford
 - Along Connecticut Boulevard
 - South of Silver Lane and east of Main Street

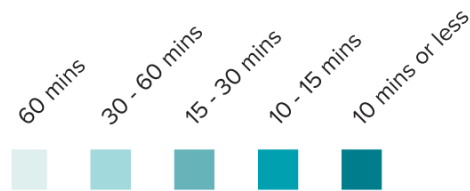
Figure 6 | Employment Density



Employment Density

Potential transit demand based on employment density

Potential service frequency supported based on jobs per acre



- Priority Corridors
- CTfastrak Stations
- CTfastrak Busway



- Water
- Study Area
- 1 Mile

Data Sources: LEHD WACS, 2018



Underlying Transit Demand

Population density and employment density each provide an indicator of potential transit demand, but when the two are combined and considered together, the demand in many areas will be significantly higher than when looking at each factor alone. This also captures areas with a mix of uses (residential, job centers, commercial areas) that can generate particularly high transit ridership.

When population and employment-based demand are considered together, it is clear that the underlying demand for transit is very high in central Hartford and generally declines with distance from the core, although with some exceptions.

As would be expected, the highest levels of demand are in the most densely developed areas (Figure 7, highlighted in red), which include:

- All of Hartford
- West Hartford Center
- East Hartford Center and along Burnside Avenue

2045 Underlying Transit Demand

Using CRCOG population and employment projections for 2045, a prediction of what transit demand may look like a quarter century in the future was produced.

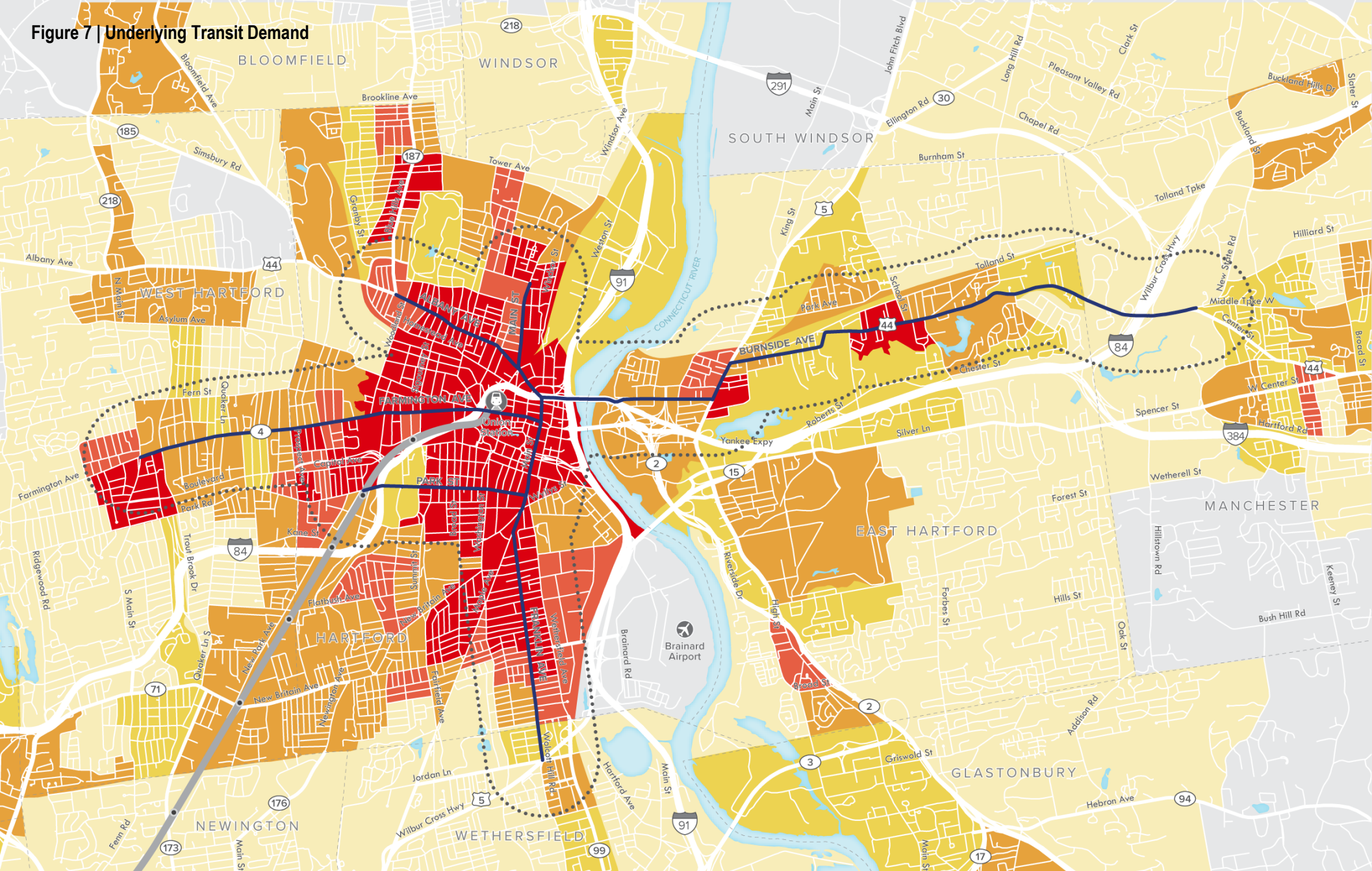
In order to compare the projected demand with today's underlying transit demand, the socioeconomic factors described previously have been used to weight the projected 2045 population and employment densities. While the current demand maps use block groups as their geographic basis, CRCOG's projections use Traffic Analysis Zones (TAZ).

Due to these factors, the comparison between 2019 and 2045 data is not an exact one, but it is a worthwhile exercise when planning for infrastructure improvements that will take time to build and are intended to benefit future residents and visitors to Metro Hartford.

In 2045, the densest parts of the region continue to be (Figure 8, shaded in red):

- All of Hartford
- East Hartford Center
- West Hartford Center

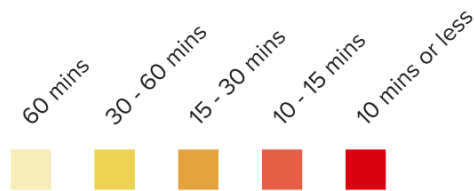
Figure 7 | Underlying Transit Demand



Underlying Transit Demand

Potential transit demand based on density of population, employment, and socioeconomic characteristics

Potential service frequency supported based on people per acre, weighted by likelihood to use transit as compared to the total population



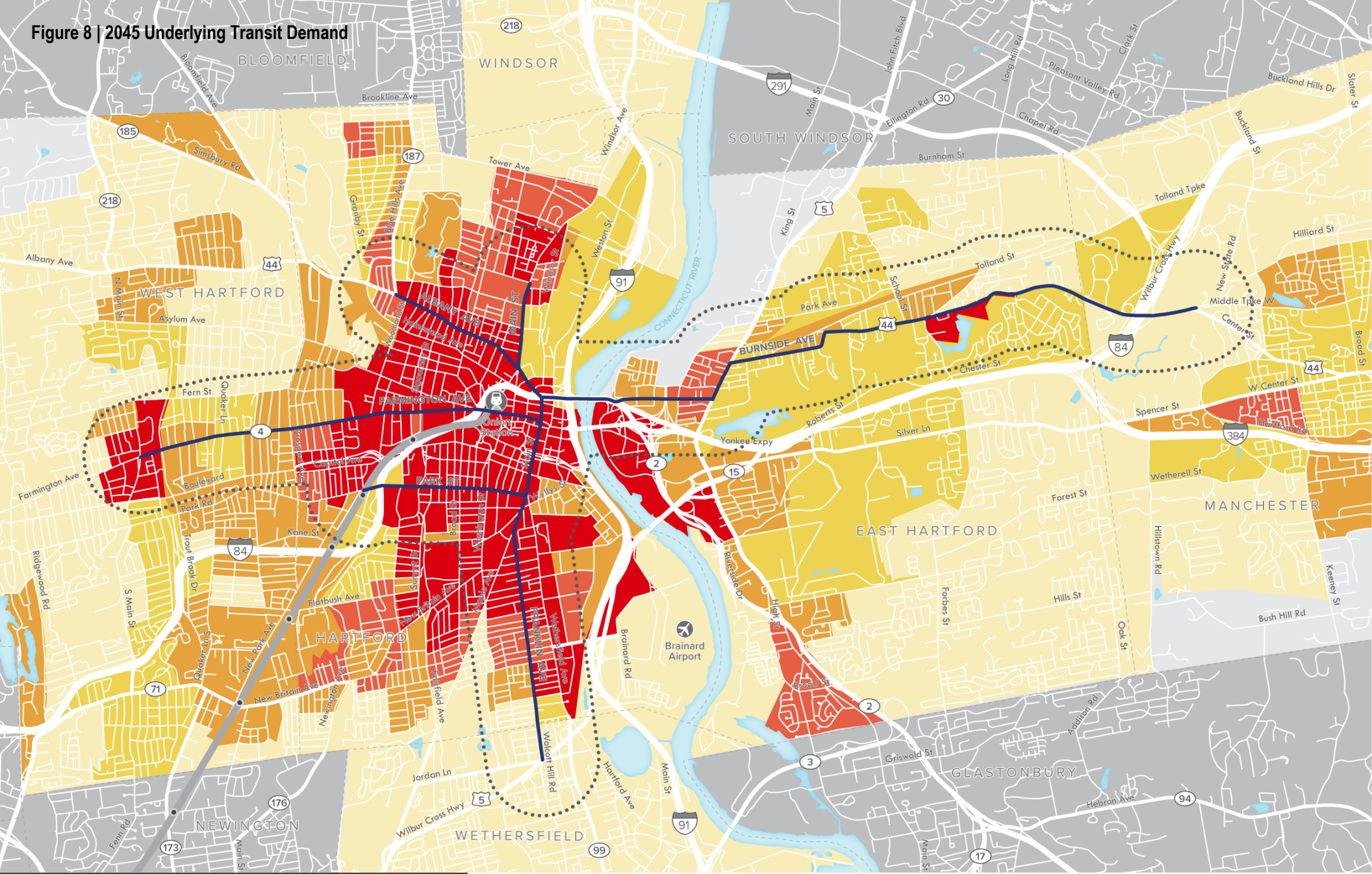
- Priority Corridors
- CTfastrak Stations
- CTfastrak Busway



- Water
- Study Area
- 1 Mile

Data Sources: ACS, 2018-2019; LEHD WACS, 2018

Figure 8 | 2045 Underlying Transit Demand



2045 Underlying Transit Demand

Potential transit demand based on projected density of population and employment in 2045 with 2019 socioeconomic characteristics

Potential service frequency supported based on people per acre, weighted by likelihood to use transit as compared to the total population

60 mins	30 - 60 mins	15 - 30 mins	10 - 15 mins	10 mins or less

No Data

Metro Hartford RapidRoutes
Transit Priority Corridors Study

- Priority Corridors
- CTfastrak Stations
- Water
- Study Area
- CTfastrak Busway

1 Mile
 Data Sources: ACS, 2018-2019; LEHD WACS, 2018; CROG projections, 2021

3 Service Review

Existing Services

See Figure 9

Routes

- The corridors are served by the most bus routes near downtown Hartford, with routes leaving and joining the corridors as they move away from the city center.
- Corridor profiles will examine the bus routes traveling along each corridor, including service hours and frequency.

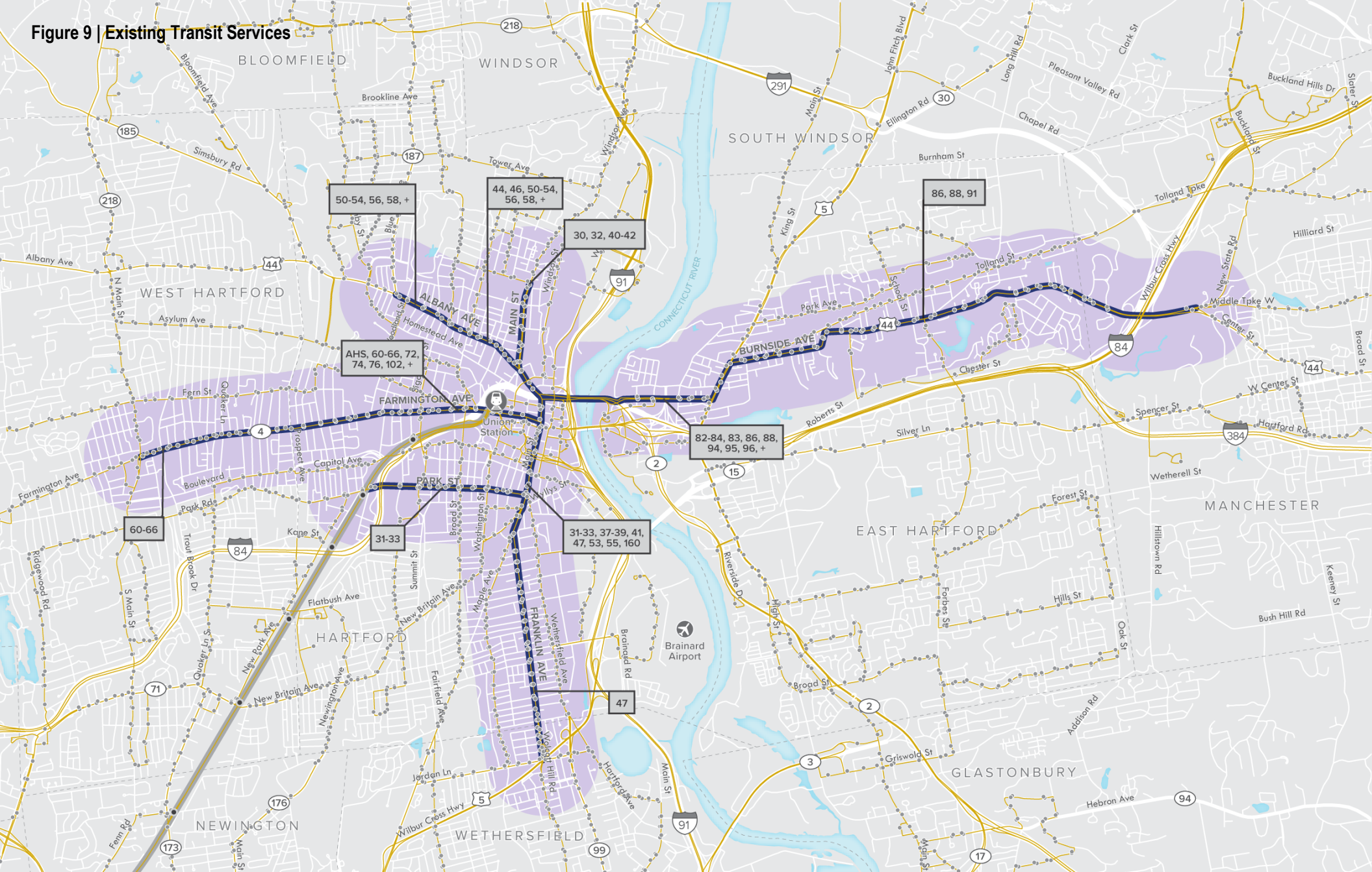
Bus Stops

- There are many bus stops closely spaced together, especially in dense, walkable areas. If transit priority measures are to be implemented, stops will need to be consolidated so that investments can effectively be made.
- Corridor profiles will examine the bus stops along each corridor, including ridership, accessibility, and amenities.

Network Design

- The bus network is characterized by a radial pattern, with almost all routes feeding into Downtown Hartford and Union Station.
- Hartford, West Hartford, and Bloomfield have some routes acting as a grid
- Only a few local bus routes connect to CTfastrak stations.
- The CTtransit network features many express routes that carry passengers from surrounding towns into Downtown Hartford for weekday, 9am-5pm employment.
- East Hartford routes are largely focused laterally through the city center. Access to Hartford is restricted to the Founders and Bulkeley Bridges.

Figure 9 | Existing Transit Services



Existing Transit Services

Current bus routes serving Metro Hartford

Priority Corridors

Bus Routes

CTfastrak Stations

Bus Stops

Bus Routes serving corridors

CTfastrak Busway

+ indicates express routes

Metro Hartford
RapidRoutes
Transit Priority Corridors Study

Water

Study Area

1 Mile



Data Sources: CTtransit 2019

Ridership

October 2019 data was used to determine average weekday ridership for each CT *transit* stop in Metro Hartford. In order to more clearly visualize ridership within corridors, all stops within 250 feet of each other were aggregated into single points. Average weekday ridership by aggregated stops is shown in Figure 10.

Streets with the highest ridership include:

- Park Street
- Albany Avenue
- Main Street
- Franklin Avenue
- Farmington Avenue
- Burnside Avenue
- CT *fastrak* stations

Other areas of moderate ridership include:

- Blue Hills Avenue, Hartford
- New Britain Avenue, Hartford
- Barbour Street, Hartford
- Main Street, East Hartford; south of Silver Lane

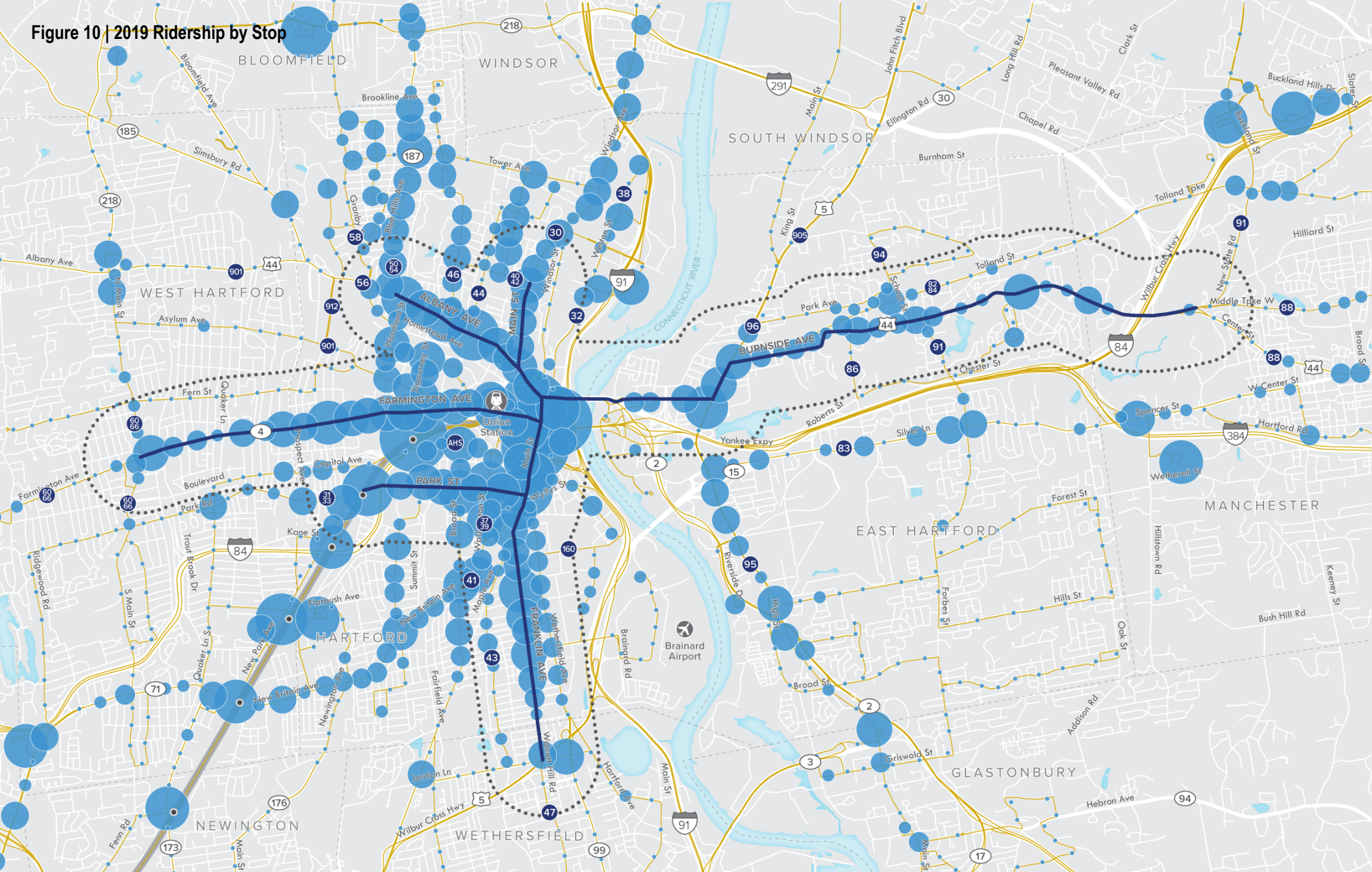
2020 Ridership

Due to the impact of COVID-19 on both the supply and demand for transit, an examination of 2020 average weekday ridership illustrates both significant decreases across the system as well as segments where ridership remained strong. These latter segments indicate populations of essential and frontline workers that continued to travel by transit, further illustrating the underlying demand.

In 2020, streets with high ridership include (Figure 11):

- Main Street just north of Downtown
- Park Street
- South end of Franklin Avenue
- Barbour Street
- Farmington Avenue
- Main Street, East Hartford; between Connecticut Boulevard and Burnside Avenue

Figure 10 | 2019 Ridership by Stop



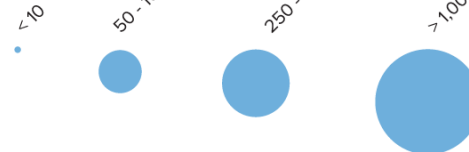
2019 Ridership By Stop

Average weekday bus boardings by stop

Average daily boardings, by aggregated stops

Bus Routes

Bus Routes serving corridors



Priority Corridors

CTfastrak Stations

CTfastrak Busway

Metro Hartford
RapidRoutes
Transit Priority Corridors Study

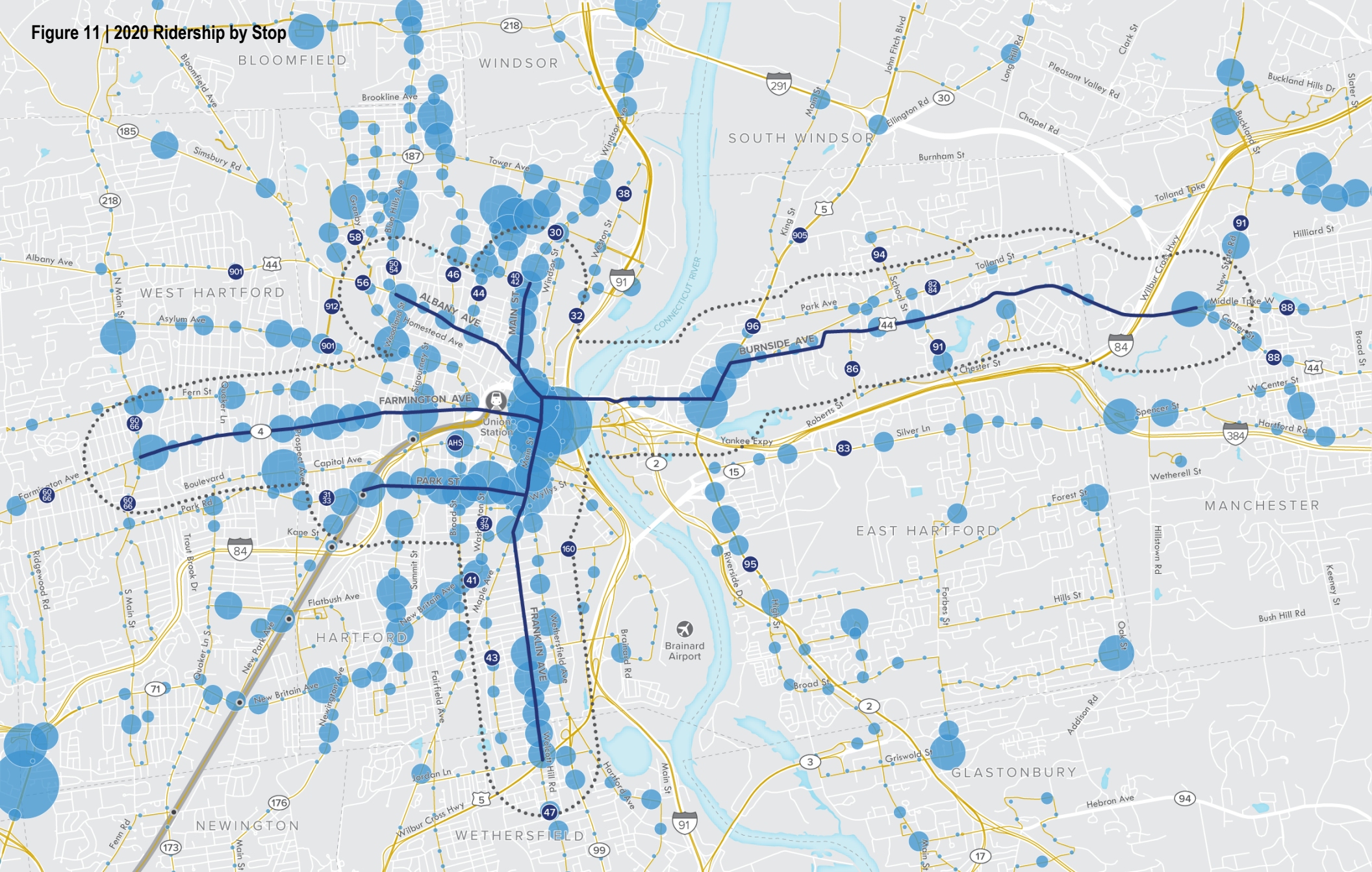
Water Study Area

1 Mile

Data Sources: CTtransit, October 2019



Figure 11 | 2020 Ridership by Stop



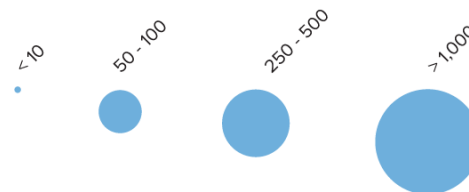
2020 Ridership By Stop

Average weekday bus boardings by stop

Bus Routes

Bus Routes serving corridors

Average daily boardings, by aggregated stops



Priority Corridors

CTfastrak Stations

CTfastrak Busway

Metro Hartford
RapidRoutes
Transit Priority Corridors Study

Water

Study Area

1 Mile

Data Sources: CTtransit, October 2020



4 Corridor Adjustment

The study began with the following six corridors, beginning in Hartford:

- **Main Street:** Asylum Avenue to Capen Street
- **Albany Avenue:** Main Street to Blue Hills Avenue
- **Burnside Avenue:** Main Street to West Center Street, Manchester
- **Park Street:** Main Street to Francis Avenue
- **Farmington Avenue:** Main Street to Main Street, West Harford
- **Franklin Avenue:** Asylum Avenue to Jordan Lane, Wethersfield

Based on the review of the existing market and service conditions, along with consultation with the Study’s Working Group, adjustments to these original corridors were made (Figure 13). While the corridors generally aligned with transit supply and demand, the analyses justify modifications.

The underlying transit demand reveals that Blue Hills Avenue is a high-demand area, with population, employment, and socioeconomic densities that support high-frequency transit of 10-minutes or better. The same demand map also shows that although Burnside Avenue has areas of high demand, the original corridor continues past these and ends in a low-demand area.

Ridership by stop data shows that Main Street has high ridership past the end of the original corridor at Capen Street, continuing north to Interstate 91. Already identified as a high-demand area, Blue Hills Avenue also exhibits high bus ridership.

Additionally, Wethersfield Avenue was considered as an alternative to Franklin Avenue. A comparison of demographic and service data favored Franklin Avenue, which has significantly higher bus ridership and population within a half mile. In contrast, Wethersfield Avenue has only a slightly higher number of jobs within a half mile (Figure 12).

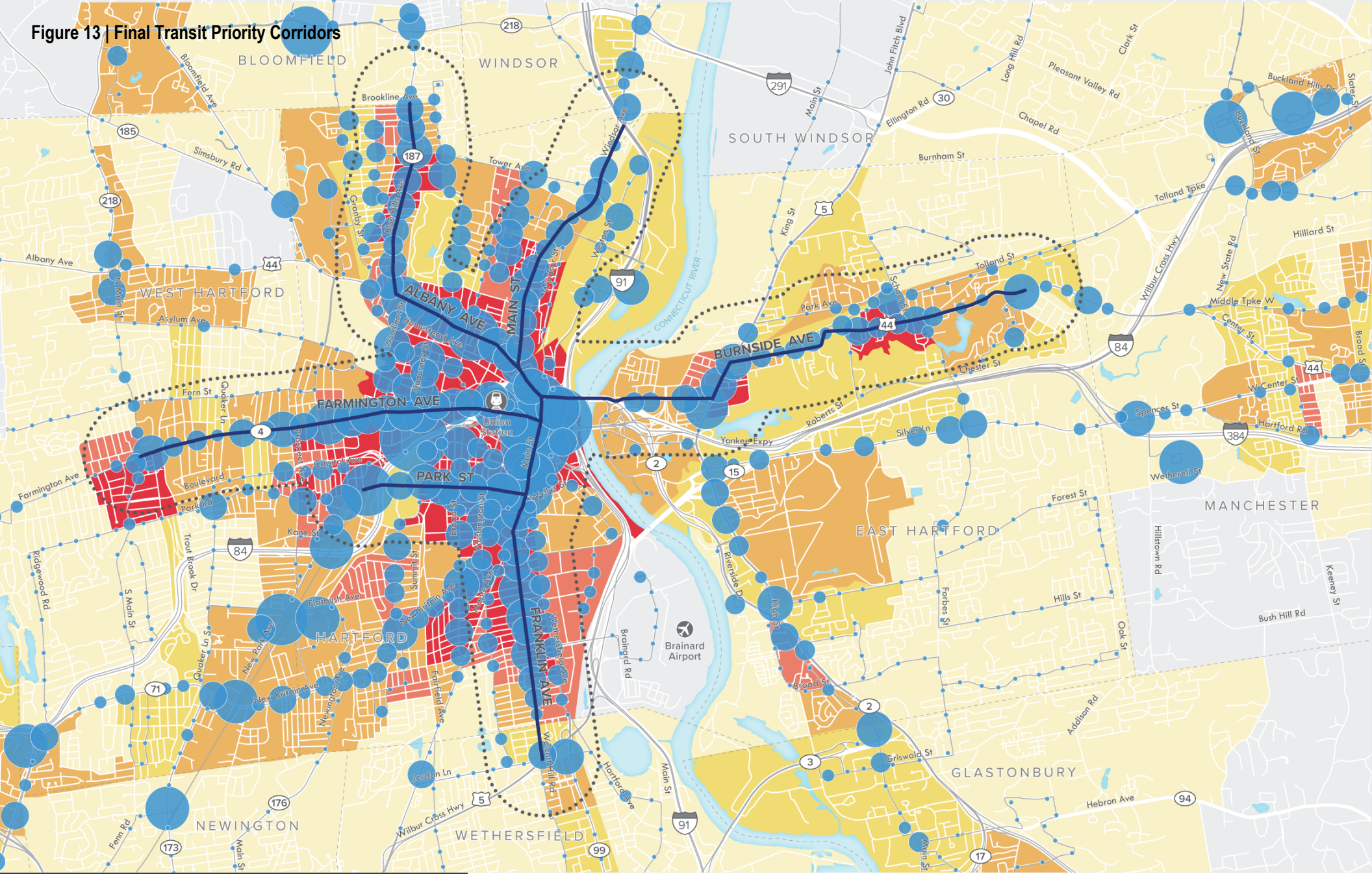
Figure 12 | Franklin Ave & Wethersfield Ave Comparison

	Franklin Avenue	Wethersfield Avenue
Population within 1/2 Mile	30,873	25,852
Employment within 1/2 Mile	32,952	33,195
Ridership (October 2019)	1,937	914

Based on these analyses, the following changes were made to the original six corridors:

- **Main Street:** segment added; *north to Interstate 91*
- **Albany Avenue:** segment added; *north along Blue Hills Avenue to Bloomfield*
- **Burnside Avenue:** segment subtracted; *east end of segment terminates at Mary Street*
- **Park Street:** no change
- **Farmington Avenue:** no change
- **Franklin Avenue:** no change

Figure 13 | Final Transit Priority Corridors



Transit Priority Corridors

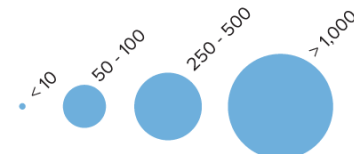
Population, employment, and socioeconomic-based demand & average weekday boardings

Potential service frequency supported based on people per acre, weighted by likelihood to use transit as compared to the total population

- 60 mins
- 30 - 60 mins
- 15 - 30 mins
- 10 - 15 mins
- 10 mins or less

— Bus Routes

Average daily boardings, by aggregated stops



Transit Priority Corridors Study

- Water
- Study Area

1 Mile

Data Sources: ACS, 2018-2019; LEHD WACS, 2018; CTtransit, October 2019



5 Planning Level of Service Capacity Assessment

Metro Hartford Transit Priority Corridors
 Planning Level-of-Service Capacity Assessment

	Class			
	I	II	III	IV
Signal Density (sig/mi)	0.8	3	5	10
Free-Flow Speed (mi/h)	50	40	35	30
Cycle Length (s)	110	90	80	70
Effective Green Ratio	0.45	0.45	0.45	0.45
Adj. Sat. Flow Rate	1850	1800	1750	1700
Arrive Type	3	4	4	5
Unit Extension (s)	3	3	3	3
Initial Queue	0	0	0	0
Other Delay	0	0	0	0
Peak-House Factor	0.92	0.92	0.92	0.92
% lefts, % rights	10	10	10	10
Left-Turn Bay	yes	yes	yes	yes
Lane Utilization Factor	Default	Default	Default	Default

Lanes	Service Volume (veh/h)				
	A	B	C	D	E
Class I					
1		860	930	1020	1140
2		1720	1860	2030	2280
3		2580	2780	3050	3430
4		3450	3710	4060	4570
Class II					
1			670	850	890
2			1470	1700	1780
3			2280	2550	2670
4			3090	3400	3560
Class III					
1			480	780	850
2			1030	1600	1690
3			1560	2410	2540
4			2140	3220	3390
Class IV					
1			540	780	800
2			1200	1570	1620
3			1900	2370	2430
4			2610	3160	3250

Data Sources:

Volume - ConnDOT Traffic Monitoring Count Data Website

https://portal.ct.gov/DOT/PP_SysInfo/Traffic-Monitoring

Segment Lengths - Measured from GIS Interactive Mapping/Property Information Viewer

<https://www.hartfordct.gov/Government/Departments/MHIS/MHIS-Divisions/Hartford-GIS/GIS-Interactive-Mapping>

Functional Classification - ConnDOT Functional Classification Maps

https://portal.ct.gov/DOT/PP_SysInfo/Functional-Classification-Maps

Speed Limit - Google Maps and ConnDOT Speed Limit Cert Listing

<https://portal.ct.gov/DOT/Commissions/STC/Speed-Limit-Certificates-and-Listings>

All Geometric and Street Layout - Google Maps

Curb to Curb Widths - Measured from GIS Interactive Mapping/Property Information Viewer and Google Earth

Appendix B The Corridors

July 2021



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1 Introduction

This document presents the evaluation of six corridors for development as Transit Priority Corridors in the Metro Hartford area. An initial set of corridors were recommended as part of the Hartford Comprehensive Transit Service Analysis. For the Metro Hartford RapidRoutes Transit Priority Corridors Study, additional analysis was conducted to confirm and refine the priority corridors. A final set of six priority corridors was defined based on further analysis of existing services, ridership, market demand, and demographics, as well as consultation with the Study's Working Group. The six priority corridors are listed here and shown in Figure 1.

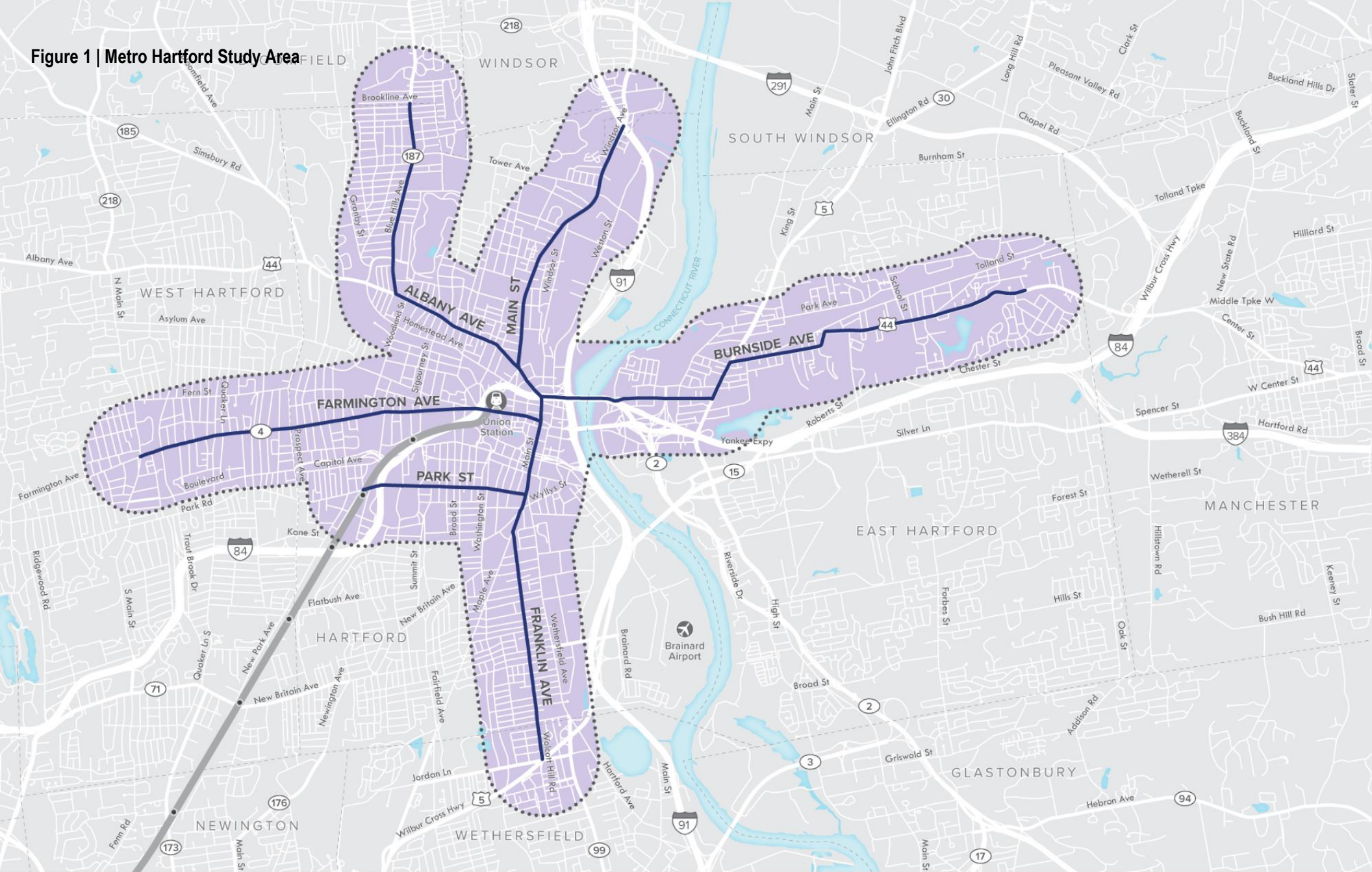
- Albany Avenue
- Burnside Avenue
- Farmington Avenue
- Franklin Avenue
- Main Street
- Park Street

For each corridor, the study team inventoried and evaluated the existing conditions for each of the following elements:

- Existing Transit Services
- Ridership by Stop
- Roadway Infrastructure
- Traffic
- Active Transportation
- Transit Infrastructure

A synopsis of key takeaways and implications for transit priority is also provided for each corridor, with a summary of findings at the end of the document.

Figure 1 | Metro Hartford Study Area



Study Area

Metro Hartford Transit Priority Corridors

 1/2 Mile Buffer

 Priority Corridors

 CTfastrak Stations

 CTfastrak Busway

Metro Hartford
RapidRoutes
Transit Priority Corridors Study 

 Water  Study Area

 1 Mile



Data Sources: CTtransit 2019

2 Transit Priority Corridors

Transit Priority Corridors are corridors with high volumes of transit service that emphasize faster service, reliability, and passenger comfort. Along these corridors, on-street facilities and technology give priority to transit over private vehicular traffic, making transit faster and more reliable. Transit Priority Corridors also typically include more significant and higher quality stop facilities, making transit more comfortable and attractive to riders. In effect, these strategies allow regular bus routes to operate in the same manner and with the same amenities as Bus Rapid Transit through important corridors.

Typical elements of Transit Priority Corridors include:

- **Bus priority lanes**, including full-time bus lanes, part-time bus lanes, shared bus/bike lanes, and queue jump lanes
- **Traffic Signal Priority (TSP)**, which extends green lights and shortens red lights when buses are approaching
- **High quality bus stops**, including enhanced shelters and seating, real-time arrival displays, wayfinding, placemaking, and multimodal connections such as bikeshare
- **Enhanced pedestrian environment**, designed for the safety and comfort of people walking to, from, and between bus stops

Other elements of Transit Priority Corridors can include:

- **Bus bulbs/curb extensions** that allow buses to serve a stop without leaving and merging back into traffic
- **Level boarding platforms** to make boarding faster and more accessible for riders
- **Off-board fare payment** to speed boarding by high volumes of riders



Rendering of Providence Downtown Transit Connector



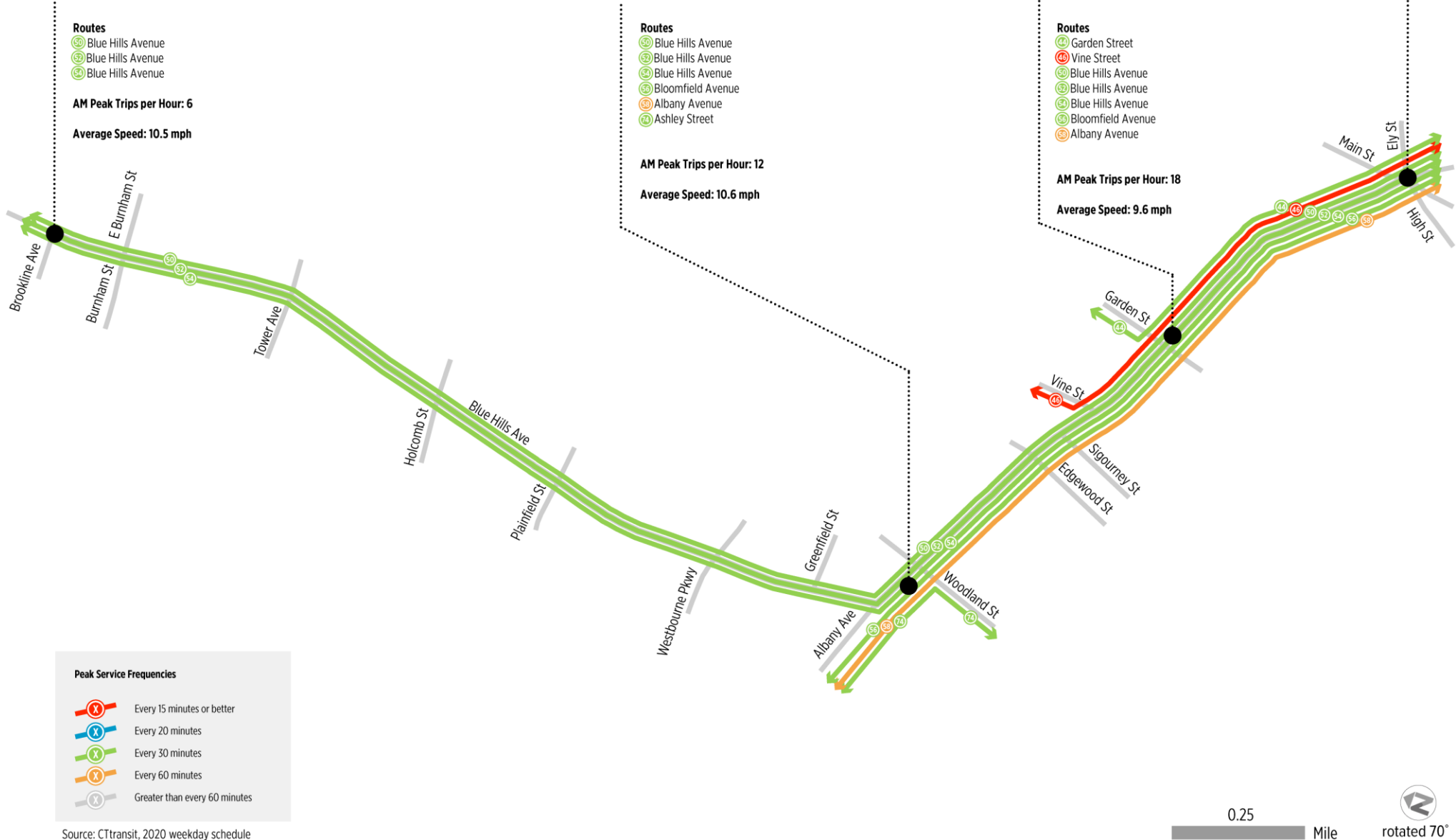
Bus Lane and Level Boarding in Everett, Massachusetts

Albany Avenue

Transit Priority Corridor

Figure 2 | Albany Avenue, Existing Transit Services

ALBANY AVENUE Existing Transit Services



Source: CTtransit, 2020 weekday schedule

0.25 Mile



Figure 3 | Albany Avenue, Ridership By Stop

ALBANY AVENUE
 Ridership By Stop

Total Stops: 58

Inbound: 30
 Outbound: 28

Total Ridership: 2594

Average weekday boardings

Stops per Mile: 10

Routes Served

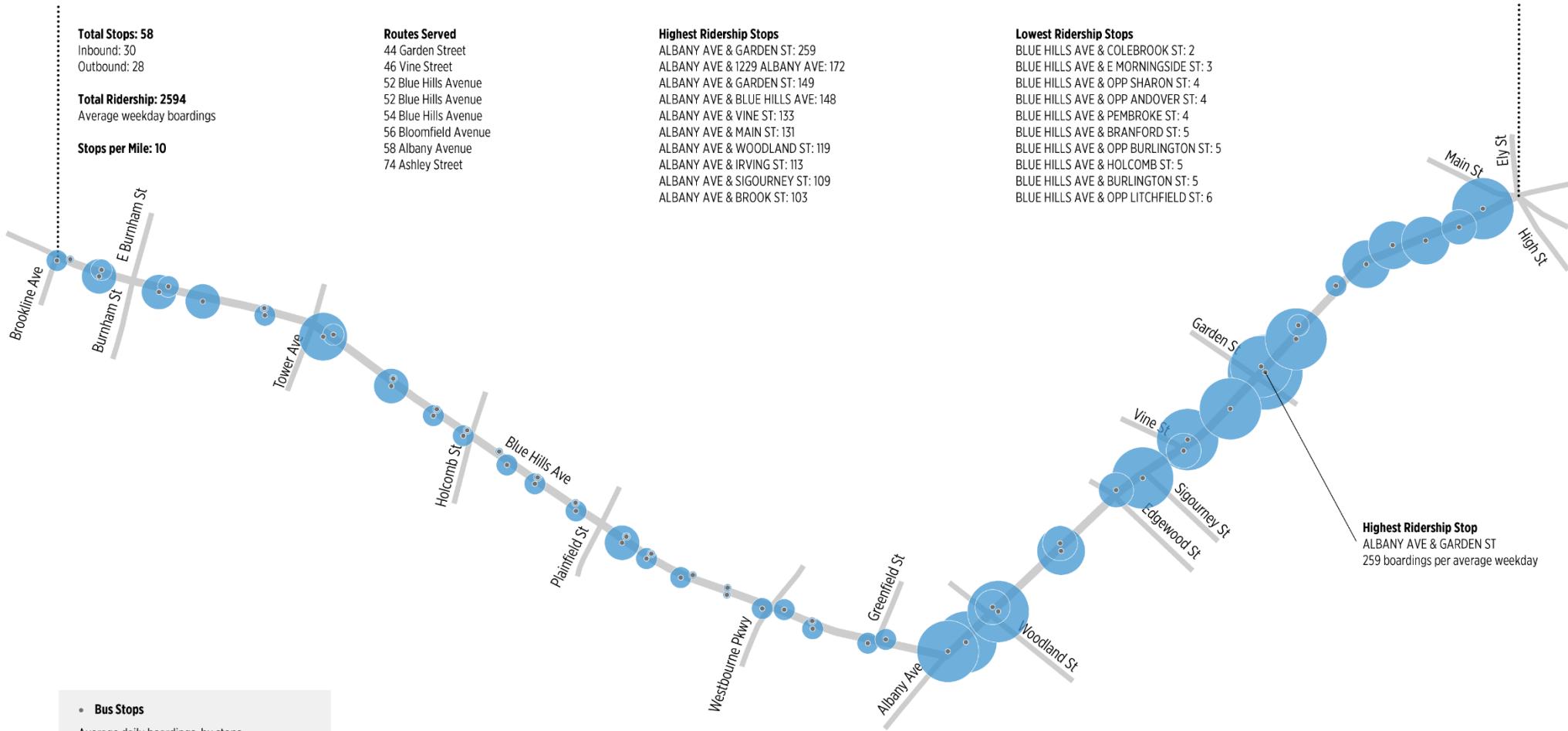
44 Garden Street
 46 Vine Street
 52 Blue Hills Avenue
 52 Blue Hills Avenue
 54 Blue Hills Avenue
 56 Bloomfield Avenue
 58 Albany Avenue
 74 Ashley Street

Highest Ridership Stops

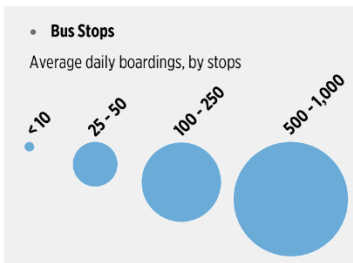
ALBANY AVE & GARDEN ST: 259
 ALBANY AVE & 1229 ALBANY AVE: 172
 ALBANY AVE & GARDEN ST: 149
 ALBANY AVE & BLUE HILLS AVE: 148
 ALBANY AVE & VINE ST: 133
 ALBANY AVE & MAIN ST: 131
 ALBANY AVE & WOODLAND ST: 119
 ALBANY AVE & IRVING ST: 113
 ALBANY AVE & SIGOURNEY ST: 109
 ALBANY AVE & BROOK ST: 103

Lowest Ridership Stops

BLUE HILLS AVE & COLEBROOK ST: 2
 BLUE HILLS AVE & E MORNINGSIDE ST: 3
 BLUE HILLS AVE & OPP SHARON ST: 4
 BLUE HILLS AVE & OPP ANDOVER ST: 4
 BLUE HILLS AVE & PEMBROKE ST: 4
 BLUE HILLS AVE & BRANFORD ST: 5
 BLUE HILLS AVE & OPP BURLINGTON ST: 5
 BLUE HILLS AVE & HOLCOMB ST: 5
 BLUE HILLS AVE & BURLINGTON ST: 5
 BLUE HILLS AVE & OPP LITCHFIELD ST: 6



Highest Ridership Stop
 ALBANY AVE & GARDEN ST
 259 boardings per average weekday



Source: CTtransit, 2019 weekday ridership



Figure 4 | Albany Avenue, Roadway Infrastructure

ALBANY AVENUE

Existing Conditions: Roadway Infrastructure

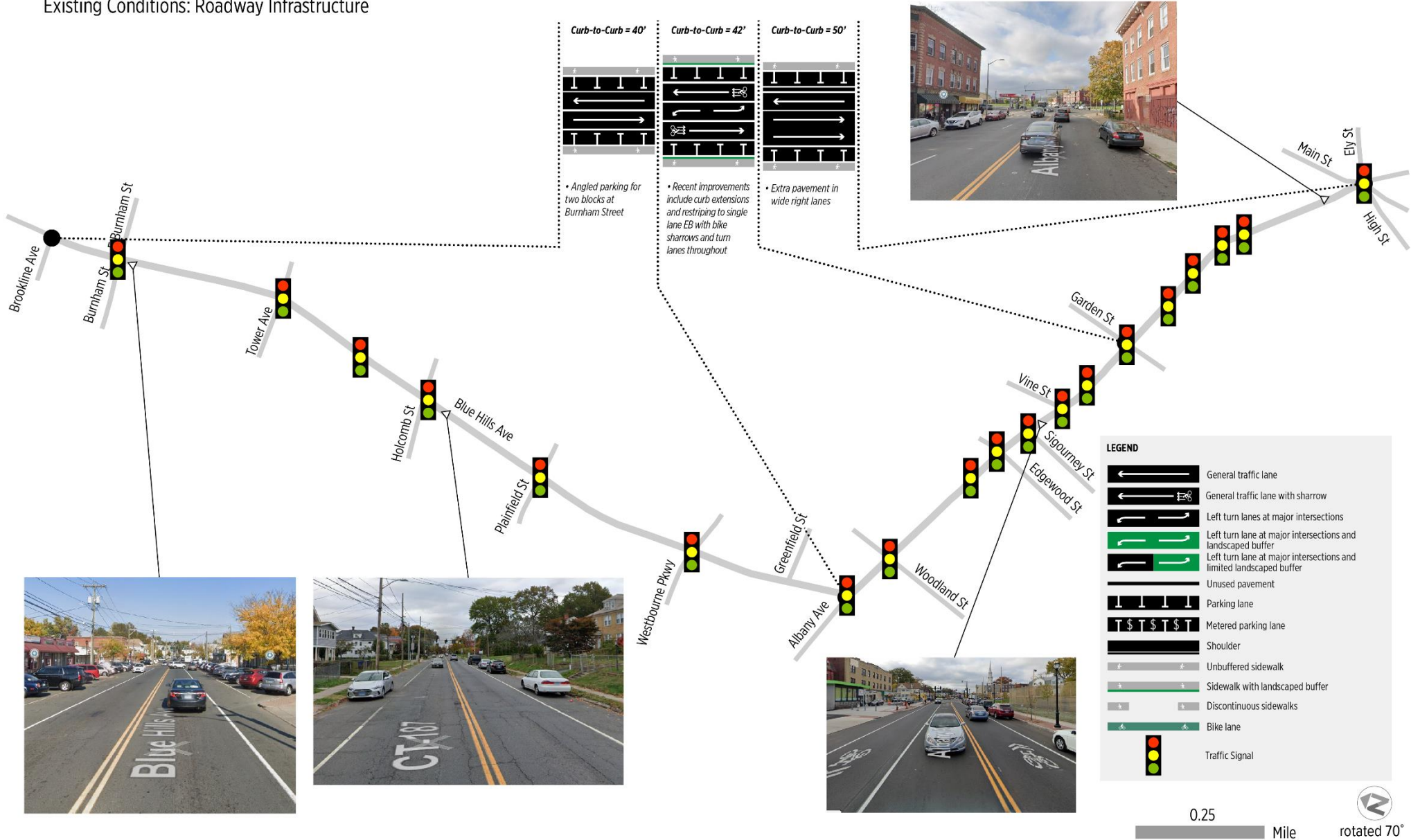
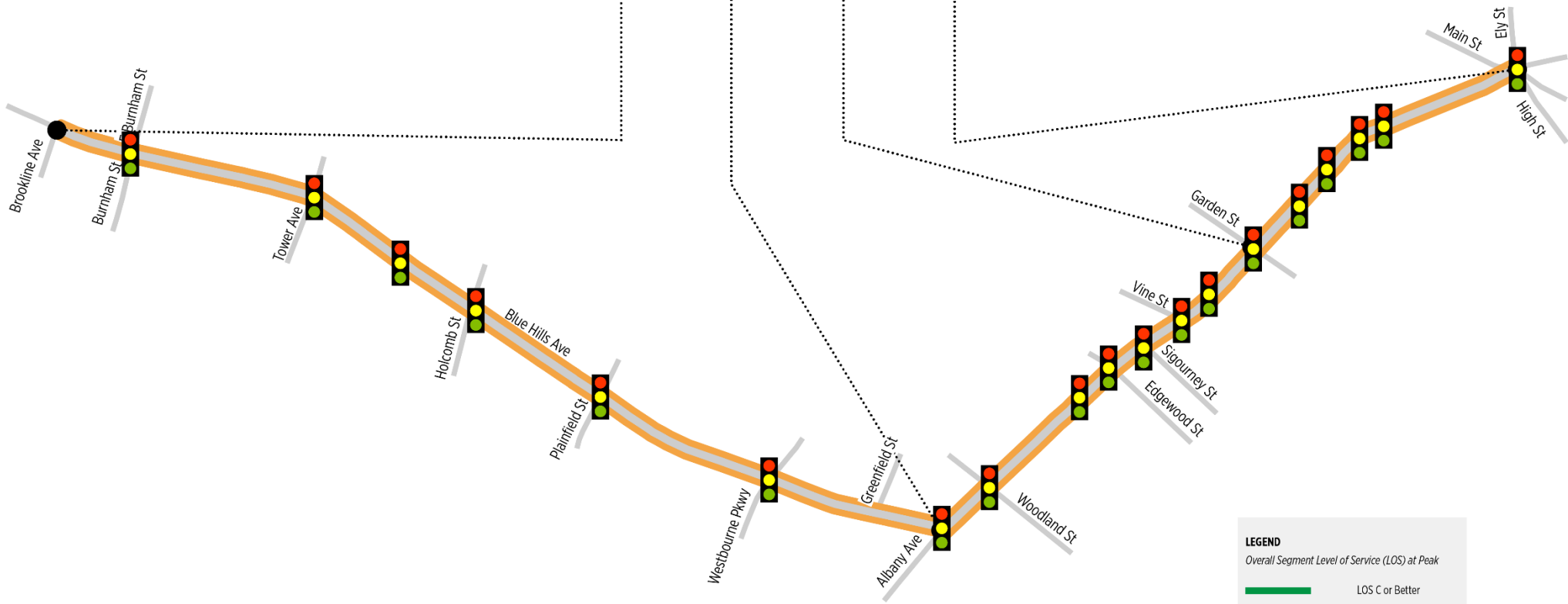


Figure 5 | Albany Avenue, Traffic

ALBANY AVENUE
Existing Conditions: Traffic

Functional Roadway Classification	Minor Arterial		Principal Arterial		Principal Arterial	
Signal Density (per mile)	4		8		11	
Volume/Capacity Ratio at Peak	AM	PM	AM	PM	AM	PM
	60%	73%	78%	86%	60%	74%



LEGEND

Overall Segment Level of Service (LOS) at Peak

- LOS C or Better
- LOS D
- LOS E
- LOS F

Traffic Signal

Note: LOS and Volume/Capacity ratio reflects 2018 traffic volume and existing lane configurations for each segment. Overall segment LOS is intended for preliminary screening purposes. Operations and delays at individual intersections may vary.

0.25 Mile

Figure 6 | Albany Avenue, Active Transportation

ALBANY AVENUE Existing Conditions: Active Transportation

CORRIDOR STATISTICS

Sidewalks

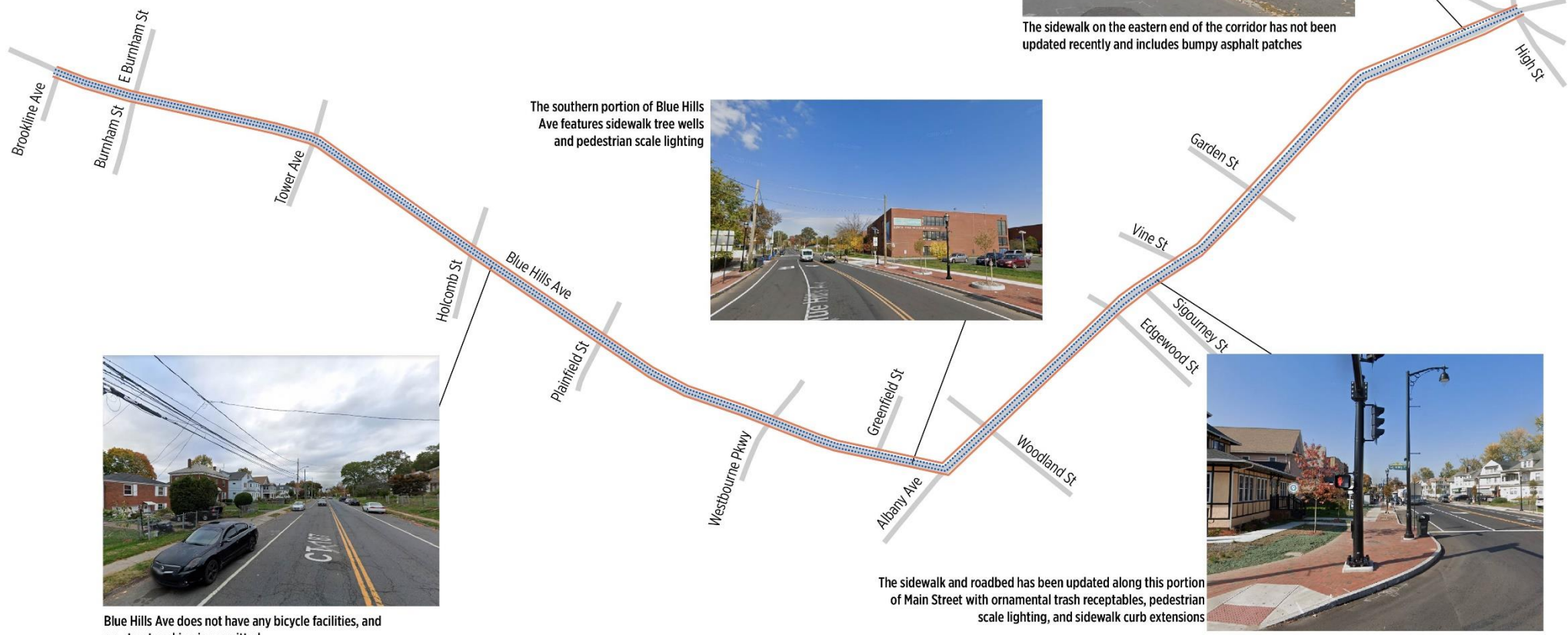
- Sidewalk Length: 3 centerline miles of sidewalks
- Sidewalk Gaps: There are no sidewalk gaps along the corridor
- The sidewalk width and quality of materials varies greatly throughout the corridor

Bike Lanes

- There are no designated bike lanes throughout the corridor
- There are shared lane markings along portions of Albany Ave

LEGEND

- Sidewalk
- Sidewalk Gap
- Bike Lane
- Bike Lane Gap



Blue Hills Ave does not have any bicycle facilities, and on-street parking is permitted



The southern portion of Blue Hills Ave features sidewalk tree wells and pedestrian scale lighting



The sidewalk on the eastern end of the corridor has not been updated recently and includes bumpy asphalt patches



The sidewalk and roadbed has been updated along this portion of Main Street with ornamental trash receptables, pedestrian scale lighting, and sidewalk curb extensions

0.25 Mile
rotated 70°

Figure 7 | Albany Avenue, Transit Infrastructure

ALBANY AVENUE

Existing Conditions: Bus Stops



Albany Avenue Key Takeaways

Figure 8 | Key Takeaways, Albany Avenue

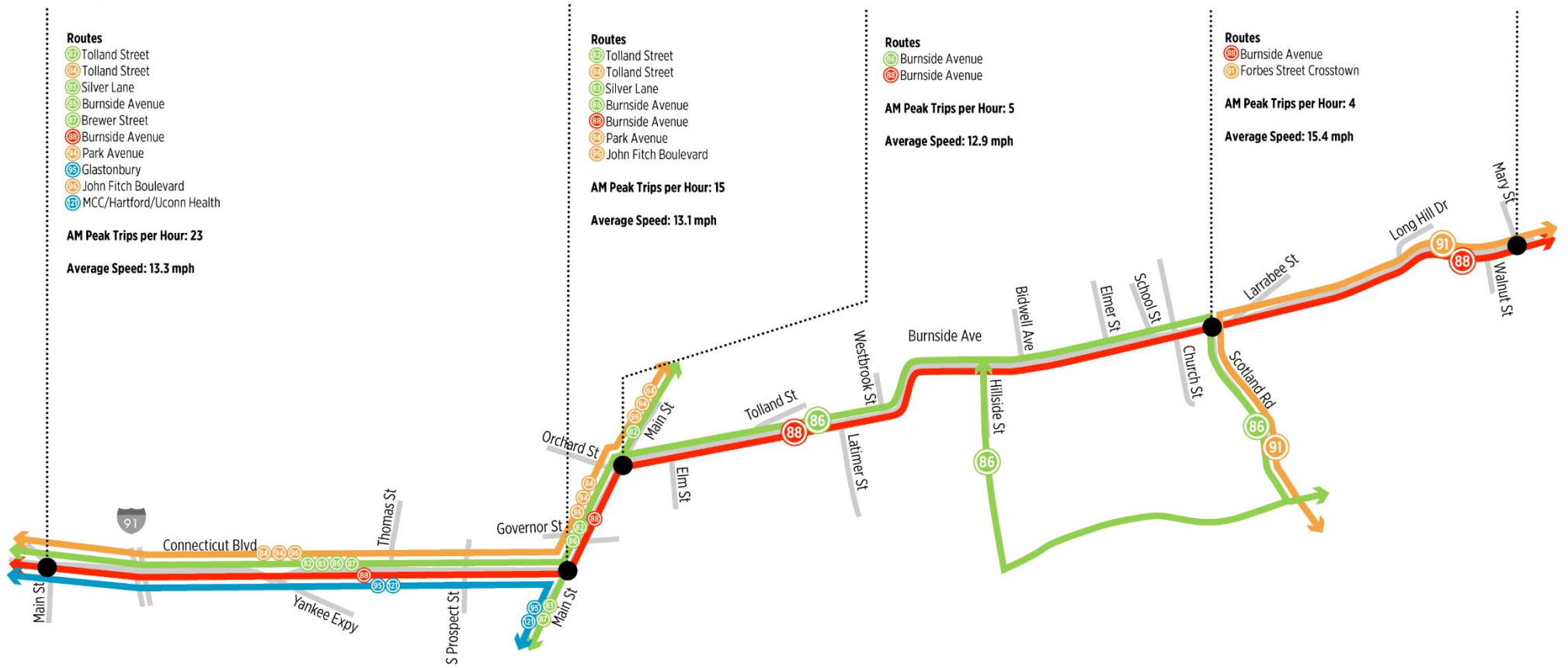
Transit Services	Road Infrastructure	Active Transportation
<ul style="list-style-type: none"> ▪ Transit services concentrated along southern half of corridor ▪ Frequency is matched to demand; during AM peak buses arrive every 10 minutes or better ▪ Bus speeds are slow; potential for bunching is high along Albany Ave 	<ul style="list-style-type: none"> ▪ The recent Albany Ave Safety Improvement Project redesigned the corridor with single vehicular travel lane in each direction ▪ Recently installed curb extensions at crossings throughout the Albany Ave corridor will generally limit potential for bus queue jump lanes and curbside running bus lanes. 	<ul style="list-style-type: none"> ▪ Although there are sidewalks located along both sides of the street throughout the corridor, the sidewalk width and quality changes ▪ There are no bike lanes throughout the corridor, although some shoulder sections exist
Ridership By Stop	Traffic	Transit Infrastructure
<ul style="list-style-type: none"> ▪ Highest ridership stops along Albany Ave; lowest ridership stops along Blue Hills Ave ▪ Large number of stops per mile at 10. Stop consolidation would improve speed and reliability ▪ Stops near routes branching from corridor show high ridership, likely from many transferring riders 	<ul style="list-style-type: none"> ▪ Corridor-wide, traffic is most congested in the evening commuter peak which affects both directions of travel on Albany Ave and along Blue Hills Ave ▪ Albany Ave is generally slow moving throughout the day with many closely spaced signals, on-street parking, and a single vehicular travel lane. 	<ul style="list-style-type: none"> ▪ There are no shelters along Blue Hills Avenue (benches only) ▪ The shelters along Albany Avenue are generally in good condition

Burnside Avenue

Transit Priority Corridor

Figure 9 | Burnside Avenue, Existing Transit Services

BURNSIDE AVENUE Existing Transit Services



Peak Service Frequencies

- Every 15 minutes or better
- Every 20 minutes
- Every 30 minutes
- Every 60 minutes
- Greater than every 60 minutes

Source: CTtransit, 2020 weekday schedule



Figure 10 | Burnside Avenue, Ridership By Stop

BURNSIDE AVENUE
Ridership By Stop

Total Stops: 55

Inbound: 27
Outbound: 28

Total Ridership: 1233

Average weekday boardings

Routes Served

- 82 Tolland Street
- 84 Tolland Street
- 83 Silver Lane
- 86 Burnside Avenue
- 87 Brewer Street
- 88 Burnside Avenue
- 94 Park Avenue
- 95 Glastonbury
- 96 John Fitch Boulevard
- 121 MCC/Hartford/Uconn Health

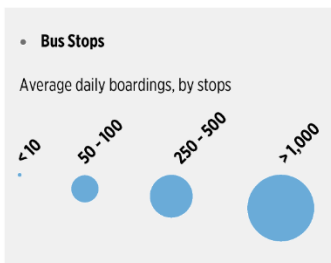
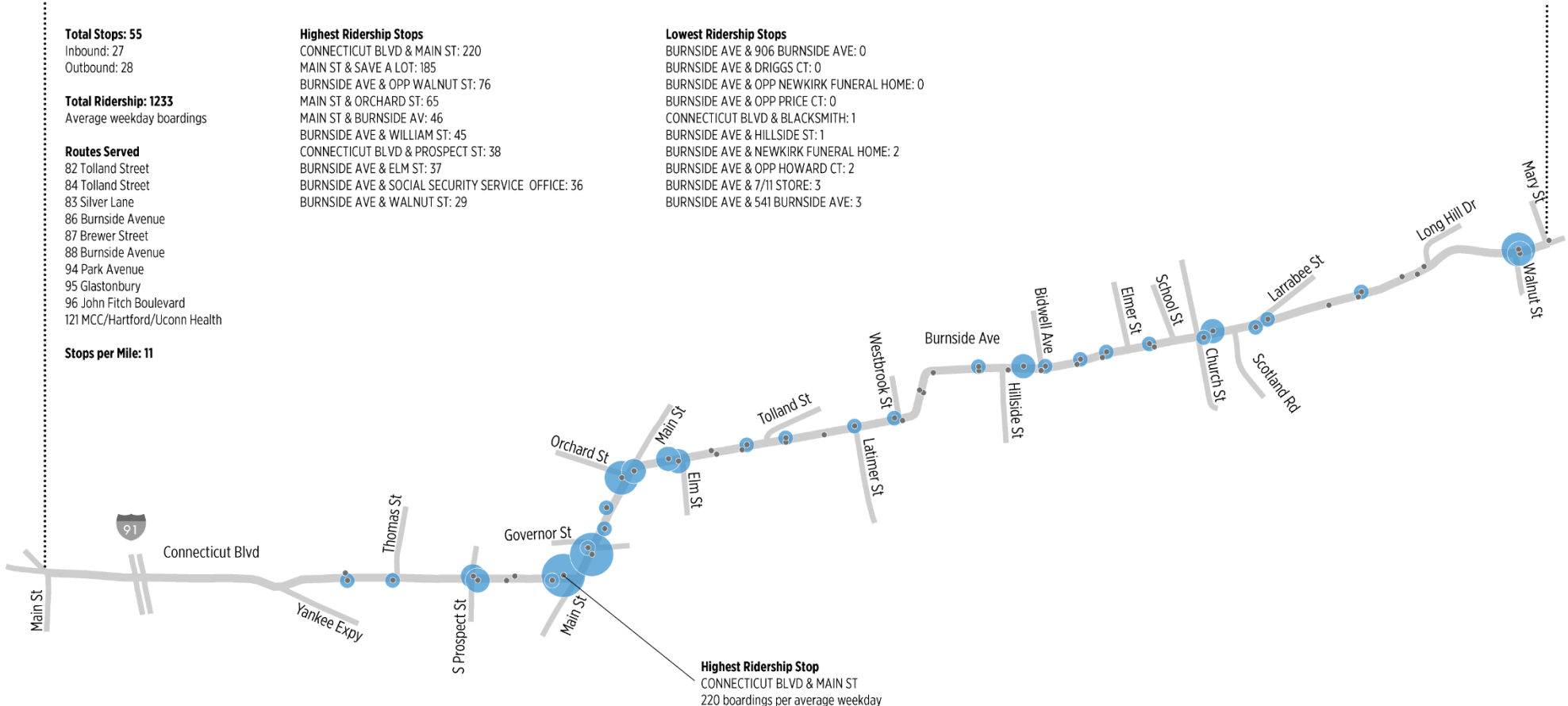
Stops per Mile: 11

Highest Ridership Stops

- CONNECTICUT BLVD & MAIN ST: 220
- MAIN ST & SAVE A LOT: 185
- BURNSIDE AVE & OPP WALNUT ST: 76
- MAIN ST & ORCHARD ST: 65
- MAIN ST & BURNSIDE AV: 46
- BURNSIDE AVE & WILLIAM ST: 45
- CONNECTICUT BLVD & PROSPECT ST: 38
- BURNSIDE AVE & ELM ST: 37
- BURNSIDE AVE & SOCIAL SECURITY SERVICE OFFICE: 36
- BURNSIDE AVE & WALNUT ST: 29

Lowest Ridership Stops

- BURNSIDE AVE & 906 BURNSIDE AVE: 0
- BURNSIDE AVE & DRIGGS CT: 0
- BURNSIDE AVE & OPP NEWKIRK FUNERAL HOME: 0
- BURNSIDE AVE & OPP PRICE CT: 0
- CONNECTICUT BLVD & BLACKSMITH: 1
- BURNSIDE AVE & HILLSIDE ST: 1
- BURNSIDE AVE & NEWKIRK FUNERAL HOME: 2
- BURNSIDE AVE & OPP HOWARD CT: 2
- BURNSIDE AVE & 7/11 STORE: 3
- BURNSIDE AVE & 541 BURNSIDE AVE: 3



Source: CTtransit, 2019 weekday ridership



Figure 11 | Burnside Avenue, Roadway Infrastructure

BURNSIDE AVENUE

Existing Conditions: Roadway Infrastructure

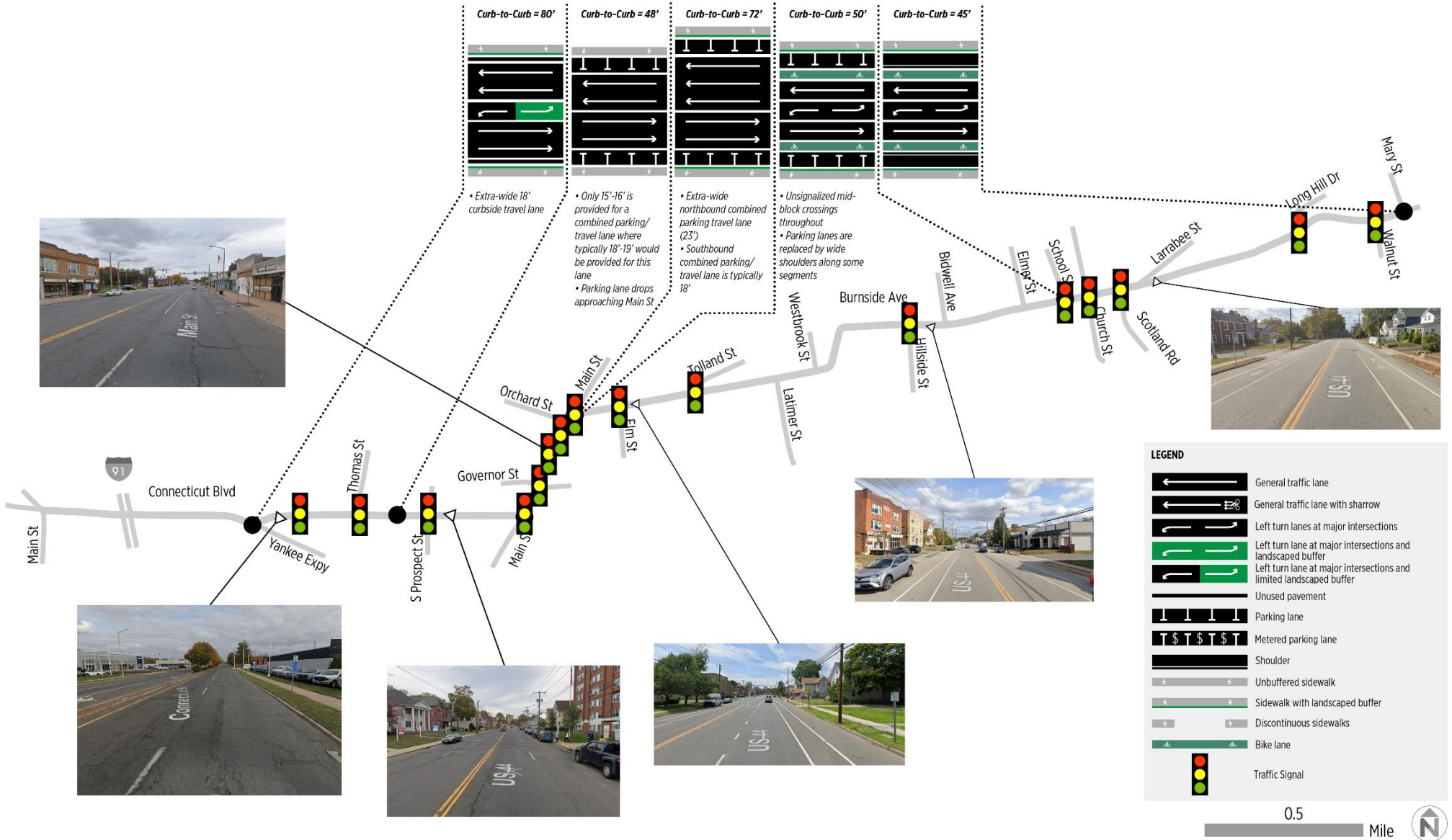
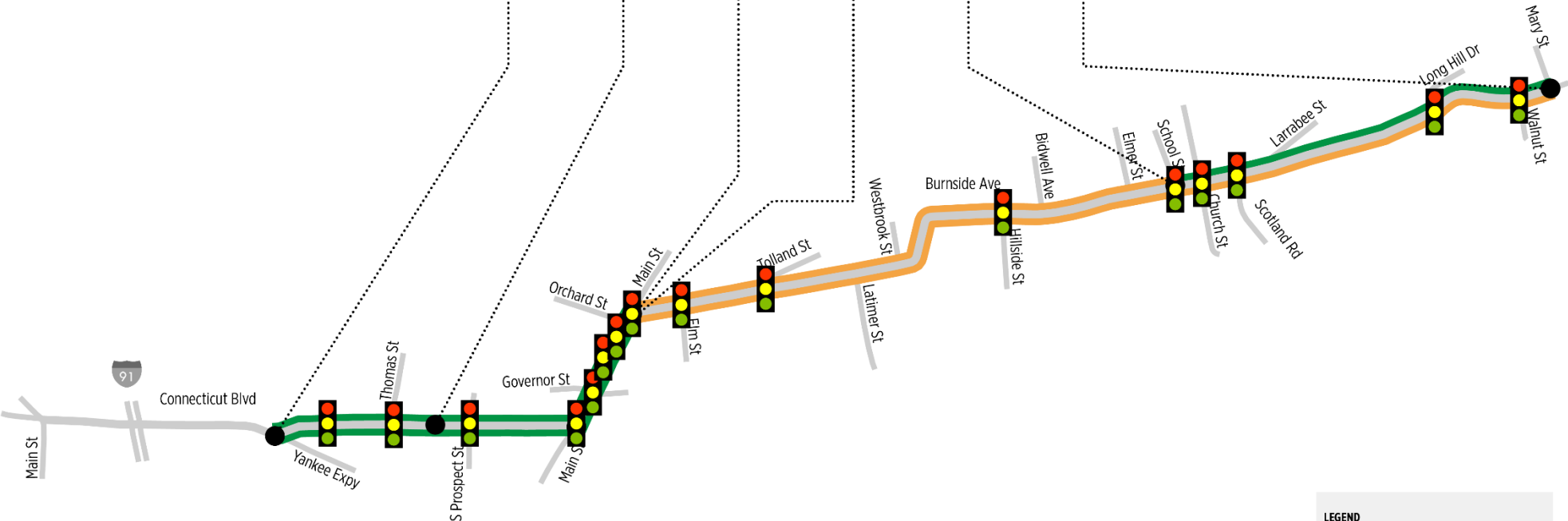


Figure 12 | Burnside Avenue, Traffic

BURNSIDE AVENUE
Existing Conditions: Traffic

Functional Roadway Classification	Principal Arterial		Principal Arterial		Principal Arterial		Minor Arterial		Minor Arterial	
Signal Density (per mile)	6		5		8		2		4	
Volume/Capacity Ratio at Peak	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	38%	38%	27%	23%	35%	39%	57%	71%	48%	58%



LEGEND
Overall Segment Level of Service (LOS) at Peak

- LOS C or Better
- LOS D
- LOS E
- LOS F
- Traffic Signal

Note: LOS and Volume/Capacity ratio reflects 2018 traffic volume and existing lane configurations for each segment. Overall segment LOS is intended for preliminary screening purposes. Operations and delays at individual intersections may vary.



BURNSIDE AVENUE Existing Conditions: Active Transportation

CORRIDOR STATISTICS

Sidewalks

- Sidewalk Length: 3.9 centerline miles of sidewalk from end to end
- Sidewalk Gaps: A 1,300 foot gap exists on the south side of Burnside Ave at Labor Field between Long Hill Drive and Walnut St
- An additional sidewalk gap exists in the area over the CT River

Bike Lanes

- Bike Lane Length: 2.7 centerline miles of bike lanes exist on Burnside Ave from Main Street to the project study boundary
- There are no bike lanes from Orchard Street heading west to the corridor study area boundary in downtown Hartford



Main Street lacks formal bicycling facilities



Sidewalk on south side ends opposite Long Hill Drive

LEGEND

- Sidewalk (solid orange line)
- Sidewalk Gap (dotted orange line)
- Bike Lane (solid blue line)
- Bike Lane Gap (dotted blue line)



The I-84 bridge connects Connecticut Blvd and downtown Hartford over the Connecticut River, and does not allow pedestrians or bicyclists



A striped bicycle lane along Burnside Ave near Westbrook St



Dashed bicycle lane adjacent to bus pull out and shelter at Larrabee St

BURNSIDE AVENUE Existing Conditions: Bus Stops

CORRIDOR STATISTICS

Bus Stop Shelter Typologies

- 1 Type 1 includes a sign, a shelter with a roof, 3 to 4 walls, and a bench inside. Type 1 almost always includes a bus pull out and an ornamental trash can.
- 2 Type 2 includes a sign and either a stand alone bench (with no shelter) or a schedule display
- 3 Type 3 includes only a sign. There is no shelter or bench with this typology.

Bus Stop Shelter Count

1	7 stops 14% of total	2	2 stops 3% of total	3	47 stops 82% of total	56 total stops
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LEGEND

- 1 Shelter, bus pull out, sign
- 2 Sign with either a bench or schedule display
- 3 Sign only



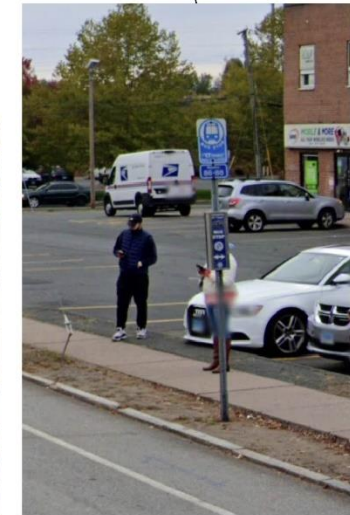
A public bench on Main Street acts as a bus stop amenity



Walnut Street bus stop location has a sign, shelter with bench, and a trash can



A bus stop location with a sign but no shelter or bench



A bus stop location with a sign that features an attached bus route schedule display



Burnside Avenue Key Takeaways

Figure 15 | Key Takeaways, Burnside Avenue

Transit Services	Road Infrastructure	Active Transportation
<ul style="list-style-type: none"> ▪ Services concentrated in westernmost segment (Connecticut Blvd) ▪ Partial mismatch between services and demand –due to limited cross-river connections ▪ During AM peak buses arrive every 15 minutes or better ▪ Bus speeds are high across corridor; lowest speeds along Main St segment 	<ul style="list-style-type: none"> ▪ Greatest potential feasibility for bus lanes on western half (Connecticut Blvd, Main St) ▪ Limited opportunity for bus lanes on Burnside Ave without displacing bike lane or parking ▪ Closely spaced intersections on Connecticut Blvd/Main St and clustered intersections on Burnside Ave may benefit from TSP 	<ul style="list-style-type: none"> ▪ Burnside Avenue features sidewalks and bike lanes along the majority of the corridor ▪ The bike lanes end at Orchard St at Main Street ▪ There is a 1,300-foot gap in the sidewalk along the south side of the corridor just west of Walnut Street
Ridership By Stop	Traffic	Transit Infrastructure
<ul style="list-style-type: none"> ▪ Highest ridership along Main St segment ▪ Lowest ridership from Elm St to Hillside St and from Larrabee St to Walnut St ▪ Large number of stops per mile at 11. Consolidate to remove no-ridership stops ▪ Burnside Ave has lowest total ridership of any transit priority corridor 	<ul style="list-style-type: none"> ▪ Traffic is primarily constrained by signals and not by lane capacity ▪ Moderate congestion is prevalent throughout the day and widespread throughout the corridor ▪ Excess lane capacity and widths on Connecticut Blvd. and Main St. have potential for reconfiguration by restriping 	<ul style="list-style-type: none"> ▪ Burnside Avenue has bus shelters throughout the corridor ▪ Some of the shelters along the eastern end of the corridor are new and appear in excellent condition ▪ The dominant bus stop type is a sign-only typology

Farmington Avenue

Transit Priority Corridor

Figure 16 | Farmington Avenue, Existing Transit Services

FARMINGTON AVENUE
 Existing Transit Services



Source: CTtransit, 2020 weekday schedule

0.5 Mile



Figure 17 | Farmington Avenue, Ridership By Stop

FARMINGTON AVENUE
Existing Transit Services

Total Stops: 60

Inbound: 29
Outbound: 31

Total Ridership: 3521

Average weekday boardings

Routes Served

- 60 Farmington Avenue
- 62 Farmington Avenue
- 64 Farmington Avenue
- 66 Farmington Avenue
- 72 Asylum Avenue
- 74 Granby Street
- 76 Ashley Street

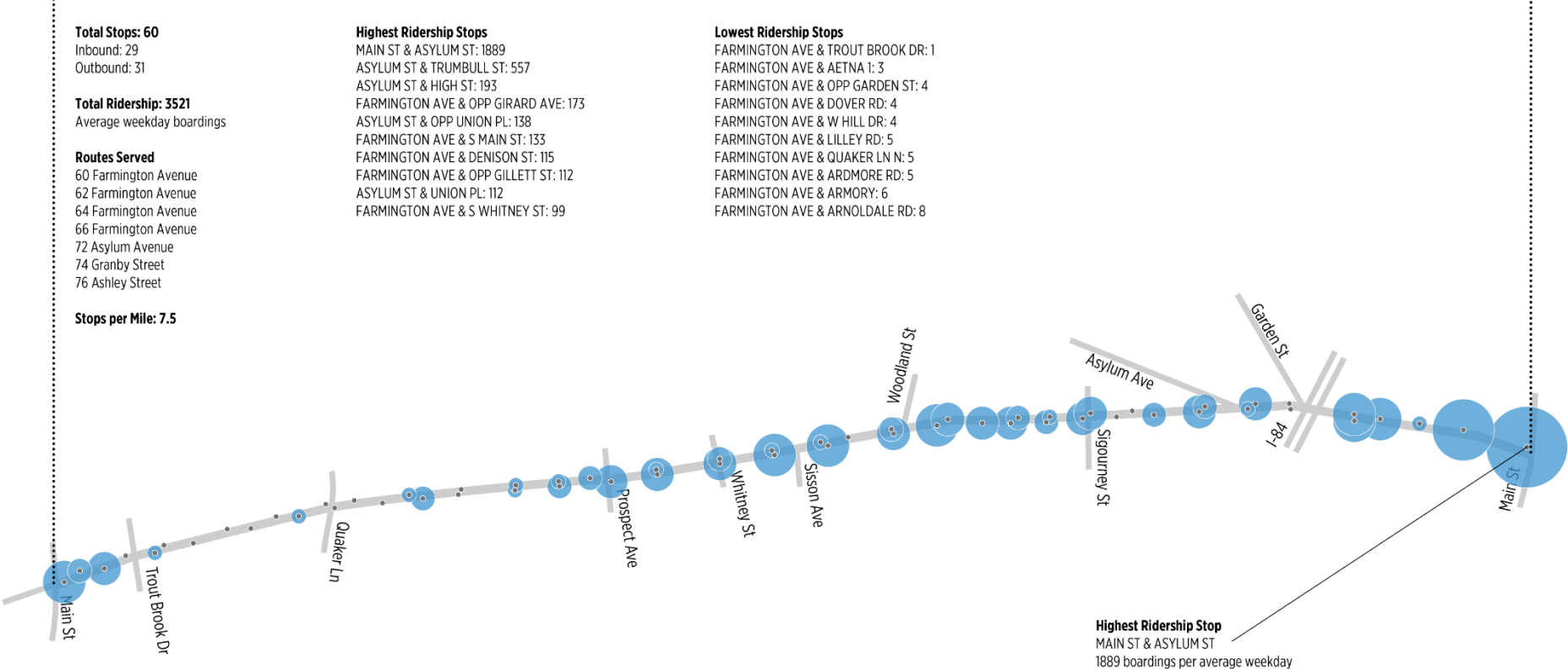
Stops per Mile: 7.5

Highest Ridership Stops

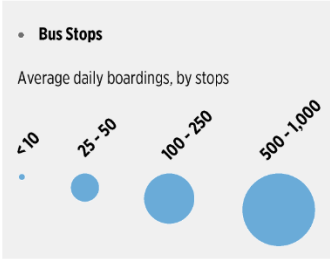
- MAIN ST & ASYLUM ST: 1889
- ASYLUM ST & TRUMBULL ST: 557
- ASYLUM ST & HIGH ST: 193
- FARMINGTON AVE & OPP GIRARD AVE: 173
- ASYLUM ST & OPP UNION PL: 138
- FARMINGTON AVE & S MAIN ST: 133
- FARMINGTON AVE & DENISON ST: 115
- FARMINGTON AVE & OPP GILLET ST: 112
- ASYLUM ST & UNION PL: 112
- FARMINGTON AVE & S WHITNEY ST: 99

Lowest Ridership Stops

- FARMINGTON AVE & TROUT BROOK DR: 1
- FARMINGTON AVE & AETNA 1: 3
- FARMINGTON AVE & OPP GARDEN ST: 4
- FARMINGTON AVE & DOVER RD: 4
- FARMINGTON AVE & W HILL DR: 4
- FARMINGTON AVE & LILLEY RD: 5
- FARMINGTON AVE & QUAKER LN N: 5
- FARMINGTON AVE & ARDMORE RD: 5
- FARMINGTON AVE & ARMORY: 6
- FARMINGTON AVE & ARNOLDALE RD: 8



Highest Ridership Stop
MAIN ST & ASYLUM ST
1889 boardings per average weekday



Source: CTtransit, 2019 weekday ridership

0.5 Mile



Figure 18 | Farmington Avenue, Roadway Infrastructure

FARMINGTON AVENUE

Existing Conditions: Roadway Infrastructure

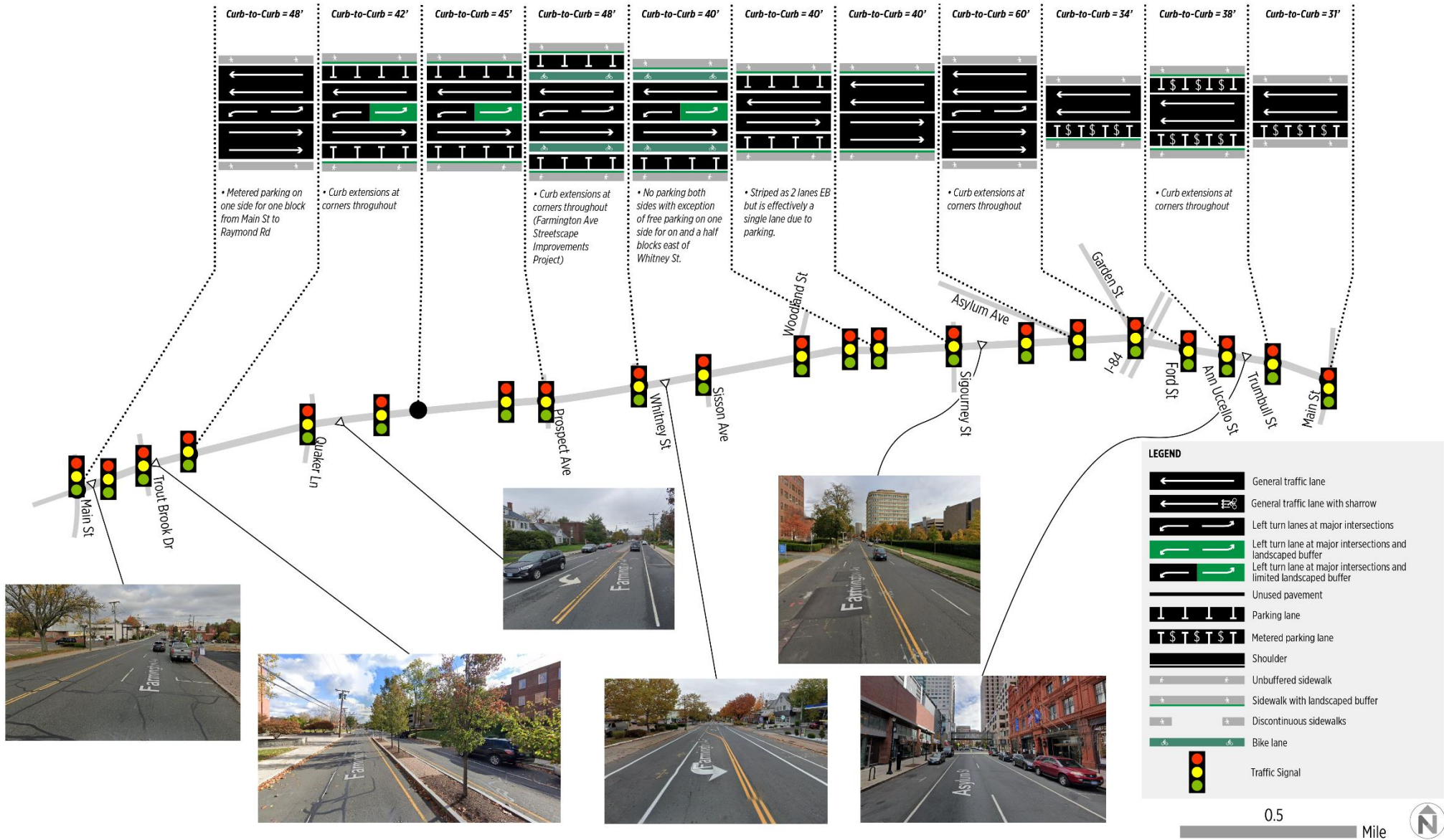
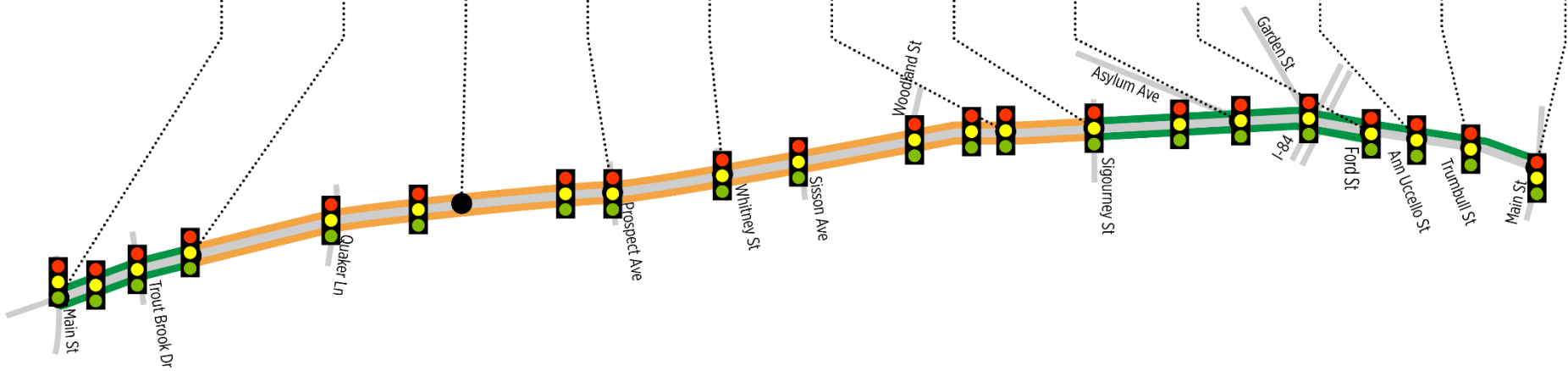


Figure 19 | Farmington Avenue, Traffic

FARMINGTON AVENUE
Existing Conditions: Traffic

Functional Roadway Classification	Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial		Minor Arterial		Minor Arterial		Minor Arterial	
Signal Density (per mile)	11		4		3		8		8		6		6		15		8		8		7	
Volume/Capacity Ratio at Peak	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	35%	31%	70%	61%	70%	61%	70%	61%	79%	64%	79%	64%	40%	31%	42%	50%	42%	50%	42%	50%	42%	50%



LEGEND

Overall Segment Level of Service (LOS) at Peak

- █ LOS C or Better
- █ LOS D
- █ LOS E
- █ LOS F
- Traffic Signal

Note: LOS and Volume/Capacity ratio reflects 2018 traffic volume and existing lane configurations for each segment. Overall segment LOS is intended for preliminary screening purposes. Operations and delays at individual intersections may vary.



FARMINGTON AVENUE Existing Conditions: Active Transportation

CORRIDOR STATISTICS

Sidewalks

- Sidewalk Length: There are 3.6 centerline miles of sidewalks along the corridor
- There are no existing sidewalk gaps along the corridor

Bike Lanes

- Bike Lane Length: There are 0.9 miles of bike lanes within the corridor, between Prospect Ave and Marshall St
- There are no bike lanes west of Prospect Ave, nor are there any east of Marshall St



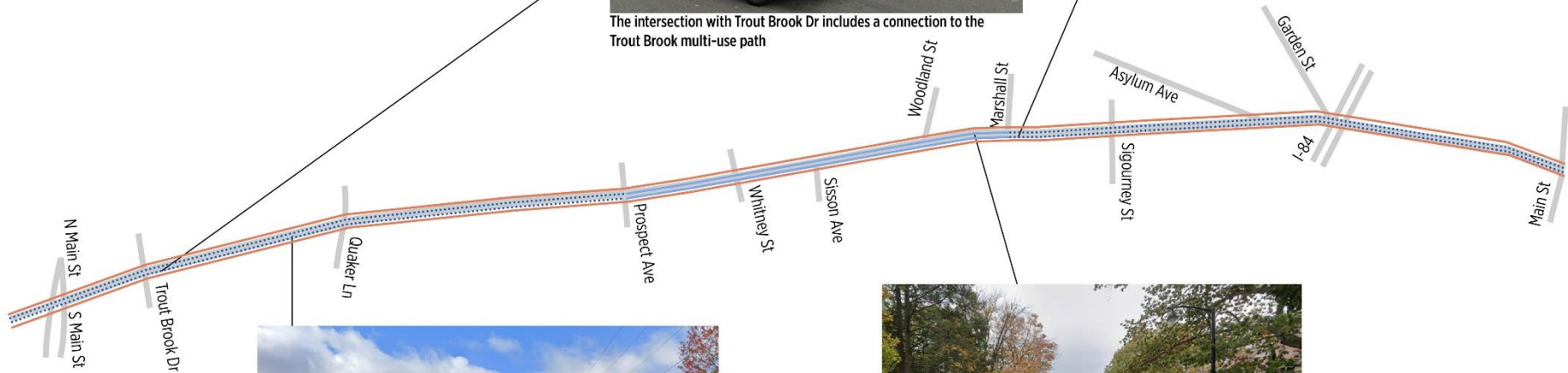
The intersection with Trout Brook Dr includes a connection to the Trout Brook multi-use path



Farmington Avenue has no bike lanes east of Marshall St

LEGEND

- Sidewalk
- Sidewalk Gap
- Bike Lane
- Bike Lane Gap



West of Prospect Ave, the corridor has varying sidewalk widths and does not include bike lanes



In the center portion of the corridor, the four-lane roadway transitions to a two-lane road with a two-way left turn lane and bike lanes in each direction

0.5

Mile



FARMINGTON AVENUE Existing Conditions: Bus Stops

CORRIDOR STATISTICS

Bus Stop Shelter Typologies

- 1 Type 1 includes a sign, a shelter with a roof, 3 to 4 walls, and a bench inside. Type 1 almost always includes a bus pull out and an ornamental trash can.
- 2 Type 2 includes a sign and either a stand alone bench (with no shelter) or a schedule display.
- 3 Type 3 includes only a sign. There is no shelter or bench with this typology.

Bus Stop Shelter Count

1	19 stops 32% of total	2	6 stops 10% of total	3	34 stops 58% of total	59 total stops
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LEGEND

- 1 Shelter, bus pull out, sign
- 2 Sign with either a bench or schedule display
- 3 Sign only



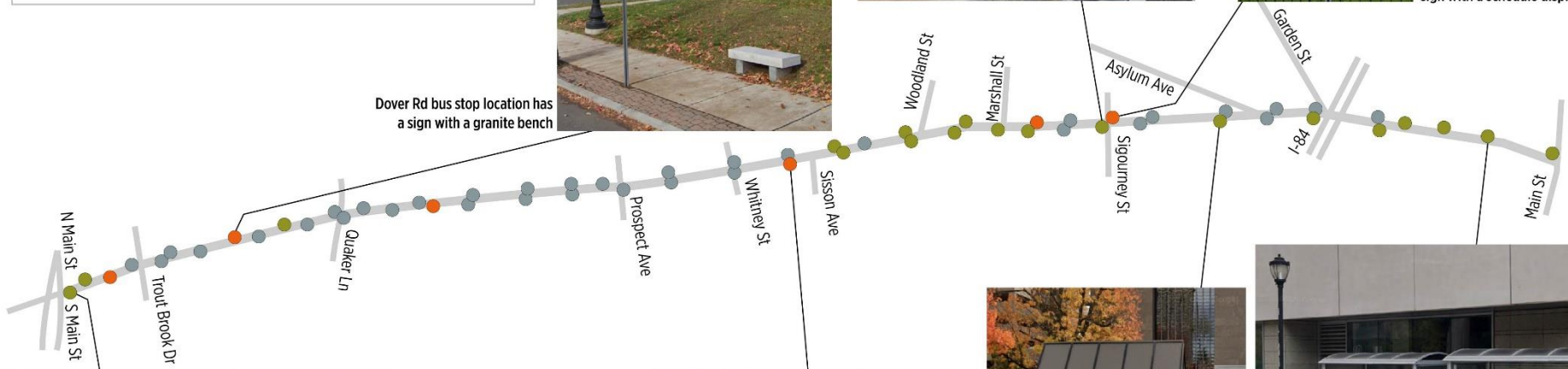
Dover Rd bus stop location has a sign with a granite bench



Sigourney St station has a solar panel array on the roof



Sigourney St (north) station has a sign with a schedule display



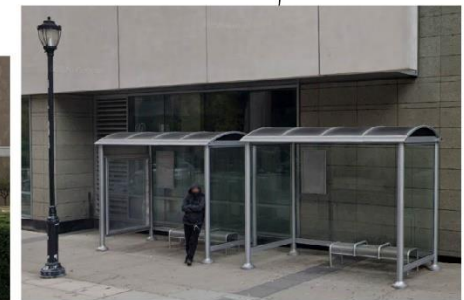
South Main St bus stop location has a sign with route information, an A-Frame roof structure, and a granite bench



Flower St bus stop location has a unique shelter design



Girard Ave bus shelter has been the target of vandals



Trumbull St bus stop location has two shelters side-by-side

0.5

Mile



Farmington Avenue Key Takeaways

Figure 22 | Key Takeaways, Farmington Avenue

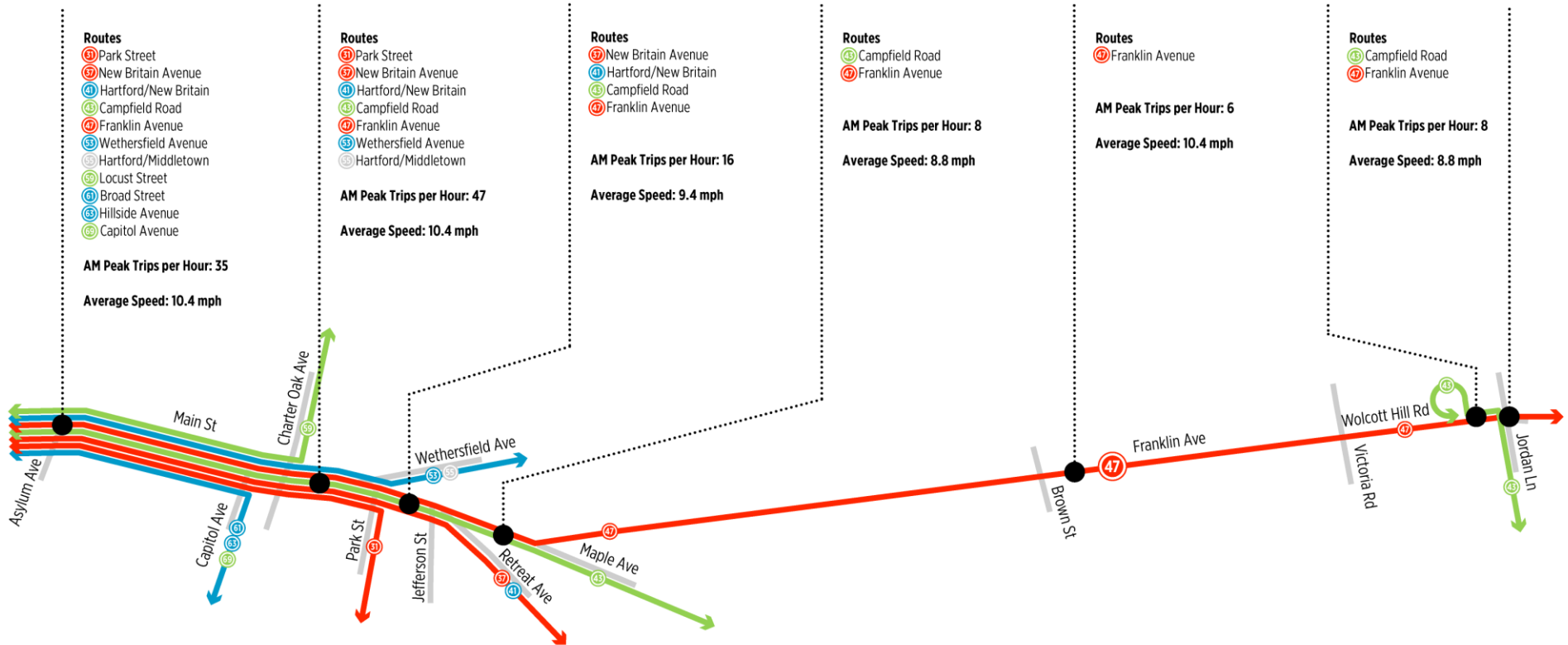
Transit Services	Road Infrastructure	Active Transportation
<ul style="list-style-type: none"> ▪ Majority of routes serve entire corridor with 3 additional routes serving east end ▪ Frequency is somewhat higher than demand; during AM peak buses arrive every 8 minutes or better ▪ Bus speeds are moderate across corridor 	<ul style="list-style-type: none"> ▪ Two travel lanes in both directions east of Sigourney St provide potential opportunities to investigate queue jump lanes and bus lanes ▪ Segments west of Sigourney St are already limited to one travel lane per direction, which limits bus lane potential. Curbside running bus lanes and/or queue jump lanes would generally require parking restrictions 	<ul style="list-style-type: none"> ▪ Farmington Avenue features sidewalks along both sides of the street for the entire length of the corridor ▪ Some segments of the corridor feature a landscaped buffer between the sidewalk and the street ▪ Just under 1 mile of bike lanes exist between Prospect Avenue and Marshall Street
Ridership By Stop	Traffic	Transit Infrastructure
<ul style="list-style-type: none"> ▪ Highest ridership stops are closest to Main St, with generally strong ridership westward to Prospect Ave ▪ Many low- and no-ridership stops in West Hartford outside of city center ▪ Moderate stop spacing at 7.5 per mile 	<ul style="list-style-type: none"> ▪ Traffic is generally slowest throughout the corridor in the midday and evening peak hours and predominantly lighter in the morning ▪ Excess peak hour lane capacity is generally available east of Sigourney Street; however, signal delay likely impedes traffic throughput 	<ul style="list-style-type: none"> ▪ Farmington Avenue has more bus shelters throughout the corridor than any of the other corridors examined in this study ▪ The Farmington Avenue shelters vary widely in size, material color, and roof type ▪ Many shelters have been vandalized with graffiti

Franklin Avenue

Transit Priority Corridor

Figure 23 | Franklin Avenue, Existing Transit Services

FRANKLIN AVENUE Existing Transit Services



Peak Service Frequencies

- ① Every 15 minutes or better
- ② Every 20 minutes
- ③ Every 30 minutes
- ④ Every 60 minutes
- ⑤ Greater than every 60 minutes

Source: CTtransit, 2020 weekday schedule



Figure 24 | Franklin Avenue, Ridership By Stop

FRANKLIN AVENUE
Ridership By Stop

Total Stops: 62
Inbound: 29
Outbound: 33

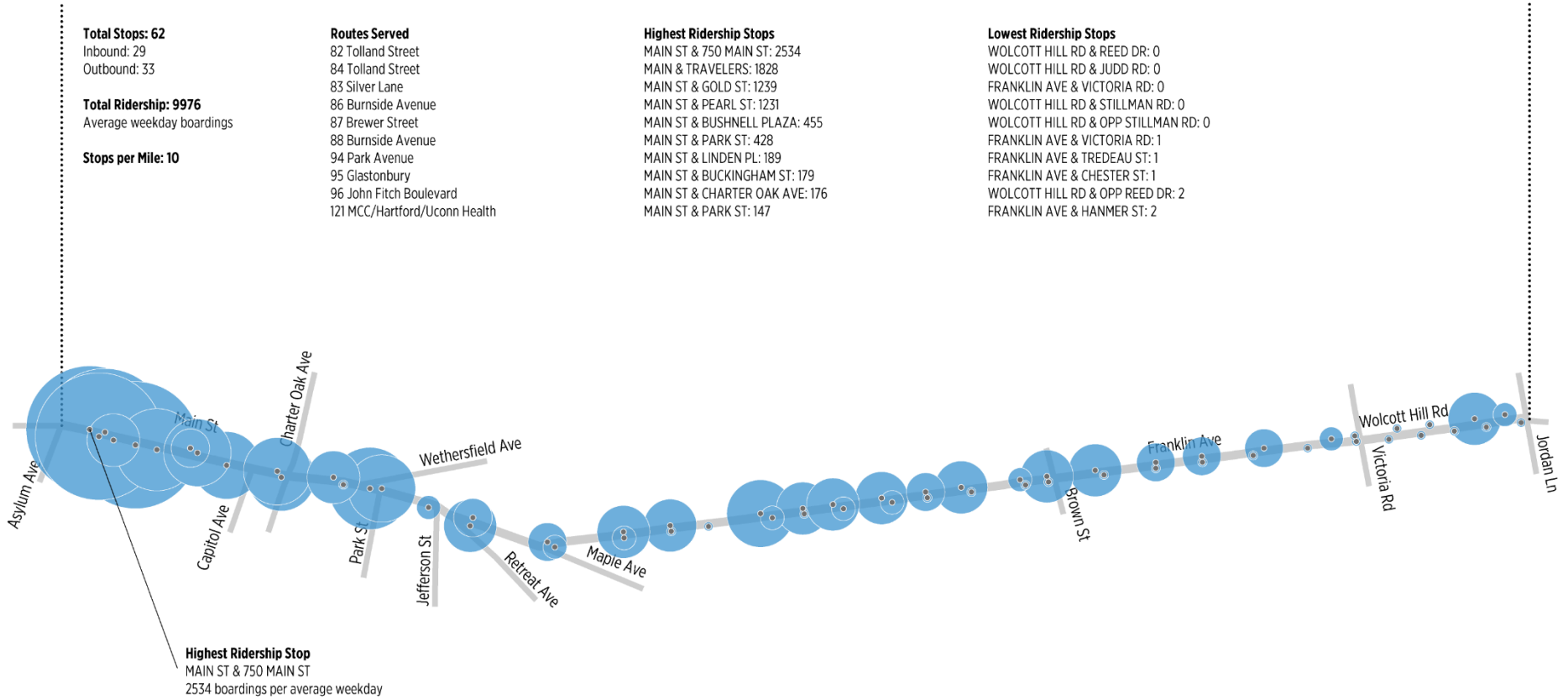
Total Ridership: 9976
Average weekday boardings

Stops per Mile: 10

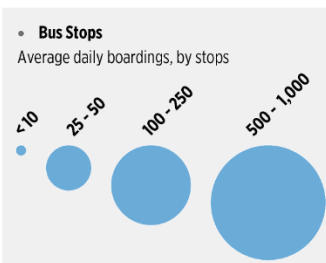
Routes Served
82 Tolland Street
84 Tolland Street
83 Silver Lane
86 Burnside Avenue
87 Brewer Street
88 Burnside Avenue
94 Park Avenue
95 Glastonbury
96 John Fitch Boulevard
121 MCC/Hartford/Uconn Health

Highest Ridership Stops
MAIN ST & 750 MAIN ST: 2534
MAIN & TRAVELERS: 1828
MAIN ST & GOLD ST: 1239
MAIN ST & PEARL ST: 1231
MAIN ST & BUSHNELL PLAZA: 455
MAIN ST & PARK ST: 428
MAIN ST & LINDEN PL: 189
MAIN ST & BUCKINGHAM ST: 179
MAIN ST & CHARTER OAK AVE: 176
MAIN ST & PARK ST: 147

Lowest Ridership Stops
WOLCOTT HILL RD & REED DR: 0
WOLCOTT HILL RD & JUDD RD: 0
FRANKLIN AVE & VICTORIA RD: 0
WOLCOTT HILL RD & STILLMAN RD: 0
WOLCOTT HILL RD & OPP STILLMAN RD: 0
FRANKLIN AVE & VICTORIA RD: 1
FRANKLIN AVE & TREDEAU ST: 1
FRANKLIN AVE & CHESTER ST: 1
WOLCOTT HILL RD & OPP REED DR: 2
FRANKLIN AVE & HANMER ST: 2



Highest Ridership Stop
MAIN ST & 750 MAIN ST
2534 boardings per average weekday



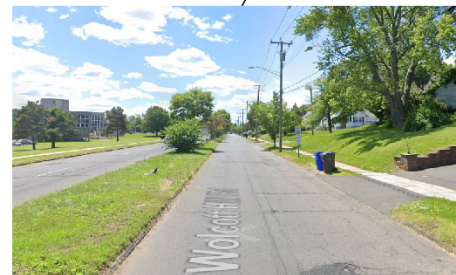
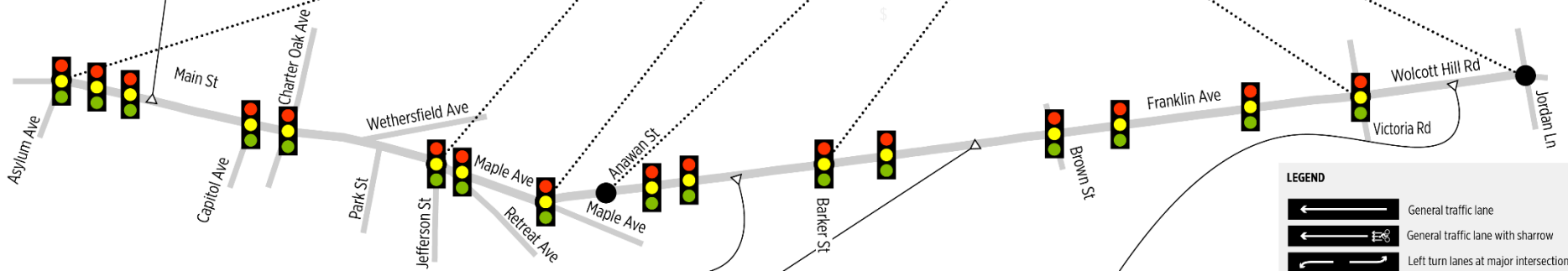
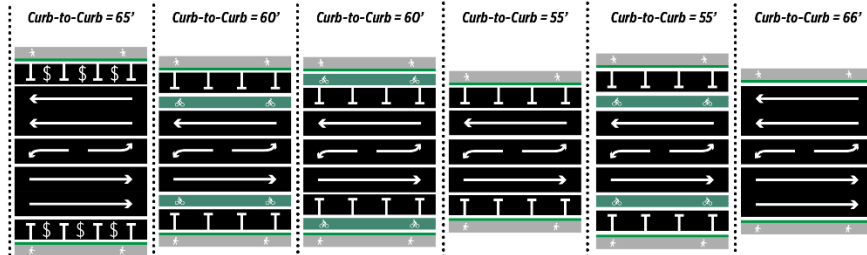
Source: CTtransit, 2019 weekday ridership



Figure 25 | Franklin Avenue, Roadway Infrastructure

FRANKLIN AVENUE

Existing Conditions: Roadway Infrastructure



LEGEND

- General traffic lane
- General traffic lane with sharrow
- Left turn lane at major intersections
- Left turn lane at major intersections and landscaped buffer
- Left turn lane at major intersections and limited landscaped buffer
- Unused pavement
- Parking lane
- Metered parking lane
- Shoulder
- Unbuffered sidewalk
- Sidewalk with landscaped buffer
- Discontinuous sidewalks
- Bike lane
- Traffic Signal

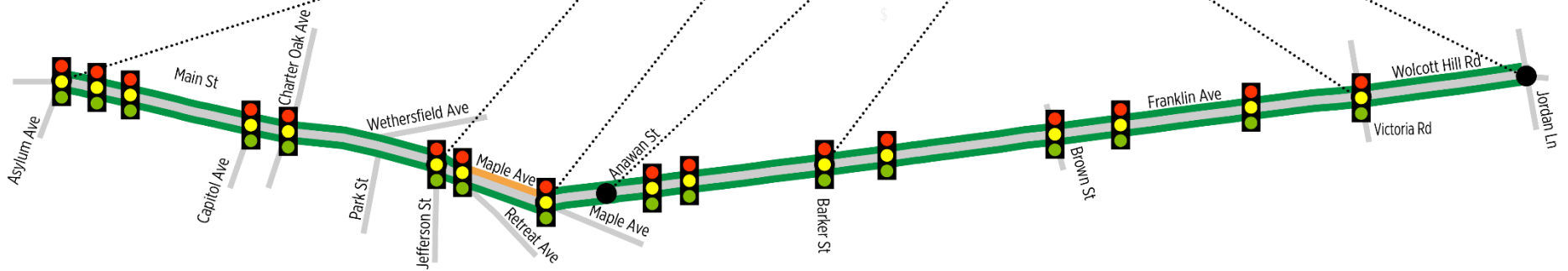


Figure 26 | Franklin Avenue, Traffic

FRANKLIN AVENUE

Existing Conditions: Traffic

Functional Roadway Classification	Principal Arterial		Minor Arterial		Minor Arterial		Minor Arterial		Minor Arterial		Minor Arterial	
Signal Density (per mile)	11		4		5		5		6		0	
Volume/Capacity Ratio at Peak	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	52%	52%	52%	74%	42%	54%	42%	54%	42%	54%	16%	19%



LEGEND

Overall Segment Level of Service (LOS) at Peak

- LOS C or Better
- LOS D
- LOS E
- LOS F
- Traffic Signal

Note: LOS and Volume/Capacity ratio reflects 2018 traffic volume and existing lane configurations for each segment. Overall segment LOS is intended for preliminary screening purposes. Operations and delays at individual intersections may vary.



Figure 27 | Franklin Avenue, Active Transportation

FRANKLIN AVENUE Existing Conditions: Active Transportation

CORRIDOR STATISTICS

Sidewalks

- Sidewalk Length: There are 3.0 centerline miles of sidewalks along the corridor
- There are no existing sidewalk gaps along the corridor

Bike Lanes

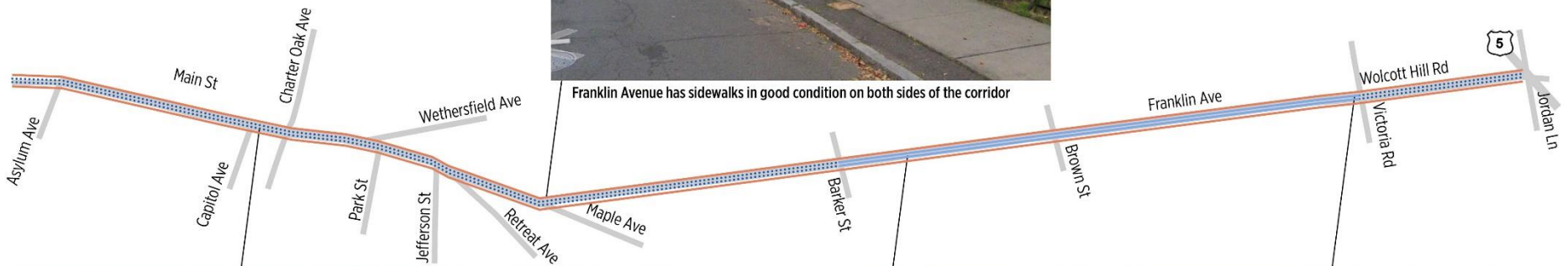
- Bike Lane Length: There are 1.1 miles of bike lanes within the corridor, between Barker St and Victoria Rd
- There are no bike lanes north of Barker St, nor south of Victoria Rd

LEGEND

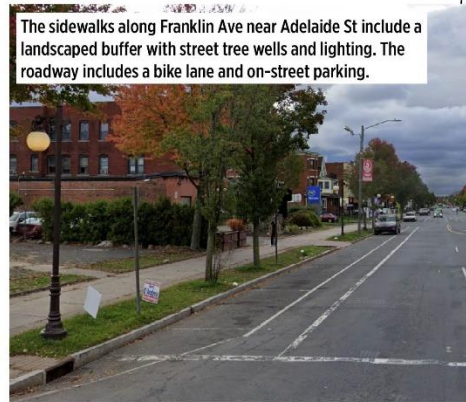
- Sidewalk
- Sidewalk Gap
- Bike Lane
- Bike Lane Gap



Franklin Avenue has sidewalks in good condition on both sides of the corridor



The sidewalks near Capital Ave feature a furniture zone with bicycle parking, street tree wells, and lighting



The sidewalks along Franklin Ave near Adelaide St include a landscaped buffer with street tree wells and lighting. The roadway includes a bike lane and on-street parking.



The sidewalks along the east end of the corridor include a landscaped buffer and feature more single-family residential land use



FRANKLIN AVENUE Existing Conditions: Bus Stops

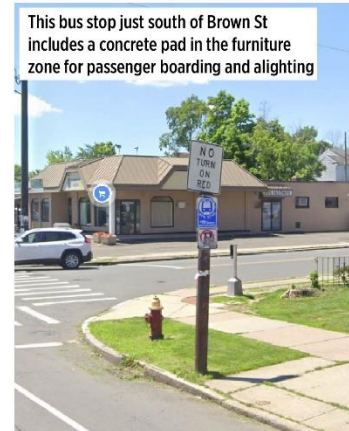
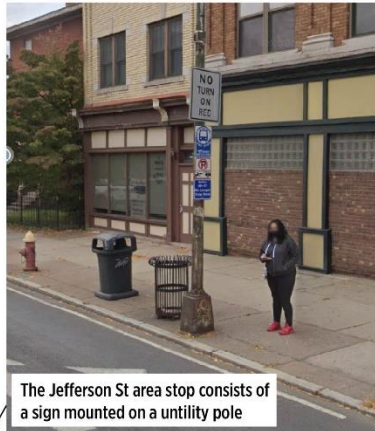
CORRIDOR STATISTICS

Bus Stop Shelter Typologies

- 1 Type 1 includes a sign, a shelter with a roof, 3 to 4 walls, and a bench inside. Type 1 almost always includes a bus pull out and an ornamental trash can.
- 2 Type 2 includes a sign and either a stand alone bench (with no shelter) or a schedule display
- 3 Type 3 includes only a sign. There is no shelter or bench with this typology.

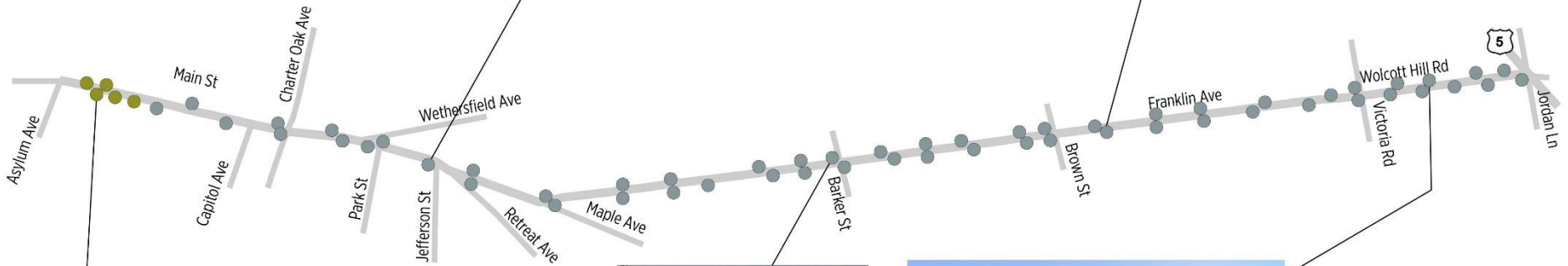
Bus Stop Shelter Count

1	5 stops 8% of total	2	-- n/a	3	56 stops 92% of total	61 total stops
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LEGEND

- 1 Shelter, bus pull out, sign
- 2 Sign with either a bench or schedule display
- 3 Sign only



Franklin Avenue Key Takeaways

Figure 29 | Key Takeaways, Franklin Avenue

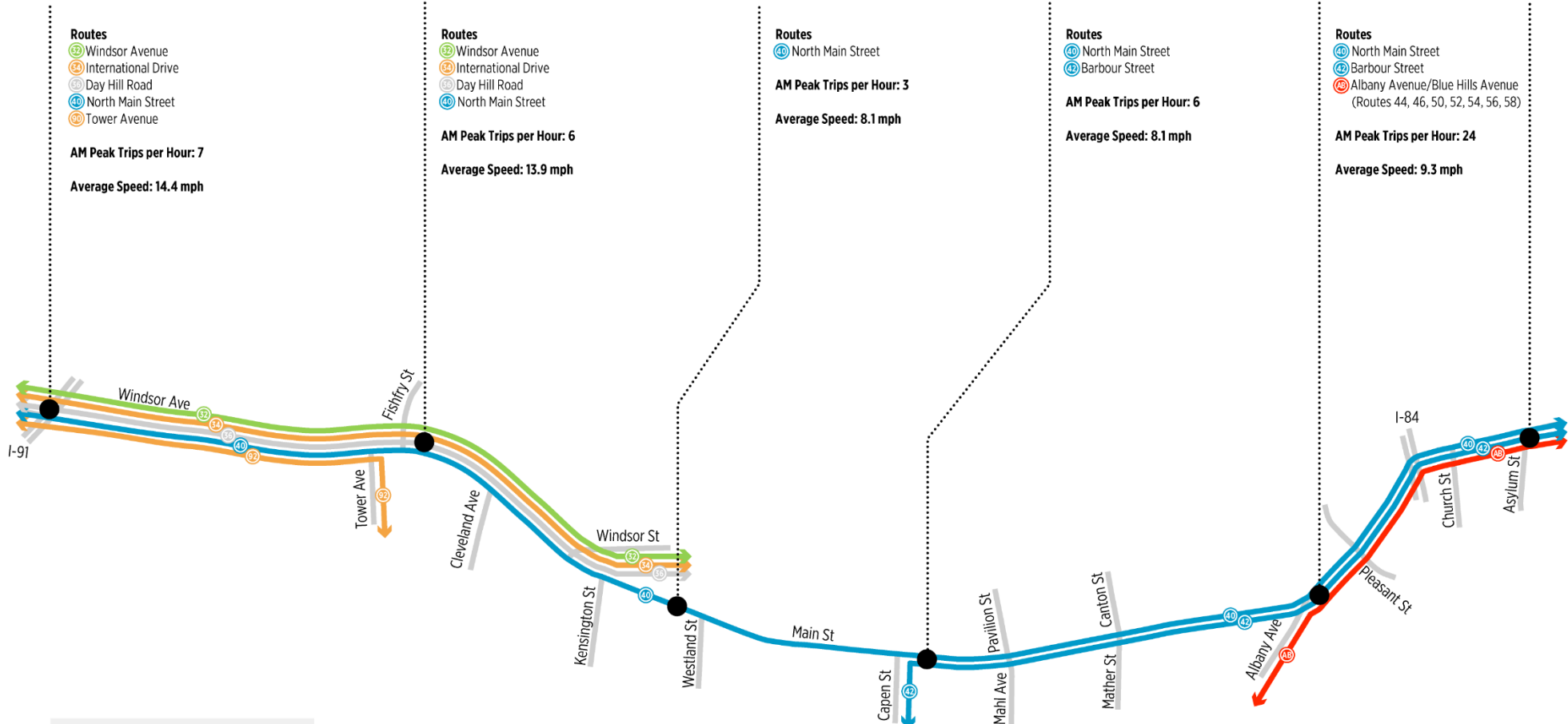
Transit Services	Road Infrastructure	Active Transportation
<ul style="list-style-type: none"> ▪ Transit services are highly concentrated at northern end; only one route serves entire corridor ▪ Frequency is matched to demand; during AM peak buses arrive every 10 minutes up to every 2 minutes for busiest section ▪ Bus speeds are slow; potential for bunching is high along Main St segment 	<ul style="list-style-type: none"> ▪ Franklin Ave is predominantly limited to one travel lane per direction, which limits bus lane potential. Curbside running bus lanes and/or queue jump lanes would generally require peak period parking restrictions or parking removal ▪ Two lanes per direction are provided on Main St north of Jefferson Street to/from downtown Hartford which presents opportunities for bus lanes and queue jump lanes 	<ul style="list-style-type: none"> ▪ Franklin Avenue has sidewalks along both sides of the street throughout the study corridor ▪ Some portions of sidewalk are wide and feature a furniture zone with street trees, utility poles, bicycle parking, etc. ▪ There are just over 1 mile of bike lanes throughout the corridor
Ridership By Stop	Traffic	Transit Infrastructure
<ul style="list-style-type: none"> ▪ Highest ridership between Asylum Ave and Park St ▪ Lowest ridership at southern end of corridor around Victoria Rd ▪ Large number of stops per mile at 10. Consolidate stops especially along Franklin Ave and Wolcott Hill Rd sections ▪ Franklin Ave has highest total ridership of any transit priority corridor 	<ul style="list-style-type: none"> ▪ Excess peak hour lane capacity is generally available north of Jefferson Street to/from downtown Hartford and signal-related delay is likely impeding traffic ▪ Traffic is generally slowest throughout the corridor in the midday and evening peak hours and predominantly lighter in the mornings 	<ul style="list-style-type: none"> ▪ Franklin Avenue has the fewest shelters over all ▪ There are no shelters between Capitol Avenue and Jordan Lane ▪ The existing shelters in highly-trafficked areas have extra capacity to accommodate high ridership

Main Street

Transit Priority Corridor

Figure 30 | Main Street, Existing Transit Services

MAIN STREET
Existing Transit Services



Peak Service Frequencies

- Every 15 minutes or better
- Every 20 minutes
- Every 30 minutes
- Every 60 minutes
- Greater than every 60 minutes

Source: CTtransit, 2020 weekday schedule

0.25 Mile

Figure 31 | Main Street, Ridership By Stop

MAIN STREET
 Ridership By Stop

Total Stops: 52

Inbound: 25
 Outbound: 27

Total Ridership: 4266

Average weekday boardings

Stops per Mile: 6.5

Routes Served

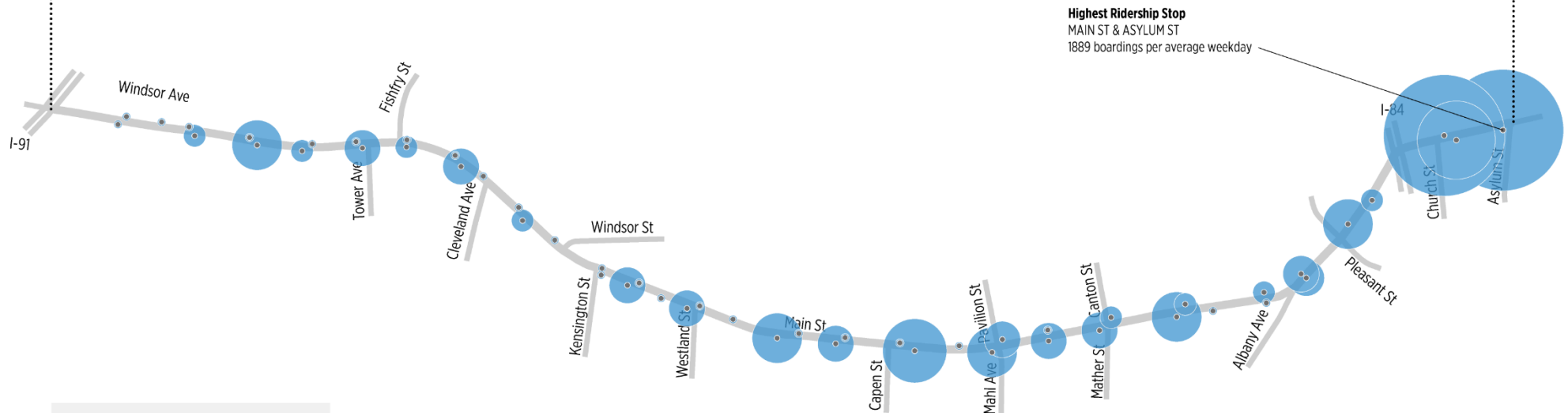
32 Windsor Avenue
 34 International Drive
 36 Day Hill Road
 40 North Main Street
 42 Barbour Street
 92 Tower Avenue
 Albany Avenue/Blue Hills Avenue
 (Routes 44, 46, 50, 52, 54, 56, 58)

Highest Ridership Stops

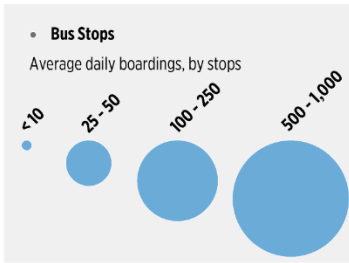
MAIN ST & ASYLUM ST: 1889
 MAIN ST & OPP CHURCH ST: 1056
 MAIN ST & PRATT ST: 306
 MAIN ST & CAPEN ST: 107
 MAIN ST & DUNKIN DONUTS PARK: 91
 MAIN ST & FLORENCE ST: 62
 MAIN ST & ST MONICAS APT: 57
 MAIN ST & MAHL AVE: 55
 MAIN ST & NELSON ST: 54
 MAIN ST & MONTVILLE ST: 49

Lowest Ridership Stops

MAIN ST & 1840 MAIN ST: 0
 MAIN ST & WINDSOR ST: 0
 MAIN ST & KENSINGTON ST: 1
 WINDSOR AVE & SUNSET ST: 1
 MAIN ST & 2062 MAIN ST: 1
 MAIN ST & OPP EARLE ST: 1
 MAIN ST & OPP 2447 MAIN ST: 2
 MAIN ST & OPP KENSINGTON ST: 2
 MAIN ST & CT WORKS CAREER CTR: 2
 MAIN ST & OPP MONTVILLE ST: 2



Highest Ridership Stop
 MAIN ST & ASYLUM ST
 1889 boardings per average weekday



Source: CTtransit, 2019 weekday ridership



Figure 32 | Main Street, Roadway Infrastructure

MAIN STREET

Existing Conditions: Roadway Infrastructure

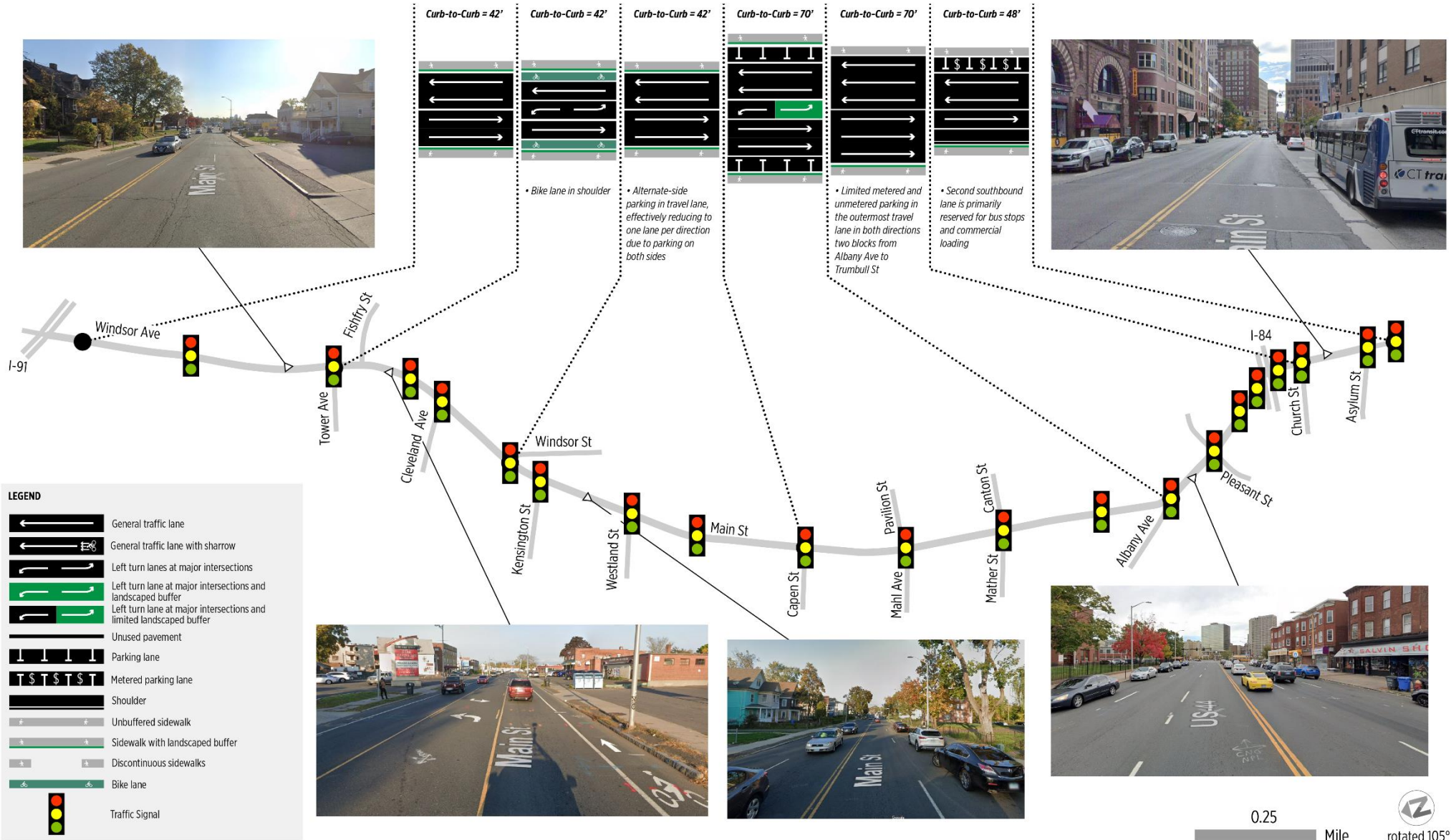
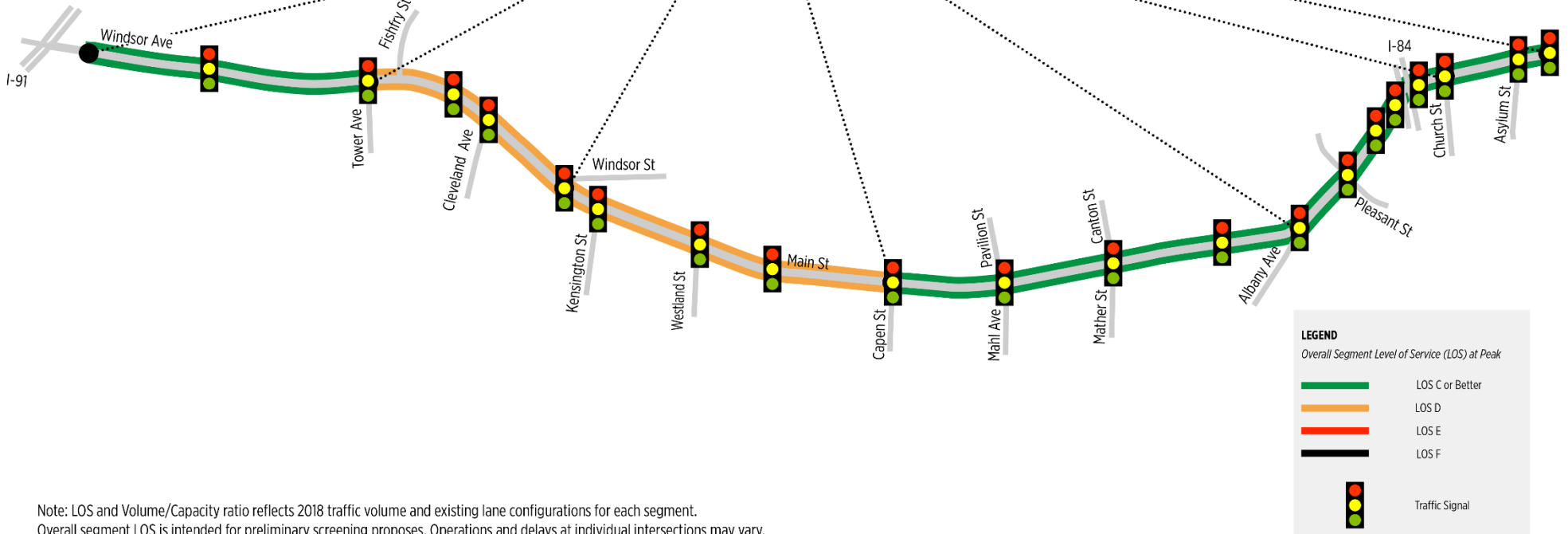


Figure 33 | Main Street, Traffic

MAIN STREET

Existing Conditions: Traffic

Functional Roadway Classification	Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial		Principal Arterial	
Signal Density (per mile)	0		7		6		5		12		11	
Volume/Capacity Ratio at Peak	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	29%	33%	58%	65%	58%	65%	17%	17%	42%	37%	52%	52%



Note: LOS and Volume/Capacity ratio reflects 2018 traffic volume and existing lane configurations for each segment. Overall segment LOS is intended for preliminary screening purposes. Operations and delays at individual intersections may vary.

Figure 34 | Main Street, Active Transportation

MAIN STREET Existing Conditions: Active Transportation

CORRIDOR STATISTICS

Sidewalks

- Sidewalk Length: There are 3.0 centerline miles of sidewalks along the corridor
- There are no existing sidewalk gaps along the corridor

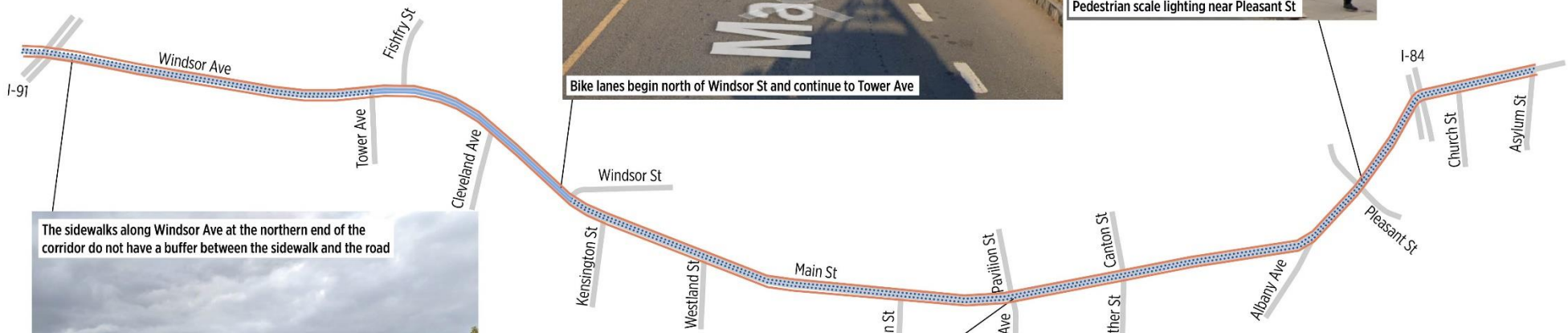
Bike Lanes

- Bike Lane Length: There are 0.4 miles of bike lanes within the corridor, between Windsor St and Tower Ave
- There are no bike lanes north of Tower Ave, nor south of Windsor St



LEGEND

- Sidewalk
- Sidewalk Gap
- Bike Lane
- Bike Lane Gap



The sidewalks along Windsor Ave at the northern end of the corridor do not have a buffer between the sidewalk and the road



The sidewalks along Main St in the center of the corridor include a landscaped buffer between the sidewalk and the road



0.25 Mile
 rotated 105°

MAIN STREET Existing Conditions: Bus Stops

CORRIDOR STATISTICS

Bus Stop Shelter Typologies

- 1 Type 1 includes a sign, a shelter with a roof, 3 to 4 walls, and a bench inside. Type 1 almost always includes a bus pull out and an ornamental trash can.
- 2 Type 2 includes a sign and either a stand alone bench (with no shelter) or a schedule display
- 3 Type 3 includes only a sign. There is no shelter or bench with this typology.

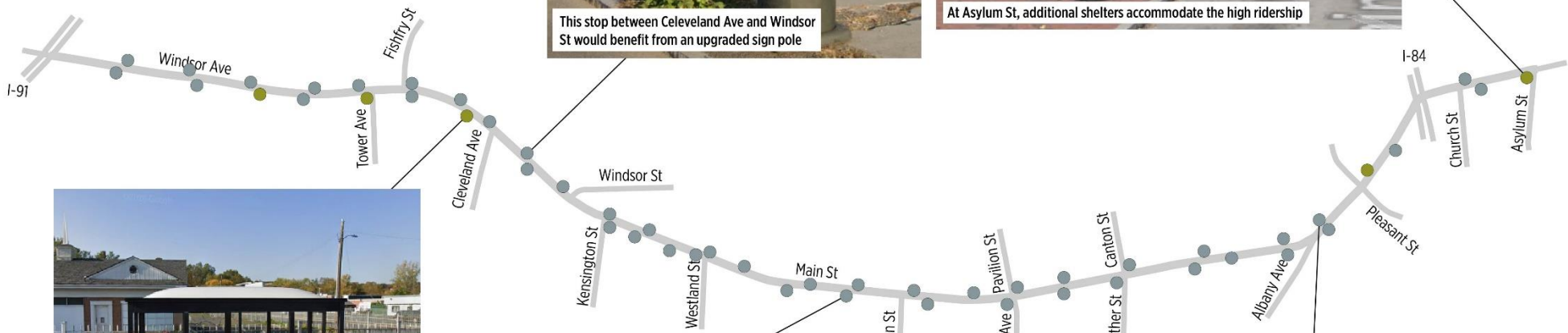
Bus Stop Shelter Count

1	5 stops 9% of total	2	-- n/a	3	46 stops 91% of total	51 total stops
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LEGEND

- 1 Shelter, bus pull out, sign
- 2 Sign with either a bench or schedule display
- 3 Sign only



0.25 Mile

Main Street Key Takeaways

Figure 36 | Key Takeaways, Main Street

Transit Services	Road Infrastructure	Active Transportation
<ul style="list-style-type: none"> ▪ Transit services disconnected across corridor; only one route serves entire length ▪ Frequency not well matched to demand; during AM peak buses arrive every 20 minutes or better ▪ Bus speeds range from fast to slow, dropping on approach to downtown 	<ul style="list-style-type: none"> ▪ Main St is predominantly two lanes per direction with parking on both sides, presenting more options for bus lanes and queue jump lanes ▪ Main St widens to three lanes per direction south of Albany St ▪ There is a moderate density of signals throughout the corridor however the signal density is high south of Albany St 	<ul style="list-style-type: none"> ▪ Main Street and Windsor Avenue feature sidewalks along both sides of the corridor throughout the study area ▪ Some portions of sidewalk include a landscaped buffer while others do not have a buffer ▪ There is a short 0.4-mile section of bike lanes along the corridor
Ridership By Stop	Traffic	Transit Infrastructure
<ul style="list-style-type: none"> ▪ Highest ridership stops near Asylum Ave ▪ Moderate ridership along rest of corridor ▪ Lowest ridership at north end near I-91 ▪ Stops are well spaced at 6.5 per mile ▪ Several low ridership stops and unpaired stops across corridor 	<ul style="list-style-type: none"> ▪ Traffic volumes are generally well accommodated by the lane capacities provided ▪ The high density of traffic signals is likely a primary contributor to delays on the corridor 	<ul style="list-style-type: none"> ▪ Some bus shelters are new, and some appear slightly outdated ▪ There is a long segment of the corridor with no bus shelters: from Pleasant Street to Cleveland Avenue

Park Street

Transit Priority Corridor

Figure 37 | Park Street, Existing Transit Services

PARK STREET

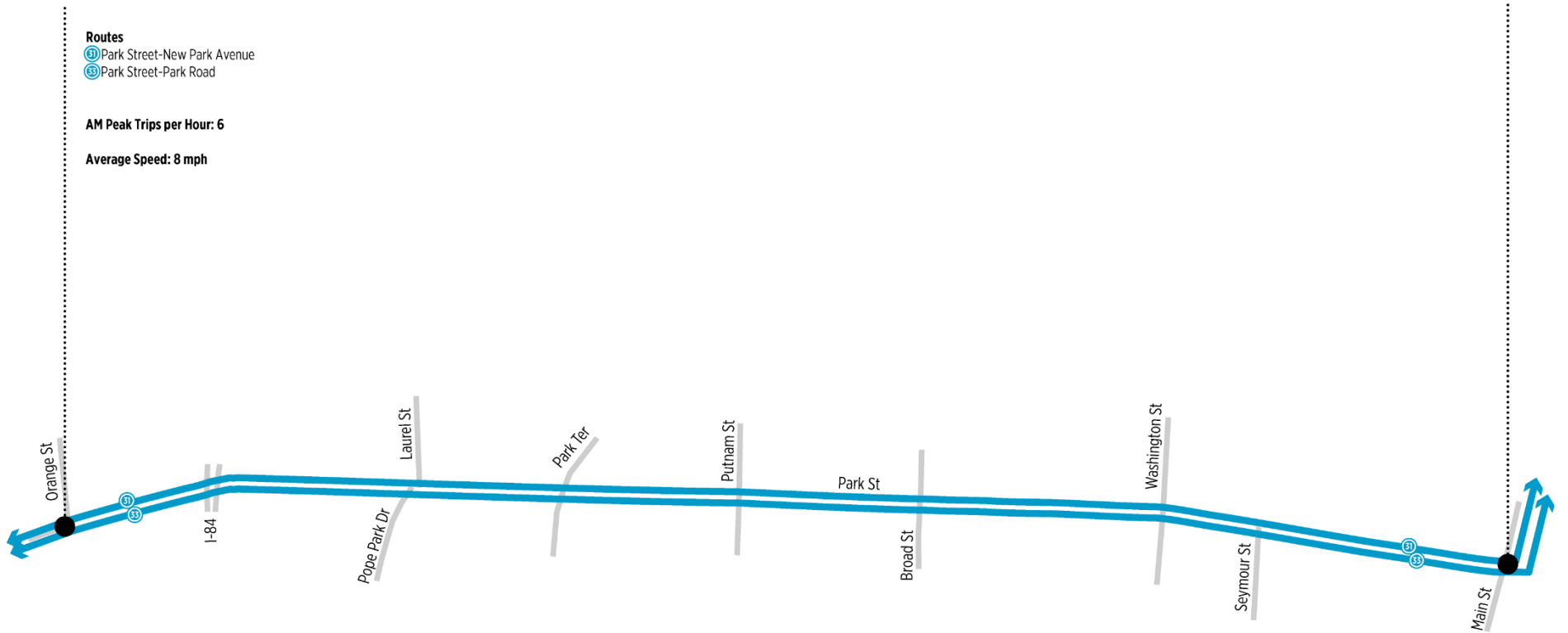
Existing Transit Services

Routes

- ① Park Street-New Park Avenue
- ② Park Street-Park Road

AM Peak Trips per Hour: 6

Average Speed: 8 mph



Peak Service Frequencies

- ① Every 15 minutes or better
- ② Every 20 minutes
- ③ Every 30 minutes
- ④ Every 60 minutes
- ⑤ Greater than every 60 minutes

Source: CTtransit, 2020 weekday schedule



Figure 38 | Park Street, Ridership By Stop

PARK STREET
 Ridership By Stop

Total Stops: 26

Inbound: 13
 Outbound: 13

Total Ridership: 1432

Average weekday boardings

Routes Served

31 Park Street-New Park Avenue
 33 Park Street-Park Road

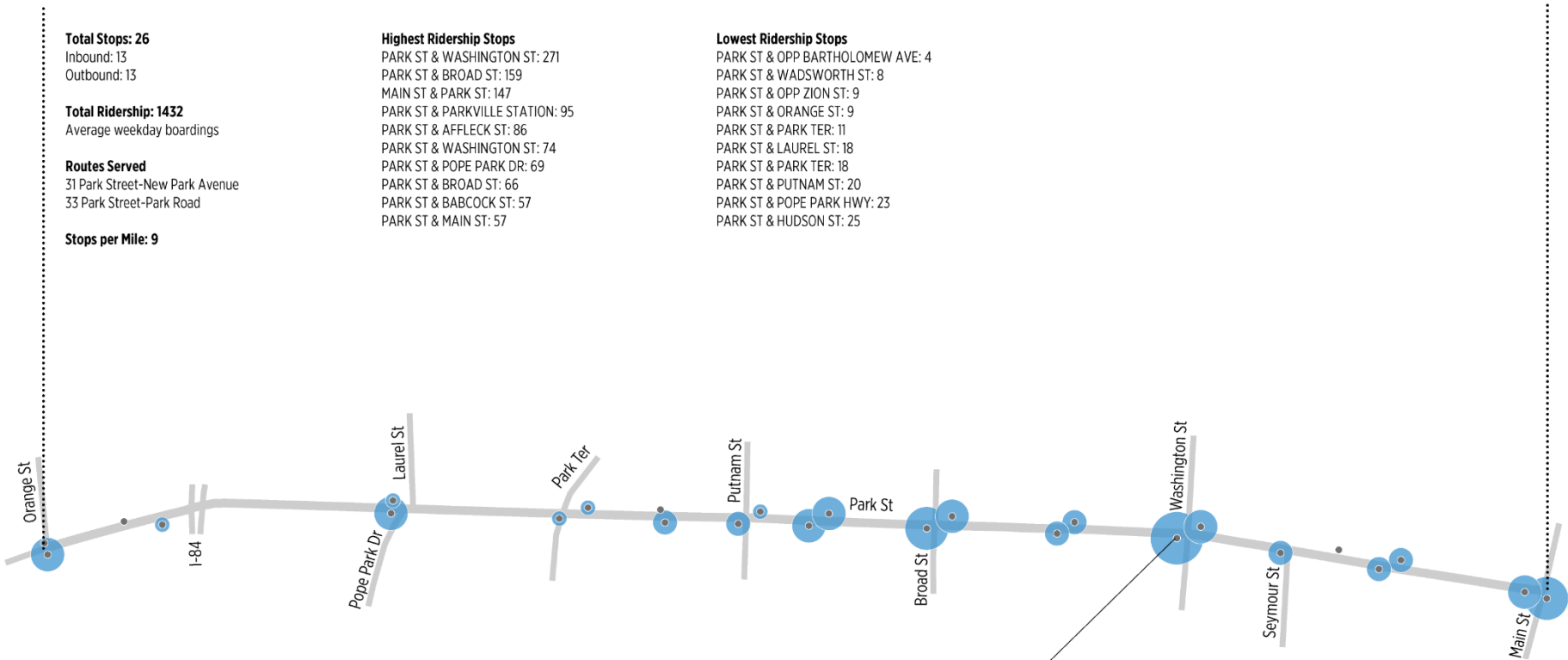
Stops per Mile: 9

Highest Ridership Stops

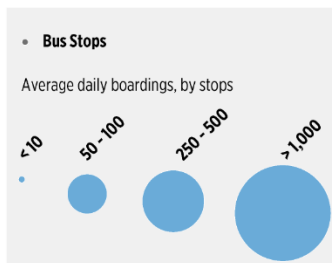
PARK ST & WASHINGTON ST: 271
 PARK ST & BROAD ST: 159
 MAIN ST & PARK ST: 147
 PARK ST & PARKVILLE STATION: 95
 PARK ST & AFFLECK ST: 86
 PARK ST & WASHINGTON ST: 74
 PARK ST & POPE PARK DR: 69
 PARK ST & BROAD ST: 66
 PARK ST & BABCOCK ST: 57
 PARK ST & MAIN ST: 57

Lowest Ridership Stops

PARK ST & OPP BARTHOLOMEW AVE: 4
 PARK ST & WADSWORTH ST: 8
 PARK ST & OPP ZION ST: 9
 PARK ST & ORANGE ST: 9
 PARK ST & PARK TER: 11
 PARK ST & LAUREL ST: 18
 PARK ST & PARK TER: 18
 PARK ST & PUTNAM ST: 20
 PARK ST & POPE PARK HWY: 23
 PARK ST & HUDSON ST: 25



Highest Ridership Stop
 PARK ST & WASHINGTON ST
 271 boardings per average weekday



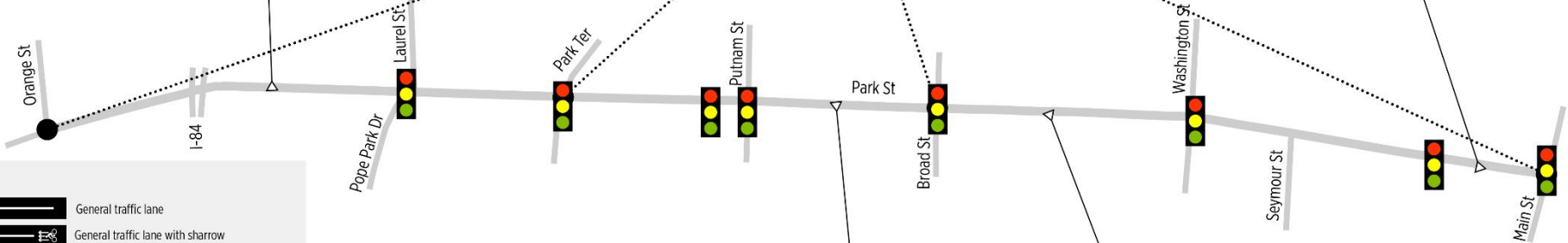
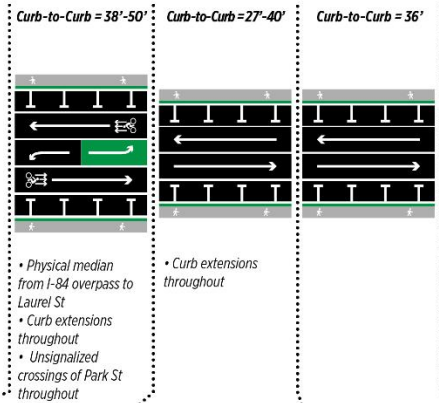
Source: CTtransit, 2019 weekday ridership



Figure 39 | Park Street, Roadway Infrastructure

PARK STREET

Existing Conditions: Roadway Infrastructure



LEGEND

- General traffic lane
- General traffic lane with sharrow
- Left turn lanes at major intersections
- Left turn lane at major intersections and landscaped buffer
- Left turn lane at major intersections and limited landscaped buffer
- Unused pavement
- Parking lane
- Metered parking lane
- Shoulder
- Unbuffered sidewalk
- Sidewalk with landscaped buffer
- Discontinuous sidewalks
- Bike lane
- Traffic Signal



0.25 Mile

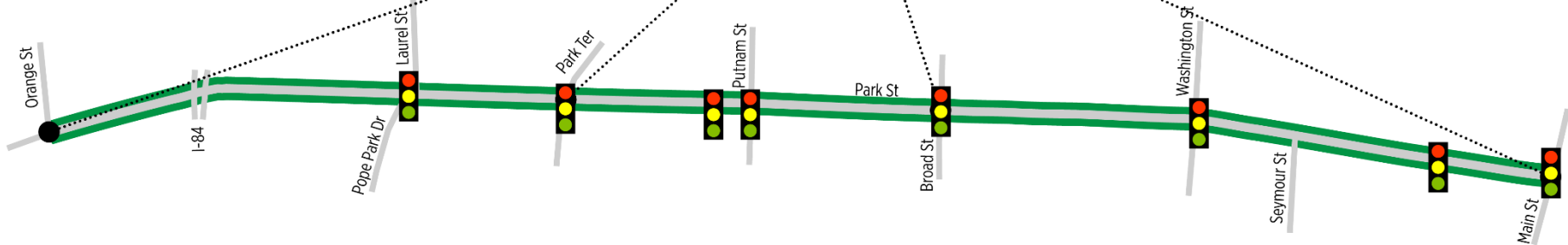


Figure 40 | Park Street, Traffic

PARK STREET

Existing Conditions: Traffic

Functional Roadway Classification	Minor Arterial		Minor Arterial		Minor Arterial	
Signal Density (per mile)	4		8		3	
Volume/Capacity Ratio at Peak	AM	PM	AM	PM	AM	PM
	39%	53%	39%	53%	39%	53%



LEGEND
Overall Segment Level of Service (LOS) at Peak

- LOS C or Better
- LOS D
- LOS E
- LOS F

Traffic Signal

Note: LOS and Volume/Capacity ratio reflects 2018 traffic volume and existing lane configurations for each segment. Overall segment LOS is intended for preliminary screening purposes. Operations and delays at individual intersections may vary.



PARK STREET Existing Conditions: Active Transportation

CORRIDOR STATISTICS

Sidewalks

- Sidewalk Length: There are 1.5 centerline miles of sidewalks along the corridor
- There are no existing sidewalk gaps along the corridor

Bike Lanes

- Bike Lanes: There are no bike lanes within the corridor



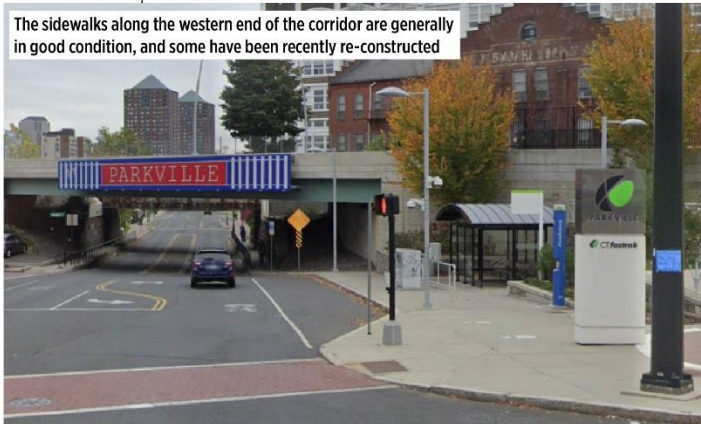
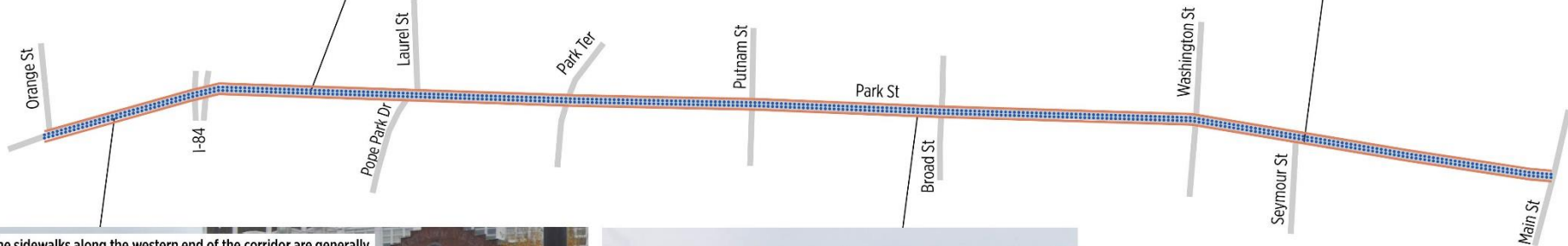
A recently paved asphalt path along the edge of Pope Park



An example of a highly visible crosswalk near Seymour St

LEGEND

- Sidewalk
- Sidewalk Gap
- Bike Lane
- Bike Lane Gap



0.25

Mile



PARK STREET Existing Conditions: Bus Stops

CORRIDOR STATISTICS

Bus Stop Shelter Typologies

- 1 Type 1 includes a sign, a shelter with a roof, 3 to 4 walls, and a bench inside. Type 1 almost always includes a bus pull out and an ornamental trash can.
- 2 Type 2 includes a sign and either a stand alone bench (with no shelter) or a schedule display
- 3 Type 3 includes only a sign. There is no shelter or bench with this typology.

Bus Stop Shelter Count

1	7 stops 28% of total	2	-- n/a	3	18 stops 72% of total	25 total stops
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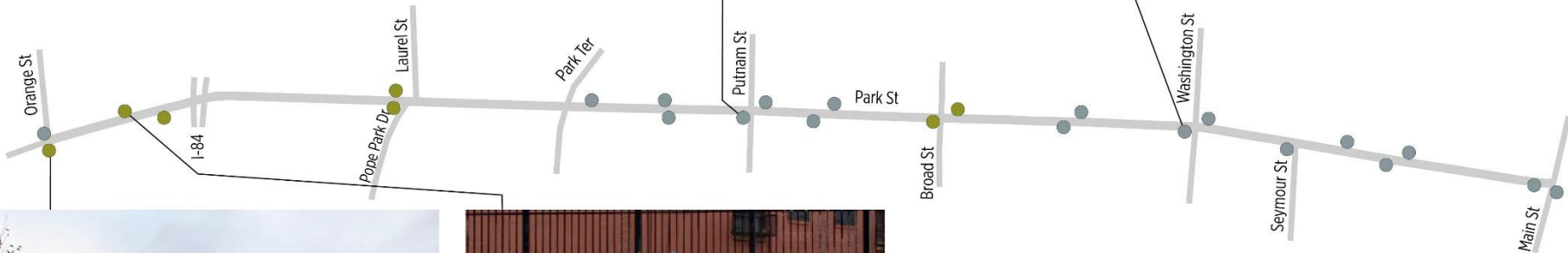
The Putnam St stop has a sign attached to pedestrian scale lighting



Consistent pedestrian scale lighting throughout the corridor can help transit users feel more comfortable at night

LEGEND

- 1 Shelter, bus pull out, sign
- 2 Sign with either a bench or schedule display
- 3 Sign only



The bus shelter near Orange Ave appears relatively new. In the background you can see the CTfastrak elevated bus-way shelter.



A handful of shelters along the Park St corridor have significant graffiti



Park Street Key Takeaways

Figure 43 | Key Takeaways, Park Street

Transit Services	Road Infrastructure	Active Transportation
<ul style="list-style-type: none"> ▪ Two routes serve entire corridor ▪ No routes branch from corridor; routes do cross Park St allowing for transfers ▪ Frequency matched to demand; during AM peak buses arrive every 10 minutes ▪ Bus speeds are slow across corridor 	<ul style="list-style-type: none"> ▪ Park St is one travel lane per direction with on-street parking throughout. Curbside bus lanes and/or queue jump lanes would require peak period parking restrictions or parking removal ▪ Curb extensions are present at crosswalks along most of the western half of Park St and would limit opportunity for curbside bus lanes or queue jump lanes 	<ul style="list-style-type: none"> ▪ The sidewalks along the western end of the corridor and in excellent condition ▪ There is a stretch of sidewalk along Pope Park that doubles as a bicycling path ▪ The sidewalks along the retail / commercial corridor in the middle of the study corridor include a furniture zone and pedestrian scale lighting
Ridership By Stop	Traffic	Transit Infrastructure
<ul style="list-style-type: none"> ▪ Higher ridership stops along eastern half of corridor, with most boardings at Washington St and Broad St ▪ Lower ridership stops generally along western half of corridor ▪ Moderate ridership at Parkville Station ▪ Large number of stops per mile at 9. Consider removing midblock stops 	<ul style="list-style-type: none"> ▪ Traffic is generally well accommodated by the lane capacities provided ▪ Traffic generally moves slowly throughout the corridor in the morning, midday, and evening peaks, due to the narrow roadway, presence of on-street parking, and numerous traffic signals 	<ul style="list-style-type: none"> ▪ There are new shelters in excellent condition that connect to the elevated CTfastrak busway ▪ Some shelters have been vandalized with graffiti ▪ The Park Street corridor has the fewest stops overall (note: the corridor length changes between each study area)

4 Summary of Findings

The Metro Hartford RapidRoutes Transit Priority Corridors Study seeks to improve transit service in all aspects including the path of travel to bus stops, the experience of waiting for the bus, accessing schedules and arrival information, boarding and alighting from vehicles, and spending time traveling to destinations. Investments in the corridors must be targeted to where the greatest impact can be made.

With this inventory of the physical conditions of existing infrastructure and assessment of supplied transit services, the study will move toward establishing recommendations for specific improvements. Evaluation of the six Metro Hartford corridors revealed a number of distinct challenges and opportunities as well as overarching trends.

The biggest differences between the corridors include:

- Scale of total bus ridership among corridors
- Disparities in the distribution of existing bus stop amenities
- Density of traffic signals

Similarities among all corridors include:

- An overall lack of bicycle infrastructure
- Complete sidewalk network along nearly all corridors
- Bus stops generally spaced too close together
- Traffic generally well accommodated by lane capacity along most corridors
- Highest bus ridership concentrated near downtown Hartford

See Figure 44 for a selection of findings for comparison across the six corridors.

Figure 44 | Summary of Findings

	Albany Ave	Burnside Ave	Farmington Ave	Franklin Ave	Main St	Park St
MAX peak trips per hour	18	23	13	47	24	6
MIN peak trips per hour	6	4	7	6	3	6
# Routes Served	8	10	7	10	6+	2
Total Ridership	2,594	1,233	3,521	9,976	4,266	1,432
Stops per mile	10	11	7.5	10	6.5	9
Type 1 Stops	16%	14%	32%	8%	9%	28 %
Type 2 Stops	-	3%	10%	-	-	-
Type 3 Stops	84%	82%	58%	92%	91%	72 %
Total Stops	58	56	59	62	52	25
MAX Travel Lanes	1	3	2	2	3	1
MIN Travel Lanes	1	1	One-way	1	1	1
Avg Travel Lanes	1 per direction	1-2 per direction	1-2 per direction	1 per direction	2 per direction	1 per direction
Excess Lane Capacity	No	Yes	Yes	Yes	No	No
Most Congested Time	PM peak	All day	Midday and PM peak	Midday and PM peak	-	AM peak, midday, PM peak
Sidewalk Gaps	-	1,300+ ft	-	-	-	-
Bike Infrastructure	-	2.7 miles	0.9 miles	1 mile	0.4 miles	Partial shared path

Appendix C Public Engagement



Table of Contents

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2. Methodology	2
3. Findings	5
4. Public Survey Summary.....	7
5. Email and Website Comments.....	16



1. Purpose/Goals

In support of the Metro Hartford Rapid Routes study, the team designed a public engagement program to inform the technical aspects of the work and understand community priorities.

Engagement, documented in a Public Involvement Plan, was designed based on CRCOG's 2017 *Public Participation Plan*. Methods were grounded in four principles: gaining the perspectives of all project stakeholders, employing innovative engagement strategies that meet the comfort levels of community members, using an array of media to communicate with a multi-lingual and

multi-generational audience, and developing widely-accessible engagement materials and content. Activities were conducted online and in-person; methods and findings are discussed next.

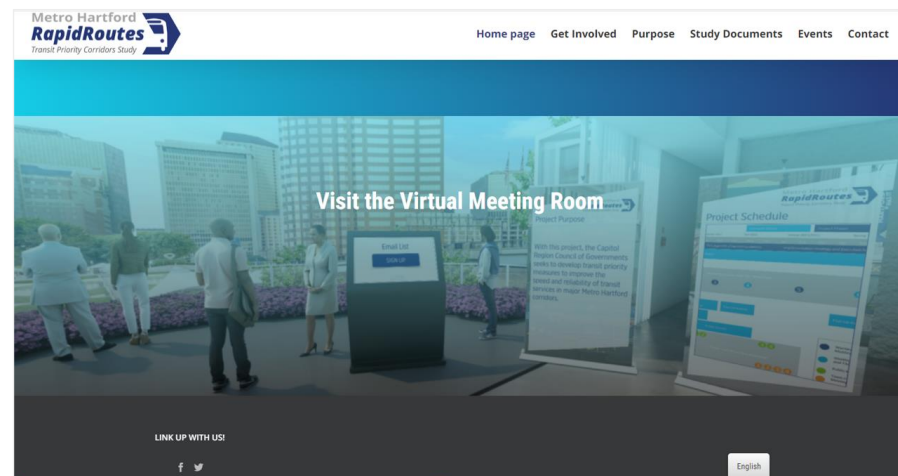
The stakeholders in this study included: public transportation customers, residents, neighborhood civic associations, transit providers, municipal staff and elected officials, major employers and small businesses, community-based associations, medical and educational institutions, and social service providers.

2. Methodology

To ensure this public engagement process was inclusive, a diverse array of outreach methods was employed in this effort to meet stakeholders at their comfort levels. A Public Involvement Plan laid out a strategy to collect feedback at deliberate points in the study to inform the technical work, identify key stakeholders, and document the types of activities utilized to collect feedback. Activities included:

- Project Website and Virtual Meeting Room
- Working Group and Technical Advisory Committee Virtual Meetings
- Online Survey
- Virtual Public Meeting
- In-Person Pop-Up Events at Bus Stops
- Stakeholder and Neighborhood Association Virtual Meetings

The project website and Virtual Meeting Room, meeting materials, surveys, and in-person pop-up events were all available in both English and Spanish.



The project website (<https://metrohartfordrapidroutes.com/>) and Virtual Meeting Room were used to post technical deliverables, videos of the public meetings, collect feedback, and advertise upcoming engagement activities. Visitors to the website could also sign up for project updates. The study team added these people to the Interested Parties email distribution list, which was used to announce upcoming project meetings and events

The project was guided by two groups of stakeholders: a Working Group and separate Technical Advisory Committee were established early in the project to guide the study process and assist in the evaluation of alternatives.

The Working Group, comprised of CRCOG, Connecticut Department of Transportation (CTDOT), CTtransit, and municipal staff from Hartford and East Hartford, ensured that:

- The study team was aware of other recent and ongoing activities, studies, and initiatives
- Data was available for the technical analyses
- Alternatives were feasible, contribute to improving operations and access, and complemented other initiatives
- Public and stakeholder engagement activities included the appropriate local and regional stakeholders.

The Technical Advisory Committee (TAC) included the members of the Working Group as well as:

- Town of Bloomfield
- Town of West Hartford
- Town of Wethersfield
- Town of Windsor
- Hartford Next

- Transport Hartford
- Capital Region Development Authority
- CTrides
- MetroHartford Alliance
- The Travelers Companies, Inc.

The Working Group met 6 times and the TAC met 3 times throughout the study duration:

- February 5, 2021: Kickoff Working Group
- June 10, 2021: Working Group/TAC
- October 13, 2021: Working Group
- December 9, 2021: Working Group/TAC
- March 17, 2022: Working Group
- May 19, 2022: Working Group/TAC

Both groups met via virtual meeting and provided input, context, and guidance on study efforts and direction.

The online survey was developed in the SurveyMonkey platform and available in English and Spanish. The survey was live from July 19 to August 26, 2021 and received 80 responses.

On August 4 and 5, 2021 virtual public meetings were held: one in the daytime and one in the evening. Following the meetings, recordings were posted on the project website for people who were not able to participate live to be able to watch the video and provide feedback.

Meetings, the survey, and the pop-up events were advertised through posters on all CT *transit* buses, on local and regional websites, listservs, and on social media.

On March 16, 2022, in-person pop-up events at transit-accessible destinations along the corridors allowed the study team to engage with populations who may not typically participate in an online outreach process or attend public meetings. The locations and

timeframes were selected during high-traffic hours at major bus stops along the corridors. The locations were ADA-accessible per CRCOG's *Public Participation Plan*. The locations and times were as follows:

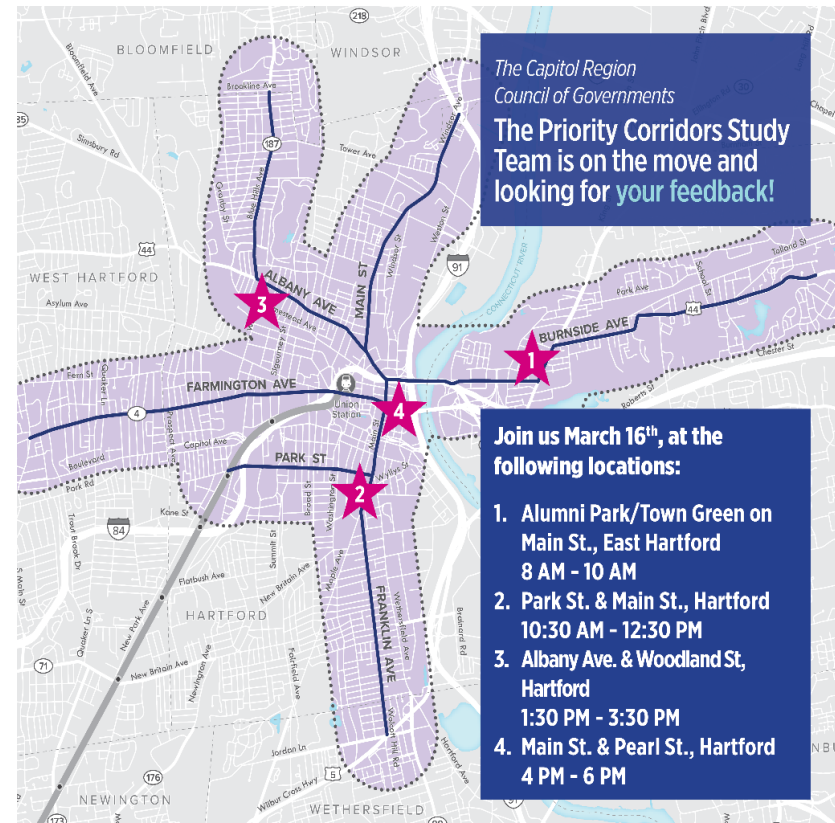
- Alumni Park/Town Green, East Hartford, 8am-10pm
- Park Street & Main Street, Hartford, 10:30am-12:30pm
- Albany Avenue & Woodland Street, Hartford, 1:30-3:30pm
- Main Street & Pearl Street, Hartford, 4pm-6pm

The study team was able to utilize the CT *transit* project bus for the pop-up events. It was a nice, sunny day, so most of the conversations occurred outside the bus, but the bus was used as rolling advertisement and in and of itself, created openings for conversation. The team had 100 postcards printed on cardstock with the project website and a QR code printed on them, used for inviting people to provide additional feedback on the recommendations after the day of the event. Almost all the postcards were distributed, and they were only handed out to a fraction of the participants.



The study team presented study recommendations at stakeholder and neighborhood association virtual meetings in February and March 2022. The team presented corridor-specific recommendations depending on the focus of the group and directed meeting participants to find more details and provide additional feedback through the project website. Groups included:

- February 14: City of Hartford Complete Streets Task Force
- March 4: Transit Equity Day
- March 7: Asylum Hill Neighborhood Revitalization Zone
- March 14: Coalition to Strengthen the Sheldon/Charter Oak Neighborhood
- March 16: West End Civic Association (WECA)



3. Findings

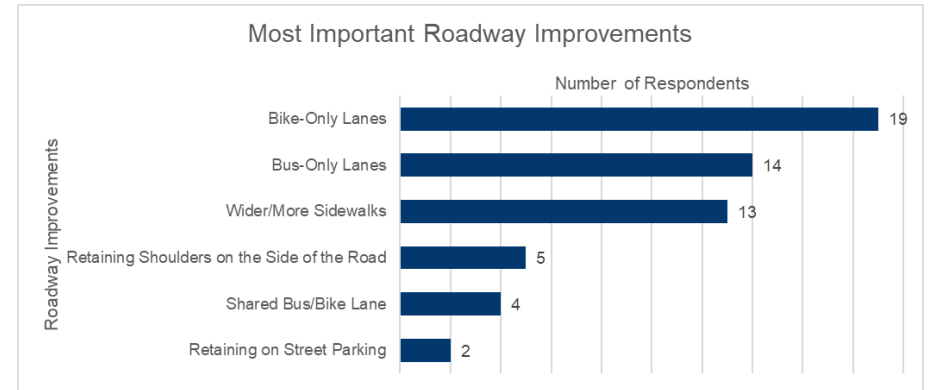
Early engagement activities focused on identifying needs and preferences for transit improvements in the Hartford region generally and more specifically along Transit Priority Corridors. Engagement later in the study focused on collecting feedback on the recommendations.

Survey and Virtual Public Meetings

Summary findings from the survey and virtual public meetings included the following, with participants in both activities representing a large contingent of the bicycle community:

- When considering different travel modes, *speed* of the transit service was the top priority
- When asked about barriers to choosing transit, all comments were associated with *bus stops*, including:
 - Lack of arrival times
 - Inadequate snow removal
 - Poor sidewalk conditions or dangerous traffic impacting access
 - Lack of benches and shelters
 - Lack of bike racks
- When asked about priorities for overall transit improvements, *frequency and span improvements, especially later evenings and weekends*, were identified as having the potential encourage people to use transit more
- Top infrastructure improvement priorities in the corridors were identified as *bike-only lanes, bus-only lanes, and wider or more sidewalks*.

More detail of the survey findings is summarized later in this appendix.



In-Person Pop-Up Events at Bus Stops

The study team was able to talk to more than 100 people at the four pop-up locations on March 16, 2022. Feedback from riders, with the most expressed sentiments listed first, included:

- Overwhelmingly positive feedback on the transit service in general
- Need for improved stop maintenance and overall cleanliness
- Need for shelters in more locations
- Support for reduced/free fares
- Willingness to walk a little further to a stop with more amenities and more frequent transit service
- Need for route/schedule information at bus stops
- Support for improved frequency of service
- Support for expanded hours of service, especially late nights and weekends (focus on Sundays)



through both avenues, so the total number of discrete comments from respondents was 11. The feedback received through the website focused on:

- Support for retaining the bus stops on the Farmington Avenue Corridor at the intersections with Oxford Street and Girard Avenue (8 respondents)
- Suggestion that information sharing and the CT*transit* website be improved (1 respondent)
- Opinion that proposed shelter sizes should be smaller (1 respondent)
- Opposition reducing the number of bus stops in the corridors (1 respondent)

Public Comments

Public comments were received via the project email and a feedback form on the project website. These comments are included verbatim at the end of this appendix with identifying information removed.

Stakeholder and Neighborhood Association Meetings

Stakeholder and neighborhood association meeting presentations were primarily met with support for any improvement that would result in better, faster, and more reliable transit service in the region. Questions were asked about improvements at specific intersections and next steps/anticipated implementation timeline. At the West End Civic Association meeting, which did not have time for a formal project presentation, concern about possibly removing or moving any bus stops was expressed by stakeholders.

Website

Through the project website, feedback was collected through a feedback form and via email to the project email address. Three people provided feedback through the form and nine people sent emails to the project email address. One person provided feedback

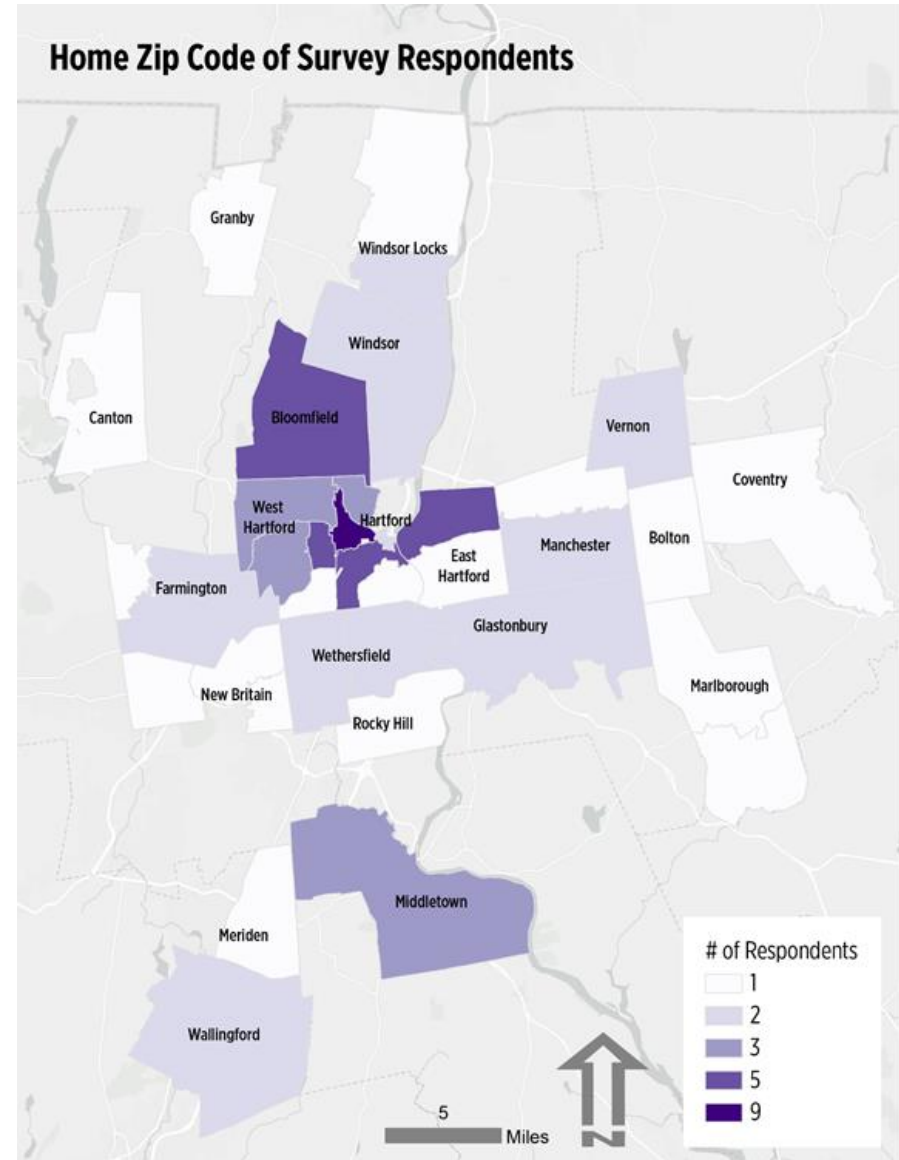
4. Public Survey Summary

Survey Overview

The survey was available online on the SurveyMonkey platform from July 19 through August 26, 2021. Both English and Spanish versions were produced in order to reach the Hartford area’s diverse rider community. To encourage participation, CRCOG promoted the survey in their newsletter and sent emails to the study’s working group, Transportation Advisory Committee (TAC), and any other community members who signed up for the study email list. The study team also worked with CT *transit* to display on-board posters advertising the survey (along with the public meetings that were held concurrently) on buses across the region. Additionally, the surveys were posted and promoted on the study website and virtual meeting room. All materials were available in both English and Spanish.

Survey Respondents

The survey received 80 responses. The top five zip codes of residence reported included 06105, 06002, 06108, 06106, and 06119, with 36.3% of respondents living in them. These zip codes either covered significant portions of the proposed corridors or were very close by. Two of the five most popular zip codes of residence were located in Hartford (one of which covers a significant portion of the proposed Farmington Avenue corridor and one which encompasses both the proposed Park Street corridor and part of the proposed Main Street Corridor); the remaining were in Bloomfield (including a section of Blue Hills Avenue), East Hartford (including the Burnside Avenue corridor), and West Hartford (including the area just west of the proposed Park Street corridor). A map of respondent home zip code is shown to the right, with regional representation.



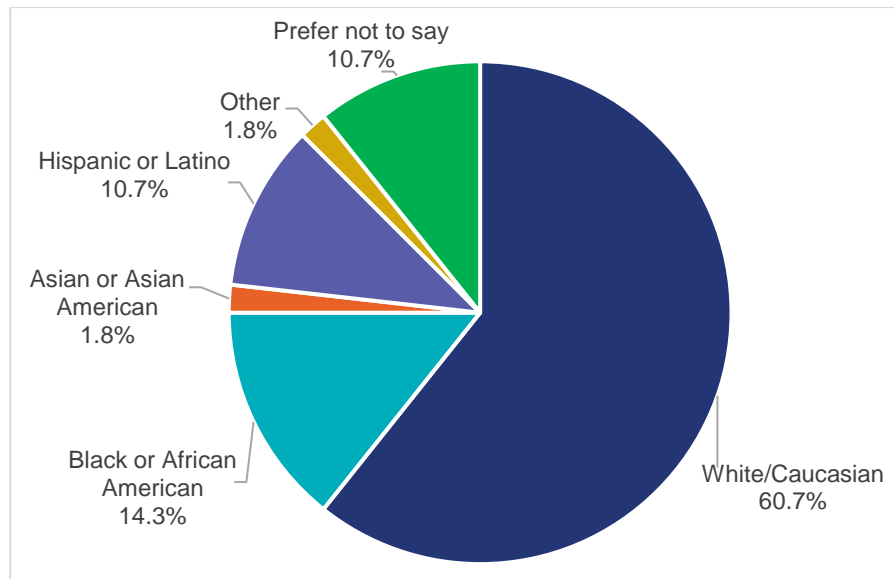
The most popular places of employment (both full- and part-time) were Hartford (all neighborhoods with the exception of the South End), East Hartford (the area south of I-84), and Windsor.

The majority of respondents (67.9%) reported using public transit prior to the COVID-19 pandemic began in mid-March 2020. Less than half (41.1%) are using transit since the pandemic.

Demographic Profile

The average age of survey respondents was 43, with somewhat higher representation of those identifying as male (56.6%). The majority of respondents identified as White/Caucasian (60.7%), 14.3% identified as Black/African American, 10.7% as Hispanic or Latino, and 1.8% as Asian or Asian American. Nearly 4% of respondents reported speaking Spanish as their primary language when at home. Respondents tended to be highly educated, with more than three-quarters of respondents having at least a bachelor's degree. None of the public survey respondents indicated that they used mobility aids (wheelchairs, scooters or walkers).

Race/Ethnicity of Survey Respondents



Transit Priority Corridor Use

Survey respondents reported using Farmington Avenue more than any other corridor. It was the most popular corridor in terms of all potential uses listed in the survey (living by it, working by it, shopping on it, school, medical trips, and leisure purposes).

Albany Avenue and Park Street were also heavily used by respondents but tended to be used more for leisure purposes than anything else—55.1% of those who answered the question said they used at least one of the two corridors for leisure purposes. Over 50% of respondents answered they didn't use Burnside Avenue for anything listed and 48.2% said they didn't use Franklin Avenue for anything listed.

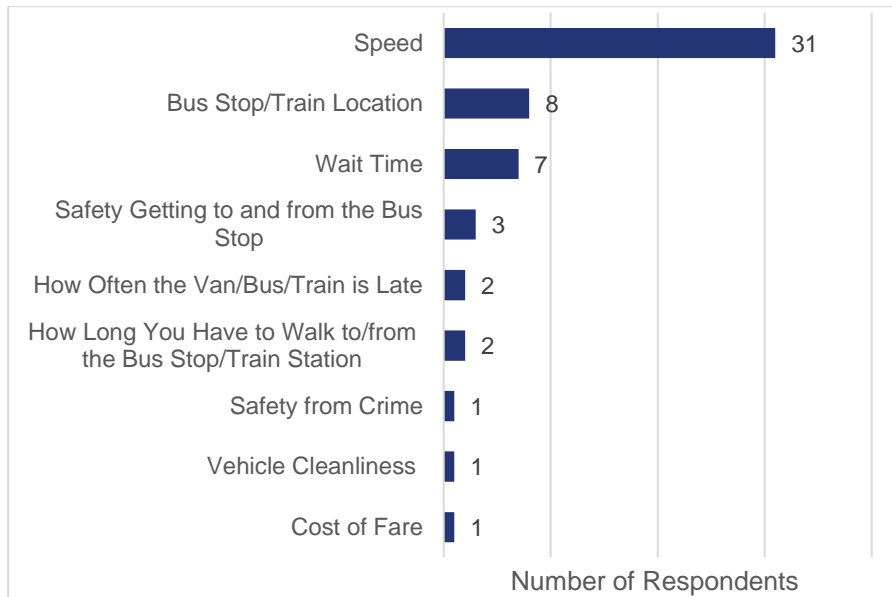
Driving was the most popular mode used by survey respondents to get to all of the corridors, with at least 40% of respondents reporting driving to the corridors over all other modes. Public transportation was the next mode most used by respondents to get to the project corridors, with exception of Farmington Avenue which had slightly more respondents biking to instead of using transit. Main Street and Franklin Avenue saw the most respondents arriving by transit.

Prioritization

Survey respondents were asked to describe changes they would like to see in transit service, primarily through prioritization exercises. The survey included questions that prompted respondents to prioritize transit infrastructure and service improvements.

When asked to rank what they considered to be the most important factors (there were nine provided) when deciding to use public transit, 55.4% of respondents (31 people) selected speed as the most important factor (ranking "How fast you get there" as '1'). The location of the transit stop was the second most important factor (14.3% of respondents ranked it as the most important factor) followed by the wait time (12.5% of respondents ranked it as the most important factor). The cost of fares was the least important factor to survey respondents when considering using transit with 48.2% ranking it as 'least important' (or 9).

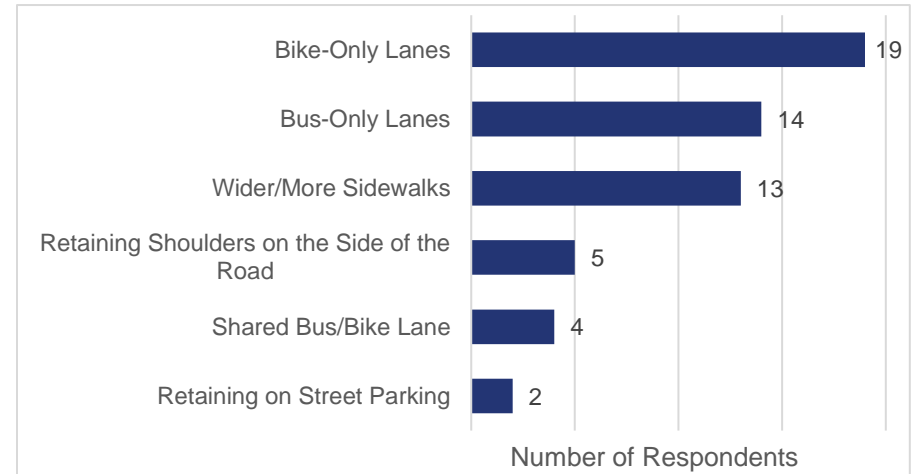
The Most Important Factor to Survey Respondents When Considering Using Public Transportation



When asked to rank the importance of five transit elements including better bus stops, bus-only lanes, transit signal priority, queue jump lanes, and fewer bus stops (for faster service), survey respondents indicated bus-only lanes were the most important transit elements followed by better bus stops, and transit signal priority. Fewer bus stops was the lowest priority for respondents.

In addition to ranking service improvements and transit elements, survey respondents were asked to prioritize six roadway design elements including bike-only lanes, bus-only lanes, wider/more sidewalks, retaining shoulders on the side of the road, share bus/bike lanes, and retaining on-street parking, on a scale of “Most Important” to “Least Important”. Bike-only lanes were the top priority with 33.9% of respondents ranking them most important, while 25% of respondents believed that bus-only lanes were the most important roadway improvements. Wider sidewalks was a close third with 23.2% of respondents. Only 3.6% of respondents believed that retaining on-street parking was the most important.

The Most Important Roadway Improvements



When asked what barriers respondents encountered when trying to use transit, the majority of respondents (66.7%) selected that bus stops lacked listed arrival times. Fifty-four percent of respondents reported that the bus schedules did not meet their needs. The lack of amenities like benches and shelters at bus stops was an impediment to 42.1% of respondents. Few respondents selected that they couldn’t find the bus stops or that they felt unsafe waiting for the bus.

Span of Service and Frequency

When asked if there were any changes that could be made to the transit system that would encourage them to use it more, 76.8% of respondents answered ‘Yes’. Many respondents elaborated by requesting increased frequency and span of service, particularly later evening and weekend service.

Multimodal Travel

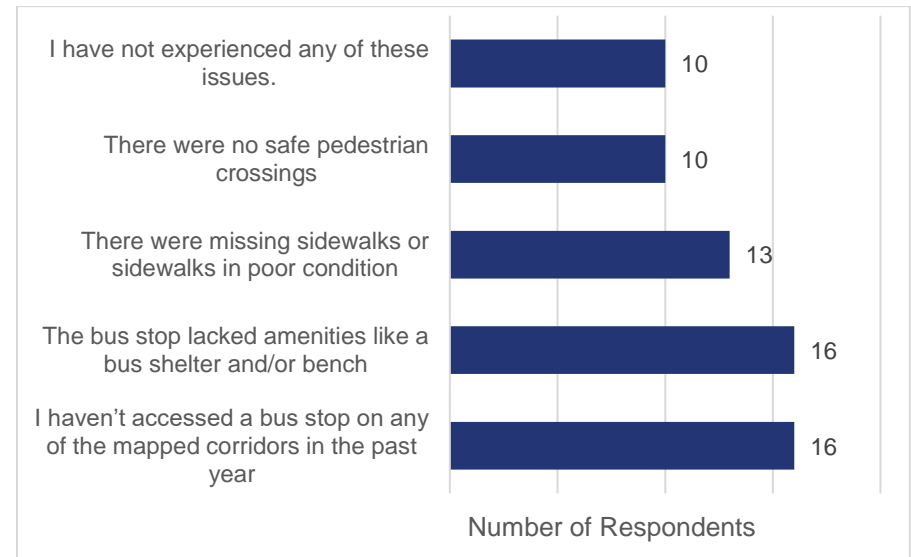
Only 9.3% of survey respondents had used a bike to get to one of the priority corridors in the past year. When asked to explain why they hadn’t biked to the corridors, the most popular reason given by respondents was lack of bike parking near bus stops (28.6%)

followed by not needing to travel to corridors or feeling that biking was too dangerous (26.5% of respondents selected each of these reasons).

Respondents also reported problematic conditions for pedestrians using the corridors. Safety issues arising from dangerous traffic and poor sidewalk conditions were also obstacles to many, with nearly 30% of respondents reporting that each prevented them from accessing bus stops. Thirty percent of respondents also indicated that they were prevented from accessing bus stops on the priority corridors in the past year because the stops lacked amenities like shelters or benches.

Almost one-third of survey respondents reported that inadequate snow removal had been an issue when they used the study corridors, with several mentioning that curb cuts and bus stops were particularly difficult to navigate.

Issues Preventing Respondents from Accessing Bus Stops on Project Corridors



Survey Comments

Public survey respondents were asked to provide comments. They are included verbatim below.

Challenges:

Snow banks blocking sidewalks & bus stop
I have personally seen others in the mapped corridor having issues at bus stops on Park Street, Main Street, and Albany Ave due to uncleared snow and ice piles.
I have missed a lot of buses, especially at the Elmwood Station, because the pedestrian crossing signal takes way too long.
Park Street & Prospect Ave stop for many days after major snow events
All the sidewalks. The city dont clean them. And if they do they barely do. Im up at 5/6 in the morning barely the roads is even clean
Smaller bus stops are never cleared, have to stand in street to wait for the bus.
Main Street - Snow and ice piles gathered at the curb ramp and crosswalks. A couple of negligent property owners also don't clear their sidewalks. All of the corridors - I've noticed similar issues with curb ramps at crosswalks not being clear & bus stops not being cleared of snow/ice.
State House Square area - curb cuts typically poorly shoveled.
Can we please create rapid bus service to the airport!
I am not good at understanding what buses I need to take to get where I need to go.
A way to know how late the bus is running (Google maps is not that accurate)
Certain towns don't have bussing or pedestrian-friendly sidewalks. Very dangerous.
Lack of convenient parking near bus stations.
Lack of services at certain times
The routes don't meet my needs (need one that goes from northern West Hartford (even Bloomfield) to southern West Hartford (Westfarms Mall area). Not going to detour through downtown Hartford for that trip!
Buses don't go where I need or require multiple transfers to achieve my home to destination route.
Frequency, especially on some routes and late nights and weekends
They should make real time bus travel data available to customers. Each stop should have a sign telling people what buses stop by there, where else they go, and at what times. Each stop should have a place for people to wait comfortably, especially stops where the bus comes

twice an hour.
For the times of day i usually need to travel, the buses don't run often enough or on the schedule i need.
(I mostly take the train) but train to bus schedule to get to where I need to go is not always smooth (or easy!)
It can take an entire hour to get from one end of Hartford to another, even without changing buses. 15 minutes or less by car.
Buses on many routes only run every 30-40 minutes even at peak hours, meaning I have to plan my schedule around leaving home and work at specific times.
I don't tend to travel far, so I don't want to take too long getting there by using public transit even though I would like to lower my carbon footprint.
A half hour+ transfer downtown makes the bus very inconvenient for commuting from West Hartford to East Hartford.
I use public transportation on an irregular and infrequent basis. The time needed to find a schedule and plan a route often cuts into available time. This is not a problem for regular trips.
No nearby bus stop. A mile is too far
The bus doesn't operate early enough or frequent on the weekends, some jobs are 7 days a week not just weekdays.
Usually, when I'm using the bus, it is for a longer trip for a meeting, social engagement, or event outside of my bicycle riding range. Daytime, evening, and weekend bus transit schedules are sparse outside outside of the morning and evening bus commuter windows. Sometimes buses to suburban and rural towns are hours apart, if they even exist. Another challenge was the BDL Flyer to the airport, which used to have a much larger gap between buses - but that was just recently improved.
I would like service express service from West Hartford Center to East Hartford for commuting (P&W)
The schedule is designed primarily to get workers into downtown in the morning and out to the suburbs in the afternoon. Far more people would use it to get to other destinations if we did not have this hub-and-spoke map. I used to live in Windsor and work in Wethersfield ... there was only one time that would take me out from downtown to Wethersfield in the morning and only one time that would take me from Wethersfield to downtown in the afternoon ... my route was going the "wrong way". Now I live in Bloomfield and work near Westfarms Mall. To detour through downtown adds faaaar too much time.
Evening busses are infrequent from downtown to Windsor Center and essentially do not exist on weekends.
bus runs too infrequent
can be a challenge to make transfers
- Low frequency on some routes - Low frequency or no buses running on late nights & weekends, especially Sunday
I'd like buses from Windsor Locks to leave earlier in the morning (5:15 am).

No late night service
Weekend schedule is too infrequent and ends too early. Getting to work would take about 3x as long as by car.
Express bus has limited schedule
Lack of frequency outside of rush hour. More evening and weekend service is needed.
Not enough time to walk to wait and wait for buses
Too many connections required to get from point A to point B
Not frequent or late enough to be reliable. Taking Farmington Ave or Park St downtown, too many required transfers to get to other spots downtown. should be more direct. For example if you take the Park St bus downtown it starts going up Main St, then stops, so you have to transfer to get up to North Main.
I've been working at home due to COVID for the past year+. I used to cycle 1x/week and would do more if the bike loading on the bus didn't scare me.
If I'm biking somewhere, I just ride my bike there. Why would I stop to wait for a bus that's not going to the exact right location?
Bikes are often stolen, see Lime Bike
I use CT Fastrack when I bike to work
It's easier to just bike where I need to go.

Suggestions for improvement:

Please add rapid bus service to the airport. Also -- add rapid bus service from the Windsor Locks train station to the airport.
an app that I put my location and where I want to go and it gives me bus routes I need to take, how long it will take, cost, etc.
Faster and more frequent bus service with bus priority over cars. Unfortunately it takes twice as long as driving to work so even though I rather take a bus I end up driving. I have the privilege of having that as an option but it is certainly not carbon neutral. Also encouragement or bus pass from employer rather than free parking would be a good incentive..
CT Rail north doesn't have enough trains (not related to this study but those are my needs). Also, make it easier to go from the train station to the buses (what's up with 2 ways to pay across same department/transit?)
Expand to outlying communities.
a cleaner, safer option in suburban areas
More routes, later hours, mix with later train service. And on Sundays.

clear schedules, trains available
on time, safety
some type of communication sign/device directly at bus stops informing customers how long till bus arrives at stop.
frequency and speed of service
More express routes to downtown from suburban areas with free parking nearby.
more frequent and more extensive service. we need transit to have more presence in our communities where cars are the alternative, not other modes of transit.
More service at night and on weekends
More buses, more often
Fewer Quarters
Shorter connections across the river and more frequent service.
More frequency and reliability during conventional (pre-pandemic) peak weekday travel times
more bike lanes
Fixed light rail around which durable development and integration with bicycle/pedestrian transi could develop
15 minute service or give everybody the UPass so it's free! Never sure how to pay when I get on a new bus.
Actual contact between drivers when 1 bus is delayed due to construction, traffic or accidents.
More frequent service connecting to nearby metro Hartford town centers. A common fare card for bus, rail, and perhaps e-scooter with a discounted monthly fare option. Getting to destinations 5-10 miles away faster than just riding my bicycle, because right now I can usually bike there faster than a bus can get me there.
Consistency in feeders to FastTrack ex. Express Bus should NOT sit in traffic through W. Htfd when it could connect at Cedar St
Express bus service across the river. If you want to encourage transit use, align the routes with where the most people are driving
Better routes that did not all detour through Downtown. Invest in shelters (or get the Towns/employers to do so) in the suburbs.
Evening busses
More frequent busses connecting the transit hubs without a connector in the Main Street Downtown. (Farmington to Park/ Albany)
Don't use enough to have useful suggestions
Don't remember if this is a thing or not since I haven't used the bus since the pandemic, but a phone app that allows you to recharge and scan

to pay from phone would facilitate travel.
increase frequency of express service from Windsor to Hartford CBD
A bus-only lane system with signal priority and frequent service city-wide would change everything. I use Fastrak for most of my travel, if the other routes were as good or better, I'd be using the system even more.
Earlier morning departure. On board bike loading (vs. front bumper, which scares me).
Late night service
Better weekend schedule. Bus priority lanes or similar that would make the trip faster than by car.
More limited stop service (more like a subway)
Frequency and span of service
Extend Fastrack to Manchester/Buckland Hills area
Bigger buses and less frequent headways
more frequent service, better communication about when buses are coming, more comfortable places to stop, transfers timed for route efficiency

5. Email and Website Comments

Public comment was received via the project email and a feedback form on the project website. These comments are included verbatim in this section, with identifying information removed.

Email Comments

- Received May 2, 2022:

I would like to voice my opposition to the reduction in bus stops at the KFC on Farmington Avenue in Hartford. Large numbers of residents using the bus live in adjacent apartments. In addition, it is a densely populated area with large numbers of bus users.

I would also like to remark that I waited for the 10:28 a.m. the other morning at Whitney and was there a few minutes early, only to wait about 15 more minutes for the 10:38 bus...which was accompanied by another bus, presumably the 10:28.

Thank you for taking my comments into account.

- Received April 20, 2022:

I have been a bus rider since June 2021, usually the Farmington Avenue bus west, at Oxford. The CT transit website is very difficult to use, and printed schedules are not to be found. The buses are on time, but nearly empty. I have had an excellent experience, and attribute the lack of riders to the dearth of information available. Rather than cutting out stops, there needs to be an effort to increase ridership. If people knew how easy and convenient it is, I am certain more would opt to ride. So CT Transit should get a website overhaul immediately.! Also, the master map, showing the routes in color must be posted in the shelters, in the paper, and made available, either free or for a nominal fee. With more riders, there won't be the need to "improve" by eliminating stops.

- Received April 5, 2022:

My comment is to continue the bus stop at Girard and Farmington Ave near KFC and the bus stop on Oxford.

Studies will show that there is a high volume of riders along the 60, 62, 64, 66 route

A reduction would be restrictive especially during the winter months.

The one thing that makes the West End pleasant are the numerous bus stops.

This is a plus for the multitude of people who do not have a car that reside in the West end.

Please consider that and continue the service pick up routes on Farmington Avenue.

Thank you

- Received March 29, 2022:

Hello,

I am a home owner in the West End of Hartford. My husband & I have lived here for 9 years. We moved into this neighborhood from the suburbs of South Windsor, CT. Our home is a multi-family of 3 separate living quarters on Beacon Street. We live in one flat & rent the others out. Specifically, we find that our tenants use the buses for transportation and they have friends who also use the system to get to the West End. The majority of our tenants have been professionals in their mid twenties to thirties. They are employed in Hartford at nonprofit companies or are going to graduate school at UCONN Law School. These individuals need the bus stop at Oxford Street and KFC. This stop provides close proximity to the apartments or multi-family homes where these hard working members of the community live. Cancelling the bus stop and figuring that Prospect Street is close enough for riders is not a viable option. These individuals carry heavy items with them. (ex., lap tops, books, notebooks, groceries) The existing bus stop provides a reliable, safe and nearby mode of transportation for young working women and men.

Additionally, there are many women in the neighborhood of Oxford Street/KFC who are single parents or elderly. I am 62 years old , which some people will consider the older generation.

However; I am speaking of individuals in their 70's and 80's who own homes down on Treamont Street, Oxford , Regent, Beacon , Warrenton & West Street. These West End community members have lived here for 50-60 years contributing to Hartford when they were more youthful and drove. Now, they need public transportation to be available in areas that they can walk to that are close to them. The Prospect St. bus stop will be viable for some, but many of them rely on the Oxford Street stop to get to stores, pharmacy, doctors, dentists and restaurants. The needs of a few should count, particularly when they have been citizens for a majority of their lives in the Hartford community or if they are raising children in a location that is a hospitable environment such as being able to get to nice parks, grocery shops, etc.

I moved to the West End because I saw it revitalizing itself along with other areas of Hartford. My husband and I live in the neighborhood as well as try to be good landlords. We do not need the bus, but know that the Oxford neighborhood areas thrive because such access is available in a convenient place.

The West End near Elizabeth Park has many modes of transportation available and the area by Farmington Avenue that has the KFC/Oxford bus stop that I have learned will be taken away is a poor decision by our local government officials.

I believe it will be detrimental to the positive changes that have been occurring. (such as fixing up several multi-families, etc. on Oxford Street and Beacon, etc.

There are a group of nuns that live on Oxford Street in a lovely house rental who have been there for many years. Routines are important and the many children, women and college graduate students who do not have a loud voice in your ear will suffer tremendously if the decision is put into place to end this bus run stop.

Please let me know that you have received this note. I am a registered voter and plan to vote in the upcoming election as I have done in the past local elections since I move into town.

Thank you.

- Received March 29, 2022:
Hello,

As a regular rider of the Farmington Avenue buses, I see this as an excellent opportunity to speed up service, and if I had it my way, I would literally eliminate every other bus stop in both the West End and Asylum Hill.

Here are the ones I would suggest removing:

- Oxford Street, both sides
- Two on far ends of Aetna at Farmington & Sigourney (east of intersection) and Farmington and Flower (west of intersection); keep the one in middle.
- Stop by Archdiocese/Cathedral
- Stop at Imlay and one across from Imlay
- Stop at South Marshall

I disagree with the plan to remove the stop in front of the KFC. It is by far the most used spot on this route outside of downtown. Likewise, the stop across the street at Girard should remain because of proximity to drug store, other shops, and incoming food truck lot.

Thanks for your consideration,

- Received March 25, 2022:
Hi project team,

As a former Hartford resident and daily bus commuter I'm so glad and excited to see this study progressing! Congrats on the progress to date, these efforts are long needed and I'm very impressed by your materials and graphics.

I appreciate the attention being given to bus shelters and bus stop amenities. However, I fear that the shelter concept of the Signature Stop goes a bit too far in its size. This type of shelter is much larger and more elaborate than bus shelters in cities with far greater transit use than Hartford, and I fear that a shelter of this elaborate of a design would be difficult to keep up and maintain (by the City or CTtransit or other). I would encourage the team to tone down or eliminate the Signature Stop shelter from this menu of options, and make the Enhanced Stop shelter the top-tier bus stop style for the highest-ridership stops along your project corridors. The Enhanced Stop concept

is far more streamlined and consistent with bus stops in other cities, such as those in Washington DC and New York City.

Additionally, I do think the Enhanced Stop is a tad too big for most applications and the Regular Stop a tad too small as currently envisioned in your materials. I would encourage the team to slightly enlarge the Regular Stop shelter concept to be sized 3 “panels” wide, up from its current depicted size of 2 “panels” wide.

In short, my suggestions can be summarized as the following

- Signature Stop: Remove from consideration or greatly reduce in shelter size – this seems a bit too over the top for most or all bus stop locations.
- Enhanced Stop: Consider using this in place of the Signature Stop for the highest-ridership bus stop locations along your project corridors – it seems more than adequate for most bus stops along your project corridors and is more in line with best practices and examples from other transit-forward cities.
- Regular Stop: Enlarge this slightly to be 3 “panels” wide and serve as the application for most bus stop locations along your project corridors – this would make for a great and more-than-adequate bus shelter model for these corridors and citywide.

Thank you for the opportunity to comment and keep up the great work!

- Received March 25, 2022:
To Whom It May Concern;

I am writing this email because I am opposed to the changes proposed as a result of the Rapid Bus Service Study.

The bus stops shouldn't change. The study lacks a fundamental understanding of who are the regular users of the underlying stops and their physical capabilities. In the West End, the bus stops are used by individuals of various physical capabilities. If you eliminate certain ones, you will be harming underserved members of our community. _

The bus stop at KFC is the only covered bus stop in the West End. If you take that away everyone riding the bus that uses

this stop is now exposed to the elements. I believe more input from the actual riders and community is needed before any changes to routes happen and stops are eliminated.

Regards,

- Received March 24, 2022:
To whom it may concern,

I am writing to you in opposition to the plan to eliminate the Girard Avenue bus stop. I use this bus stop to get to work in downtown Hartford multiple times a week. Every morning there are at least a few other people utilizing the Girard Ave stop, several of whom are elderly or use walkers or canes to get around. While I would be able in theory to walk a few more blocks for a bus stop, I worry that those with mobility challenges would face a real struggle if this bus stop is eliminated.

Furthermore, should the Girard Ave. bus stop be eliminated, riders would be forced to walk up to either Whitney Street or down to Denison Street. Both of these intersections are difficult to cross safely. The Sisson Avenue intersection in particular is nearly impossible to cross at ANY time, let alone during the commuting hours. If you eliminate this bus stop, riders will be forced to cross dangerous intersections to access public transit.

If you eliminate the Girard Ave. bus stop, I'd take a serious look at making the Sisson Ave/Farmington intersection more accessible to pedestrians and a lot safer.

Sincerely,

- Received March 16, 2022:
At this evening's West End presentation, it was reported that, in the interest of transportation efficiency, the number of bus stops will be reduced. At least in the West End, that is exactly the opposite of what I believe most West Enders want. First, you should separate the question of places where a bus will "stop" for pick-ups and drop-offs from the issue of what degree of amenities will be provided. It is possible for a system to have stops corner stops

without amenities. Second, you should recognize that most people don't ride the bus and putting bus stops farther apart will reduce the incentive to ride, not enhance it. The inconvenience of walking one or two blocks may seem insignificant to planners but it in fact is significant about people's decisions whether or not to ride the bus, especially if they could drive instead. Third, the alleged loss of efficiency is minimal. In reality, if there is no one waiting to board and no one asking to get off, the bus will not stop. The frequency of "non-stops" can be adjusted based on experience and appropriately built into bus time scheduling.

On the other hand, if someone is waiting at a street corner or someone wants to get off the bus, although it may feel less efficient, it also means that people are riding the bus. The loss in efficiency is minimal and is outweighed by the way in which greater access will increase ridership. I can't speak to impact in the suburbs, but I am confident about what is likely to happen in the city.

Website Feedback Form Comments

- Received March 23, 2022:
I strongly oppose eliminating any bus stops on Farmington Ave. The bus stops at Oxford St. and Girard Ave. are proposed to be eliminated. These stops, while not used as much as other bus stops with shelters, provide much needed convenience to the residents who use them. Walking another block or more is difficult for bus riders who have mobility issues, have young children with them, are carrying packages or suitcases, are tired and don't want to have to walk further. Buses should continue to stop, as needed on Farmington Ave. at the present Oxford St. and Girard Ave., bus stops, to let on or off passengers. Retaining these stops will have a very minor impact on bus schedules, and will make bus ridership manageable for those who use these stops. Please don't eliminate the Oxford St. and Girard Ave bus stops on Farmington Ave.!
- Received March 21, 2022:
Neither stops at Oxford and KFC should be eliminated.

Both are crucial

- Received March 21, 2022:
As a West End resident, I strongly object to the proposed elimination of bus stops at Girard Avenue/KFC and at Oxford Street. This would present a hardship to many West End riders. Those living north of Farmington Avenue would have to cross the very busy Sisson / Farmington intersection to get to Denison Street, or else walk several blocks out of the way to Whitney to catch an eastbound bus. Many of the bus riders who live in this neighborhood are elderly or mobility-impaired, using walkers or canes. Removing these bus stops presents a real hardship to those who most need public transportation.

Appendix D Active Transportation Audits



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1. Transit Stop Audits

INTRODUCTION

BETA Group, Inc. (BETA) conducted active transportation audits at key bus stop locations within each of the six study priority corridors. The locations of the bus stops to be audited were identified by the project team and confirmed by the Working Group. Bus stop locations to be analyzed and audited were identified based on a bus stop optimization analysis consisting of a scoring system where

points were awarded for bus ridership, proximity to points of interest, and demand. The following 44 bus stops were identified for transportation Audits:

- Albany Ave & 1229 Albany Ave (Collin Bennett Building)
- Albany Ave & Main St
- Albany Ave & Brook St
- Albany Ave & Blue Hills Ave
- Albany Ave & Garden St

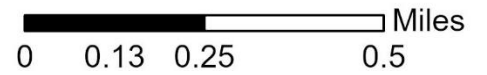
- Albany Ave & Garden St
- Main St & Save A Lot
- Connecticut Blvd & Main St
- Connecticut Blvd & Lynn St
- Main St & Connecticut Blvd
- Main St & Governor St
- Farmington Ave & S Main St
- Farmington Ave & Bank of America
- Asylum St & High St
- Main St & Asylum St
- Farmington Ave & Opposite Woodland St
- Farmington Ave & Woodland St
- Asylum St & Trumbull St
- Asylum St at Bushnell Park
- Asylum St & Union Pl
- Farmington Ave & Opposite Gillett St
- Farmington Ave & Gillett St
- Main St & Atheneum Sq at Travelers
- Main St & Bushnell Plaza
- Main St & Park St (1)
- Main St & Park St (2)
- Franklin Ave & Elliott St
- Main St & Pearl St
- Central Row South Side at Travelers
- Main & Gold at Center Church
- Central Row North Side at Old State House
- Main St & Buckingham St
- Main St & Charter Oak Ave
- Main St & Ancient Burying Ground
- Main St & Linden Pl
- Main St & Arch St
- Main St & 750 Main St
- Main St & Opposite Church St
- Main St & Pratt St
- Main St & Asylum St
- Main St & Capen St

- Church St & Main St
- Park St & Washington St
- Park St & Broad St

BETA Group Inc. utilized a three phased approach to evaluate bus stop locations in Hartford and East Hartford with collaboration from the Capitol Region Council of Governments (CRCOG). The first phase consisted of an initial meeting with CRCOG to establish the project's overall goals and identify objectives that helped facilitate the field data collection process. The project team reviewed CRCOG's existing Active Transportation Audit form. The form was then updated to remove redundant questions, revise wording of some questions, and add new questions. Once the audit was finalized it was converted into an electronic format that could be used with GIS based tools for field data collection and analyses of each bus stop location.

Phase two consisted of the actual field data collection. BETA staff held a training session with CRCOG and CTtransit staff on November 5, 2021 and conducted a field test at several study bus stops using electronic hand-held tablets. Once the equipment testing and training was completed, the field crews surveyed each of the survey bus stops over several days in November 2021. A variety of active transportation and accessibility information was collected including pedestrian and ADA facilities, bicycle facilities, environmental safety, land use & connectivity, amenities, and others. Photographs and notes collected by each field member were also included as part of the field data collection which were then integrated into the final report. Utilizing Survey123 as the GIS-based tool for field data collection, the information at each bus stop was stored in the cloud, which allowed for easy retrieval during the analytical process. The location of each survey location was automatically geo-coded. During the final phase, this information was then fed to an excel driven spreadsheet which summarized each bus stop's characteristics, and a report was generated which is provided below.

Albany Avenue



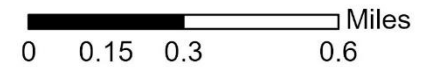
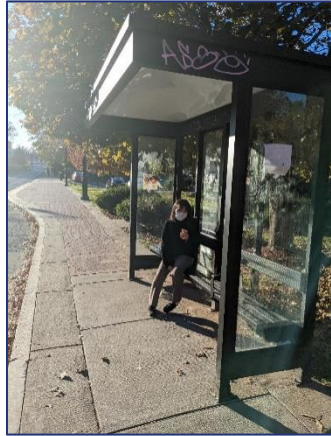
	Amenities	Accessibility	Safety
Transit Facilities	<ul style="list-style-type: none"> •Four out of six locations had benches or seating. •Three out of six locations had wayfinding signage. •Four out of six locations had a trash can. •Five out of six locations had some shade trees. •Three out of six locations had a shelter. •The shelters were in fair condition. 	<ul style="list-style-type: none"> •One out of six locations did not have a clear 5' by 8' long boarding area. •One out of six locations did not have an accessible path from the shelter to the boarding area. •No signage complied with section 703 of ADA. 	
Pedestrian Accommodation	<ul style="list-style-type: none"> •All audit locations had a continuous sidewalk present. •On average, audit location sidewalk condition was rated good (four out of five) with one location receiving a rating of two. 	<ul style="list-style-type: none"> •Two out of six locations had obstructions in the sidewalk. •Obstructions included utility vaults, signs, and a light post. 	<ul style="list-style-type: none"> •Street lamps existed at all audit locations. •None of the audit locations had a buffer between the sidewalk and road.
Bicycle Accommodation	<ul style="list-style-type: none"> •Three out of six audit locations had continuous bike accommodation in the form of sharrows. •One out of six locations had bike parking. 		<ul style="list-style-type: none"> •The average rating for the bike facilities on continuity, surface condition, and width was a three out of five, demonstrating a medium level of safety amenities for people biking.
Intersections	<ul style="list-style-type: none"> •All of the audit locations had a crosswalk present. •All had a pedestrian signal. •All had a pedestrian push button and one out of six had a countdown signal. 	<ul style="list-style-type: none"> •Five out of six of the intersections had wheelchair ramps. •Four out of six intersections had detectable warning panels, and these were in good condition. •No ramps were obstructed. •No 4+ lane intersections had an accessible median refuge island, but one 3 lane crossing did. 	<ul style="list-style-type: none"> •All of the pedestrian push buttons worked. •Four out of six of the signals took too long to change to the pedestrian phase. •One out of six signals did not give enough time to cross. •At all locations, pedestrians had a clear view of traffic. •Two out of six locations had 4+ travel lanes to cross.

Burnside Avenue



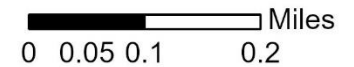
	Amenities	Accessibility	Safety
Transit Facilities	<ul style="list-style-type: none"> •Two out of five locations had benches or seating. •One out of five locations had wayfinding signage. •Four out of five locations had a trash can. •Four out of five locations had some shade trees. •Three out of five locations had a shelter. •Shelter condition was fair. 	<ul style="list-style-type: none"> •One out of five locations did not have a clear 5' by 8' long boarding area. •One out of five locations did not have an accessible path from the shelter to the boarding area. •No signage complied with section 703 of ADA. 	
Pedestrian Accommodation	<ul style="list-style-type: none"> •All audit locations had a continuous sidewalk present. •On average, audit location sidewalk condition was a 3.6 out of five with no sidewalk with a condition less than 3.0 (fair). 	<ul style="list-style-type: none"> •Two out of five locations had obstructions in the sidewalk. •Obstructions included hydrant, utility pole, cracking, and a bush. 	<ul style="list-style-type: none"> •Street lamps existed at all audit locations. •Two of the audit locations had some buffer between the sidewalk and road.
Bicycle Accommodation	<ul style="list-style-type: none"> •One out of five the audit locations had bike accommodation in the form of a paved shoulder, but it was not continuous. •Two out of five locations had bike parking. 		<ul style="list-style-type: none"> •The average rating for the bike facilities on continuity, surface condition, and width was a 1.5 out of 5, demonstrating a poor level of safety amenities for people biking.
Intersections	<ul style="list-style-type: none"> •All audit location intersections (four intersections) had a crosswalk present. •All had a pedestrian signal. •All had a pedestrian push button and three out of four had a countdown signal. 	<ul style="list-style-type: none"> •All of the intersections had wheelchair ramps. •All intersections had detectable warning panels, and these were in fair to good condition. •No ramps were obstructed. •No 4+ lane intersections had an accessible median refuge island. 	<ul style="list-style-type: none"> •All of the pedestrian push buttons worked. •Three out of four signals took too long to change to the pedestrian phase. •One out of four signals did not give enough time to cross. • At all locations, pedestrians had a clear view of traffic. •All locations had 4+ travel lanes to cross.

Farmington Avenue

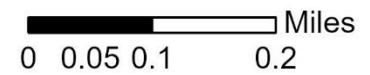


	Amenities	Accessibility	Safety
Transit Facilities	<ul style="list-style-type: none"> •Ten out of eleven locations had benches or seating. •Five out of eleven had wayfinding signage. •Seven out of eleven locations had a trash can. •Ten out of eleven locations had some shade trees. •Ten out of eleven locations had a shelter. •Shelters were mostly in good condition with one in poor condition. 	<ul style="list-style-type: none"> •Two out of eleven locations did not have a clear 5' by 8' long boarding area. •All locations had an accessible path. from the shelter to the boarding area. •No signage complied with section 703 of ADA. 	
Pedestrian Accommodation	<ul style="list-style-type: none"> •All audit locations had a continuous sidewalk present. •On average, audit location sidewalk condition was a four out of five with no sidewalk with a condition less than three (fair). 	<ul style="list-style-type: none"> •Three out of eleven locations had obstructions in the sidewalk. •Obstructions included hydrant, utility pole, tree, manhole, sign, and utility vault. 	<ul style="list-style-type: none"> •Street lamps existed at all audit locations. •Six out of eleven of the audit locations had some buffer between the sidewalk and road.
Bicycle Accommodation	<ul style="list-style-type: none"> •Four out of eleven of the audit locations had continuous bike accommodation in the form of a paved shoulder or sharrow, but it was not continuous. •Four out of eleven locations had bike parking. 		<ul style="list-style-type: none"> •The average rating for the bike facilities on continuity, surface condition, and width was a two out of five, demonstrating a fair to poor level of safety amenities for people biking.
Intersections	<ul style="list-style-type: none"> •One of the audit location intersections did not have a crosswalk present. •Ten out of eleven locations had a pedestrian signal. •Of these, all had a pedestrian push button and eight out of ten had a countdown signal. 	<ul style="list-style-type: none"> •Ten of eleven audit location intersections had wheelchair ramps. •All of the audit locations with wheelchair ramps had detectable warning panels, and these were in fair to good condition. •No ramps were obstructed. •None of the four audit locations with 4+ lanes had an accessible median refuge island. 	<ul style="list-style-type: none"> •All of the pedestrian push buttons worked. •Four of the ten pedestrian signals took too long to change to the pedestrian phase. •Four out of the ten signals did not give enough time to cross. •At all locations, pedestrians had a clear view of traffic. •Four of eleven locations had 4+ travel lanes to cross.

Franklin Avenue



Franklin Avenue (continued)



	Amenities	Accessibility	Safety
Transit Facilities	<ul style="list-style-type: none"> •Eight out of fifteen locations had benches or seating. •Twelve out of fifteen locations have wayfinding signage. •Thirteen out of fifteen locations had a trash can. •Eleven out of fifteen locations had some shade trees. •Eight out of fifteen locations had a shelter. •Shelters were in good condition, on average. 	<ul style="list-style-type: none"> •Two out of fifteen locations did not have a clear 5' by 8' long boarding area. •All locations with a shelter had an accessible path from the shelter to the boarding area. •No signage complied with section 703 of ADA. 	
Pedestrian Accommodation	<ul style="list-style-type: none"> •Fourteen out of fifteen locations had a continuous sidewalk present. •On average, audit location sidewalk condition was a three out of five. 	<ul style="list-style-type: none"> •Two out of fifteen locations had obstructions in the sidewalk. •Obstructions included hydrants, light posts, and signs. 	<ul style="list-style-type: none"> •Street lamps existed at all audit locations. •Four out of fifteen of the audit locations had some buffer between the sidewalk and road.
Bicycle Accommodation	<ul style="list-style-type: none"> •No audit locations had continuous bike accommodation. •Three out of fifteen locations had bike parking. 		<ul style="list-style-type: none"> •The average rating for the bike facilities on continuity, surface condition, and width was a one out of five, demonstrating a poor level of safety amenities for people biking.
Intersections	<ul style="list-style-type: none"> •Eleven out of fifteen audit locations intersections had a crosswalk present. •Ten of the locations had a pedestrian signal. •Of these, nine out of ten had a pedestrian push button and nine out of ten a countdown signal. 	<ul style="list-style-type: none"> •Ten out of eleven audit locations with crosswalks had wheelchair ramps. •Five out of the ten of the audit location intersections with wheelchair ramps had detectable warning panels, and four out of five of these were in good condition. •No ramps were obstructed. •One of the thirteen audit locations with 4+ lanes had an accessible median refuge island. 	<ul style="list-style-type: none"> •Eight out of nine pedestrian push buttons worked. •Four of the ten pedestrian signals took too long to change to the pedestrian phase. •Six out of the ten signals did not give enough time to cross. •One out of fifteen locations did not have a clear view of traffic for pedestrians. •Thirteen of fifteen locations had 4+ travel lanes to cross.

Main Street



	Amenities	Accessibility	Safety
Transit Facilities	<ul style="list-style-type: none"> •One out of five locations had benches or seating. •One out of five locations had wayfinding signage. One location had no bus stop sign. •Four out of five locations had a trash can. •Two out of five locations had some shade trees. •One out of five locations had a shelter. •The shelter was in good condition. 	<ul style="list-style-type: none"> •No locations did not have a clear 5' by 8' long boarding area. •One out of five locations did not have an accessible path from the shelter to the boarding area. •No signage complied with section 703 of ADA. 	
Pedestrian Accommodation	<ul style="list-style-type: none"> •All locations had a continuous sidewalk present. •On average, audit location sidewalk condition was a three with two locations receiving a rating of two. 	<ul style="list-style-type: none"> •Three out of five locations had obstructions in the sidewalk. •The obstructions included a fire hydrant, light post, manhole, sign and grating. 	<ul style="list-style-type: none"> •Street lamps existed at all audit locations. •None of the audit locations had a buffer between the sidewalk and road.
Bicycle Accommodation	<ul style="list-style-type: none"> •None of the locations had bike accommodation. •Two out of five locations had bike parking. 		<ul style="list-style-type: none"> •The average rating for the bike facilities on continuity, surface condition, and width was a one, demonstrating a strong lack of safety amenities for people biking.
Intersections	<ul style="list-style-type: none"> •Four out of five locations were at an intersection. •Three out of four of the locations had a crosswalk present. •All had a pedestrian signal. •All had a pedestrian push button and two had a countdown signal head. 	<ul style="list-style-type: none"> •All the locations had wheelchair ramps. •Two out of four stop locations had detectable warning panels, and these were in fair condition. •No ramps were obstructed. •No 4+ lane intersections had an accessible median refuge island. 	<ul style="list-style-type: none"> •One out of four of the pedestrian push buttons did not work. •Three out of four of the location's signals took too long to change to the pedestrian phase. •One out of four signals did not give enough time to cross. •At one out of four locations, pedestrians did not have a clear view of traffic. •Three out of five locations had 4+ travel lanes to cross.

Park Street



	Amenities	Accessibility	Safety
Transit Facilities	<ul style="list-style-type: none"> •One out of two locations had benches or seating. •One location had wayfinding signage. •Both locations had a trash can. •Both locations had a few shade trees. •Both locations had a shelter. •One shelter was in good condition and the other was in fair condition. 	<ul style="list-style-type: none"> •Both locations had a clear 5' by 8' long boarding area. •One location did not have an accessible path from the shelter to the boarding area. •No signage complied with section 703 of ADA. 	
Pedestrian Accommodation	<ul style="list-style-type: none"> •Both locations had a continuous sidewalk present. •On average, audit location sidewalk condition was a three out of five. 	<ul style="list-style-type: none"> •Neither location had obstructions in the sidewalk. 	<ul style="list-style-type: none"> •Street lamps existed at both locations. •One of two audit locations had some buffer between the sidewalk and road.
Bicycle Accommodation	<ul style="list-style-type: none"> •Neither audit locations had bike accommodation. •One out of the two locations had bike parking. 		<ul style="list-style-type: none"> •The average rating for the bike facilities on continuity, surface condition, and width was a one out of five, demonstrating a poor level of safety amenities for people biking.
Intersections	<ul style="list-style-type: none"> •Both audit locations with an intersection had a crosswalk present. •One of the locations had a pedestrian signal with a pedestrian push button and a countdown signal. 	<ul style="list-style-type: none"> •Both locations had wheelchair ramps. •Both location intersections had detectable warning panels, and these were in fair to good condition. •No ramps were obstructed. 	<ul style="list-style-type: none"> •All pedestrian push buttons worked. •One of the locations has a pedestrian signal that takes too long to change to the pedestrian phase. •The signals all gave enough time to cross. •One of the locations had a clear view of traffic for pedestrians. •Neither of the locations had 4+ travel lanes to cross.

Summary of All Corridors Combined

		Albany Avenue	Burnside Avenue	Farmington Avenue	Franklin Avenue	Main Street	Park Street
	Number of audit locations	6	5	11	15	5	2
Amenities	Locations with benches or seating	66%	40%	91%	53%	20%	50%
	Locations with wayfinding signage	50%	20%	9%	80%	80%	50%
	Locations with trash can	66%	80%	64%	87%	80%	100%
	Locations with shade trees	83%	80%	91%	73%	40%	100%
	Locations with shelter	50%	60%	91%	53%	20%	100%
	Locations with continuous sidewalk	100%	100%	100%	100%	100%	100%
	Average sidewalk condition (out of 5)	4	3.6	4	3.2	3	3
	Locations with bike accommodation	50%	20%	80%	0%	0%	0%
	Type of bike accommodation	sharrow	Paved shoulder	Paved shoulder/sharrow	NA	NA	NA
	Locations with bike parking	17%	40%	36%	20%	40%	50%
	Intersection locations with crosswalk present	100%	100%	91%	100%	75%	100%
	Intersection locations with pedestrian signal	100%	100%	91%	91%	100%	50%
	Signal locations with countdown signal	17%	75%	80%	90%	40%	100%
	Signal locations with pedestrian push button	100%	100%	100%	90%	100%	100%
Accessibility	Locations with clear '5 by 8' boarding area	83%	80%	81%	91%	100%	100%
	Locations with accessible path from shelter to boarding area	83%	80%	100%	100%	80%	50%
	Locations with obstructions in sidewalk	33%	40%	27%	13%	60%	0%
	Intersection locations with wheelchair ramps	83%	100%	91%	91%	100%	100%
	Intersection locations with wheelchair ramps obstructed	0%	0%	0%	0%	0%	0%

	Intersection locations with detectable warning panels	66%	100%	100%	50%	50%	100%
	Detectable warning panel condition	Good	Fair-good	Fair-good	Good	Fair	Fair to good
	4+ Lane locations with accessible median island	0%	0%	0%	7%	0%	NA
	Signage compliant with section 703 of ADA	0%	0%	0%	0%	0%	0%
Safety	Locations with street lamps	100%	100%	100%	100%	100%	100%
	Locations with some buffer between road and sidewalk	0%	40%	55%	26%	0%	50%
	Average rating for bike facilities based on continuity, surface condition, and width	3	1.5	2	1	1	1
	Push button locations with push buttons that work	100%	100%	100%	88%	75%	100%
	Signal locations with pedestrian signals requiring pedestrians wait too long	66%	75%	40%	40%	75%	50%
	Signal locations that give pedestrians enough time to cross	17%	75%	60%	40%	75%	100%
	Locations where pedestrians have a clear view of traffic	100%	100%	100%	100%	75%	50%
	Locations with 4+ lane pedestrian crossing	33%	100%	36%	87%	60%	0%

Appendix E Capital Costs

May 2022



Conceptual Cost Estimates

As described above, the development of the six Transit Priority Corridors will require capital investments in bus stops, transit signal priority, and the development of bus lanes:

- **Bus Stops:** There will be 189 total bus stops in the six corridors, which will be a combination of Signature Stops, Enhanced Stops, Regular Stops, and Basic Stops.
- **Transit Signal Priority:** TSP would be installed at 106 intersections. Some additional *CTtransit* buses may need to be fitted with emitters to trigger the TSP.
- **Bus Lanes:** A total of 12.5 miles of bus lanes would be developed in five of the six corridors. These will include curbside and offset bus lanes, bus-bike lanes, queue jumps,

Unit Costs

Using a combination of recent costs incurred by *CTtransit*, CDOT, other transit systems, and the specific treatments and elements, capital costs, in 2022 dollars, will be approximately \$36.4 million; costs per TPC will range from a low of \$1.1 million for the Park TPC to a high of \$9.0 million for the Farmington TPC.



Bus Stops

All stops in the Transit Priority Corridors will be high quality stops that exhibit a consistent design character. The stops are classified according to the following parameters:

Bus Stop Classification	Average Daily Boardings
Signature	200 or more
Enhanced	50 to 199
Regular	15 to 49
Basic	Fewer than 15
All transfer stops are Enhanced at minimum	



The four bus stop classes feature the following recommended amenities:

Signature Stops

- Multiple benches and extra-large shelter
- Sign with real-time transit information, wayfinding signage, route maps and schedules
- Public art and neighborhood character elements
- Bicycle racks and bike repair station
- Litter and recycling receptacles
- Level boarding area with detectable warning plates

Enhanced Stops

- Bench and large shelter
- Sign with real-time transit information, wayfinding signage, route maps and schedules
- Bicycle racks
- Litter and recycling receptacles
- Level boarding area with detectable warning plates

Regular Stops

- Bench and shelter
- Sign with route maps and schedules
- Level boarding area with detectable warning plates

Basic Stops

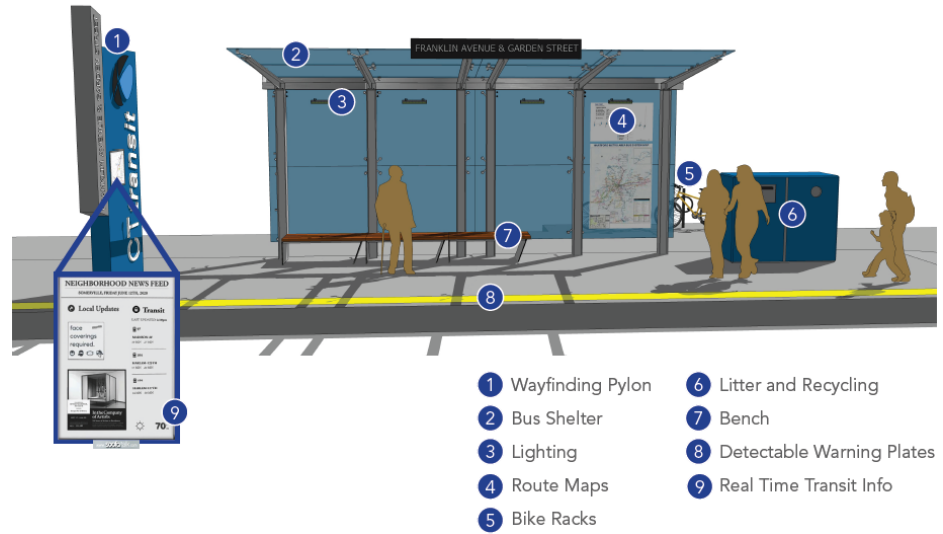
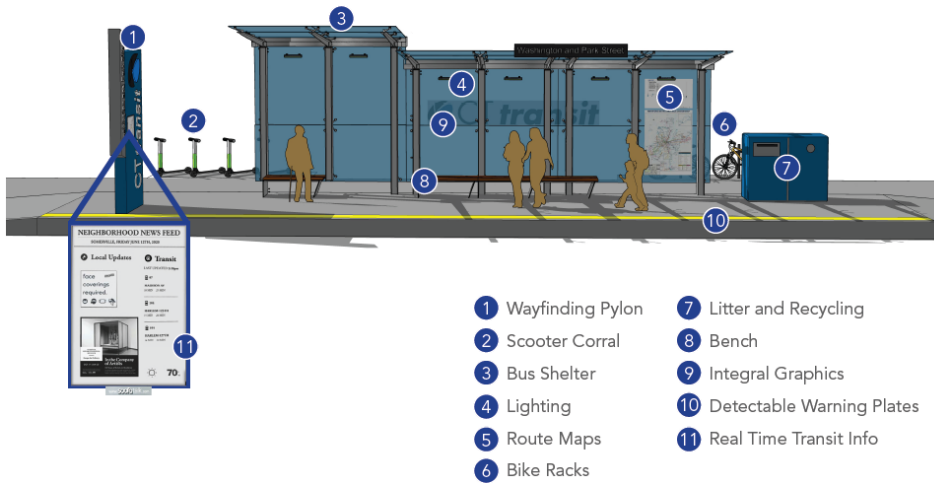
- Bench
- Sign with route maps and schedules

Bus Stop Element Costs

Bus Stop Amenity	Note	Low Price	High Price	Average Price
Bus Stop Sign		\$40	\$255	\$146
Shelter with Lighting	For new shelter	\$11,000	\$17,000	\$14,000
Route Map and Schedule		-	-	\$150
Bike Rack	Not surface mounted	-	-	\$900
Litter Receptacle		\$105	\$525	\$315
Recycling Receptacle		\$105	\$525	\$315
Bench		\$650	\$2,500	\$1,575
Real-time transit information screen		\$9,000	\$11,000	\$10,000
Curb ramp		-	-	\$1,200
ADA-compliant landing pad		-	-	\$4,825

Signature Stop
 (Washington St & Park St)

Enhanced Stop
 (Franklin Ave & Garden St)

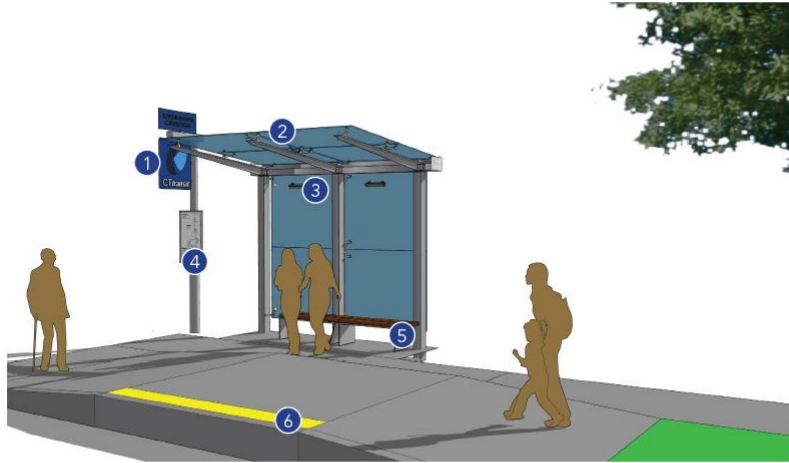


Signature Stop Cost Range	
High	\$60,180
Low	\$41,425
Average	\$50,801

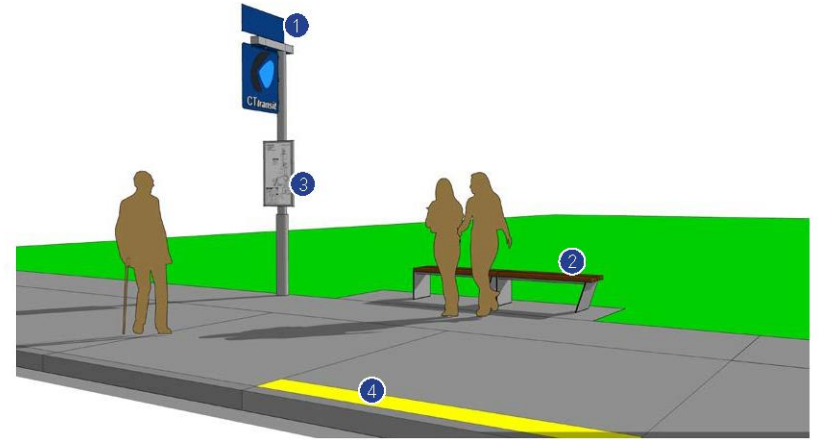
Enhanced Stop Cost Range	
High	\$39,780
Low	\$28,875
Average	\$34,326

Regular Stop
 (Franklin Ave & Chester St)

Basic Stop
 (Typical)



- 1 Bus Stop Sign
- 2 Bus Shelter
- 3 Lighting
- 4 Route Maps
- 5 Bench
- 6 Detectable Warning Plates



- 1 Bus Stop Sign
- 2 Bench
- 3 Route Maps
- 4 Detectable Warning Plates

Regular Stop Cost Range	
High	\$25,930
Low	\$17,865
Average	\$21,896

Basic Stop Cost Range	
High	\$8,930
Low	\$6,865
Average	\$7,896

Transit Signal Priority

The study recommends 106 intersections where transit signal priority can be implemented. Successful implementation requires ongoing coordination to maintain the physical infrastructure, manage the signal systems, and review and adjust based on real-world conditions.

By Intersection

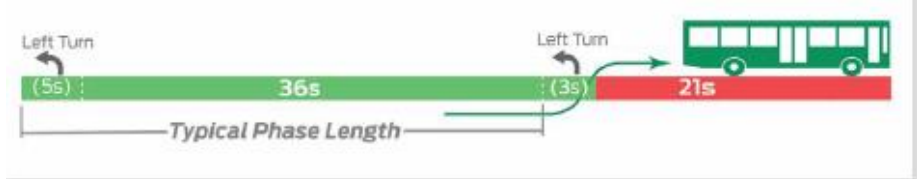
- Implementation will require upgrading all intersections to a baseline where active TSP systems can be used.
- Intersections with older signal systems that cannot be upgraded may still benefit from signal retiming.
- Cost per intersection: \$16,000 for newer signal requiring fewer upgrades; \$95,000 for older signal requiring more significant upgrades
- Average cost per intersection: \$55,500 for a 50/50 mix of older and newer existing signals

Vehicle-Based Costs (Emitters)

- CTtransit has emitters on some of its vehicles but will need to upgrade a larger portion of their Hartford fleet in order to make full use of TSP in the Metro region.
- Cost per vehicle: \$4,000

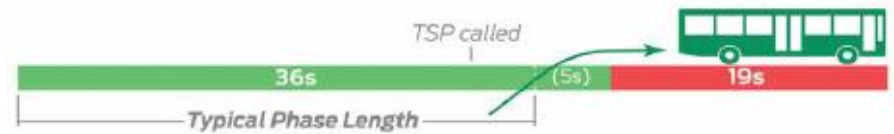
Central Office Software Upgrade

- Software for CTtransit Central Office staff to gather data from TSP equipment on buses and at intersections.
- Additionally, an optional AVL System Integration would enable TSP requests only when the bus is behind schedule (as measured by the AVL System).
- Cost: \$100,000-\$200,000



Source: NACTD

Figure D4.2: Phase Extension



Source: NACTD

Figure D4.3: Phase Truncation



Source: NACTD

Figure D4.4: Phase Insertion



Source: NACTD

Bus Lane Treatments

The study recommends 12.5 miles of bus lane treatments to serve the six transit priority corridors. This includes curbside and offset bus lanes, bus-bike lanes, queue jumps, and extended bus stops. Enforcement costs are not included. In addition to application of bus lane markings, bus lane implementation is assumed to require a full corridor redesign within existing curb limits, roadway resurfacing, and new pavement markings for all travel lanes.

Cost per mile of bus lane: \$1,800,000

Curbside Bus Lane

- Bus lanes running against the curb will require eliminating existing on-street parking in some instances.

Offset Bus Lane

- Simple treatment requires painting only.

Bus-Bike Lane

- Simple treatment requires painting only.

Queue Jump Lane

- May require eliminating some on-street parking leading up to intersections.

Extended Bus Stop

- May require eliminating some on-street parking around the stop. Includes new concrete bus pad.
- Cost per stop: \$13,330



Summary of Costs

	Unit	Unit Cost (\$2022)	Albany/ Blue Hills	Burnside	Farmington	Franklin	Main/ Windsor	Park	Capital Cost
Bus Stops									
Signature Stops	Each	\$51,000	2	7	6	3	4	2	\$1,224,000
Enhanced Stops	Each	\$35,000	13	8	16	8	15	12	\$2,520,000
Regular Stops	Each	\$22,000	15	15	11	7	6	4	\$1,276,000
Basic Stops	Each	\$8,000	6	11	5	8	7	-	\$2,960,000
Bus Lane Treatments									
									\$0
Bus Lane (Various Types; Average Cost)	per Mile	\$1,800,000	1.1	2.3	3.5	3	2.6	0	\$22,500,000
Transit Signal Priority									
									\$0
TSP Locations (by intersection)	Intersection	\$56,000	19	16	28	16	19	8	\$5,936,000
Total Estimated Costs			\$3,979,000	\$6,091,000	\$9,016,000	\$6,947,000	\$6,661,000	\$1,058,000	\$33,752,000

A broad range of recently implemented bus priority projects were referenced for cost estimation purposes, including:

- NYCDOT South Brooklyn Select Bus Service (B82 SBS), 2021, New York, NY
- Mountain Line (NAIPTA) TSP Demonstration, 2021, Flagstaff, AZ
- Milwaukee East-West BRT, 2021, Milwaukee, WI
- Ogden Bus Rapid Transit, 2021, Ogden, UT
- FRA-COTA Cleveland Avenue Bus Rapid Transit, 2017, Columbus, OH
- Cedar Avenue TSP Deployment, 2013, Dakota County, MN.
- UPA Transit Technologies, 2011, Metro Transit, Minneapolis, MN

Appendix F Bus Stop Renderings

May 2022



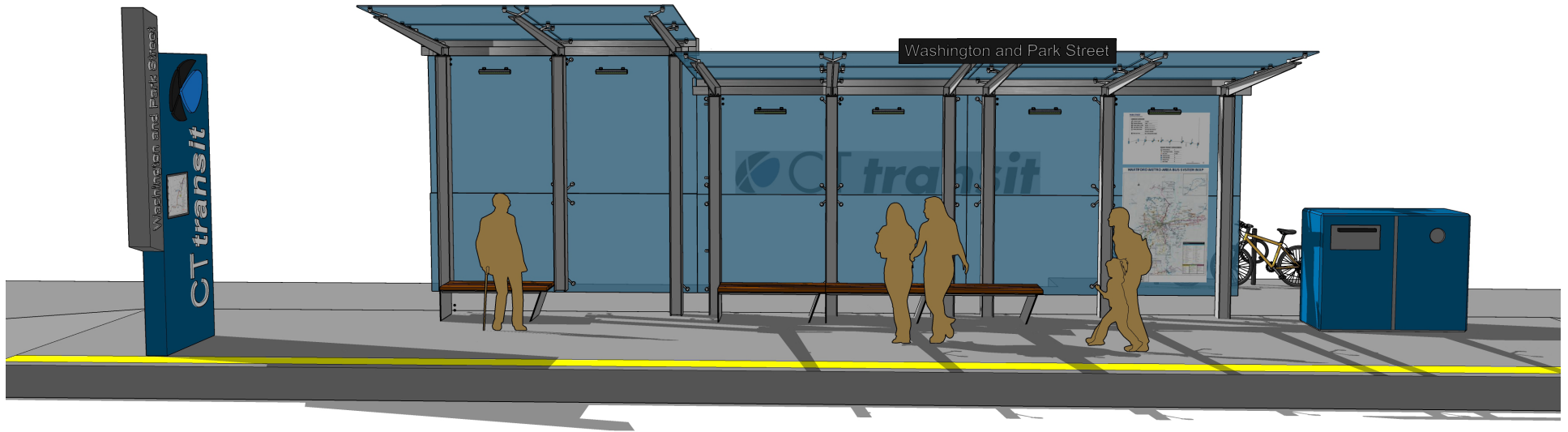
Signature Stop

(Washington St & Park St)



Signature Stop

(Washington St & Park St)



Enhanced Stop

(Franklin Ave & Garden St)



Enhanced Stop (Franklin Ave & Garden St)



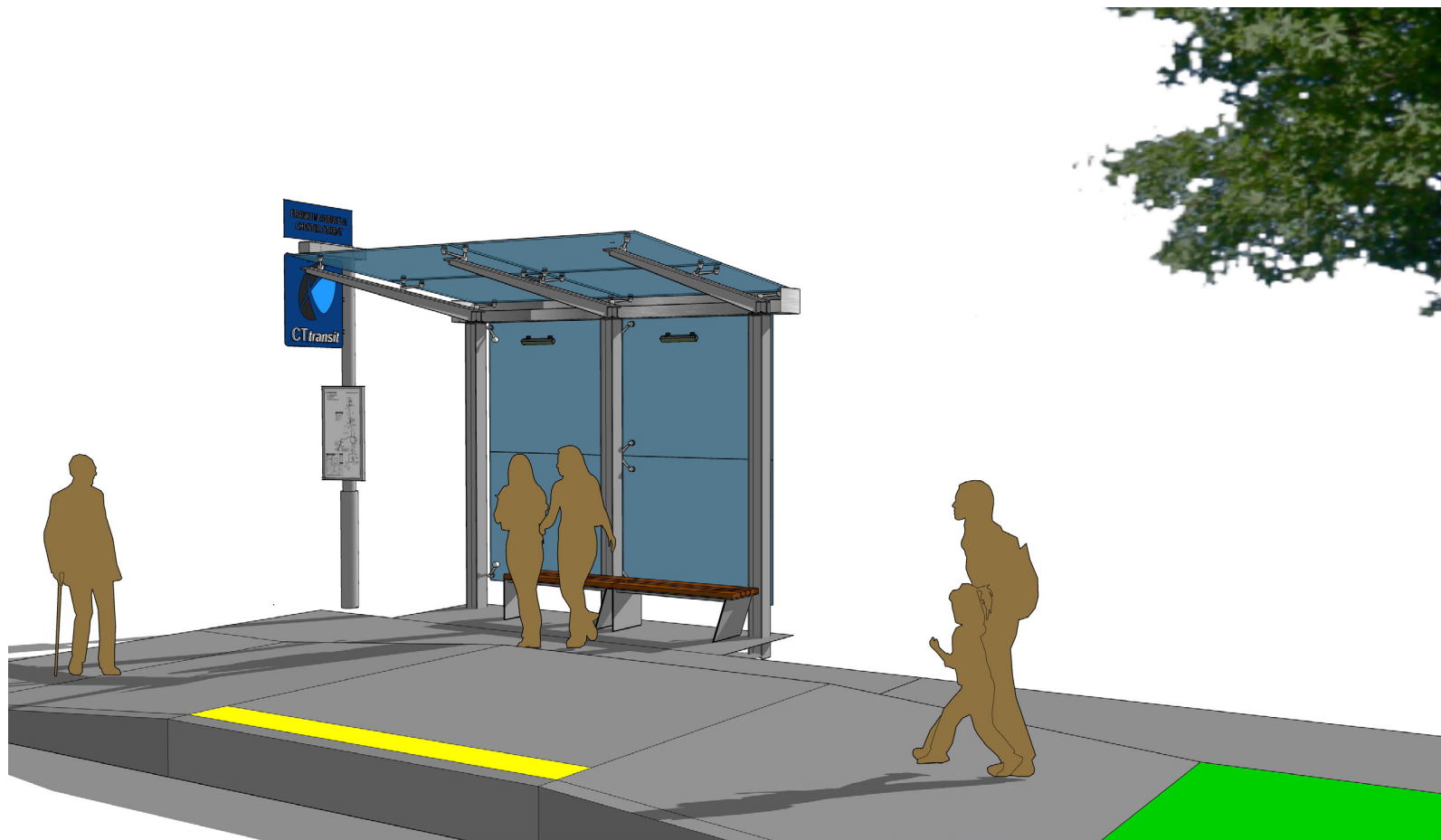
Regular Stop

(Franklin Ave & Chester St)

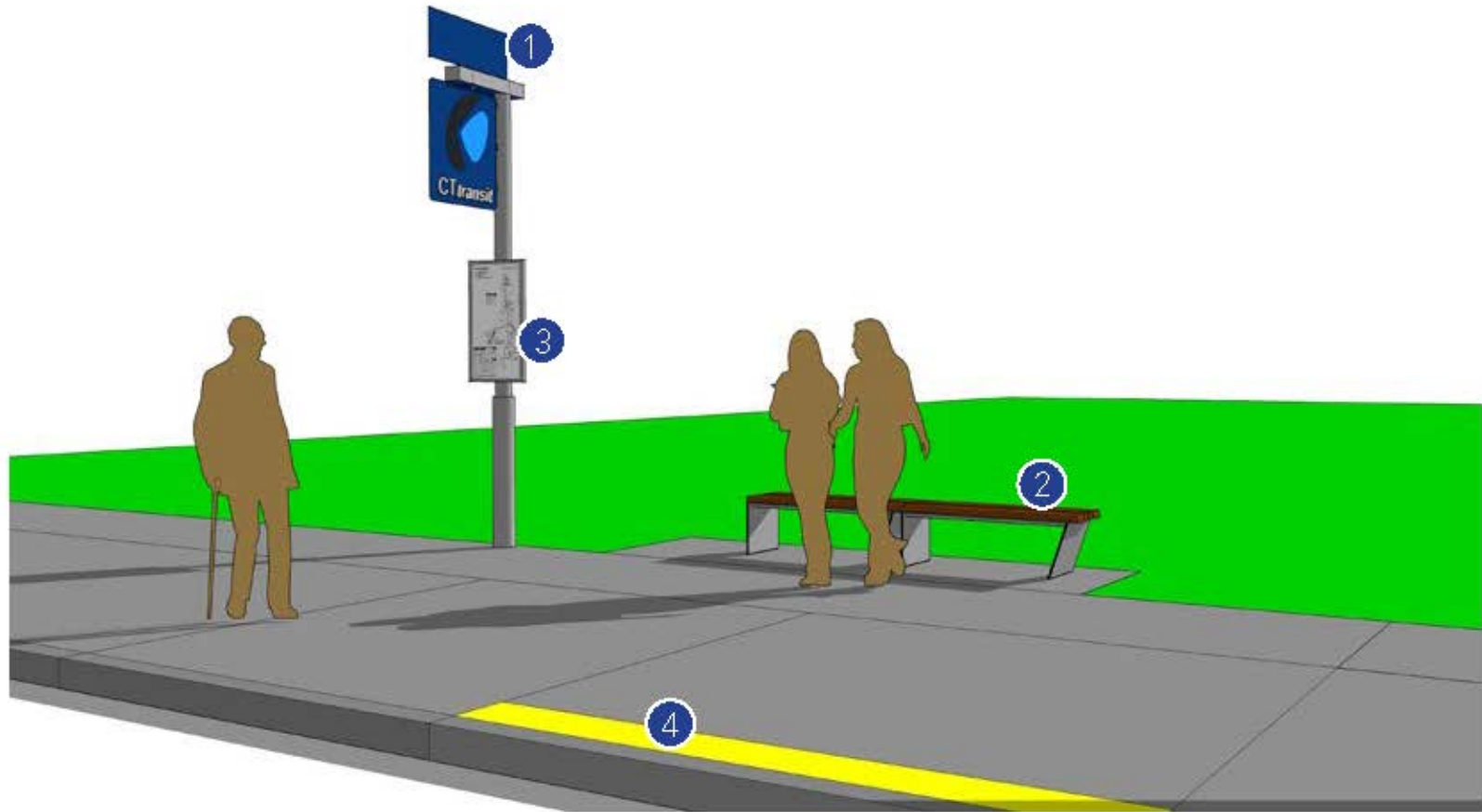


Regular Stop

(Franklin Ave & Chester St)



Basic Stop (Typical)



1 Bus Stop Sign

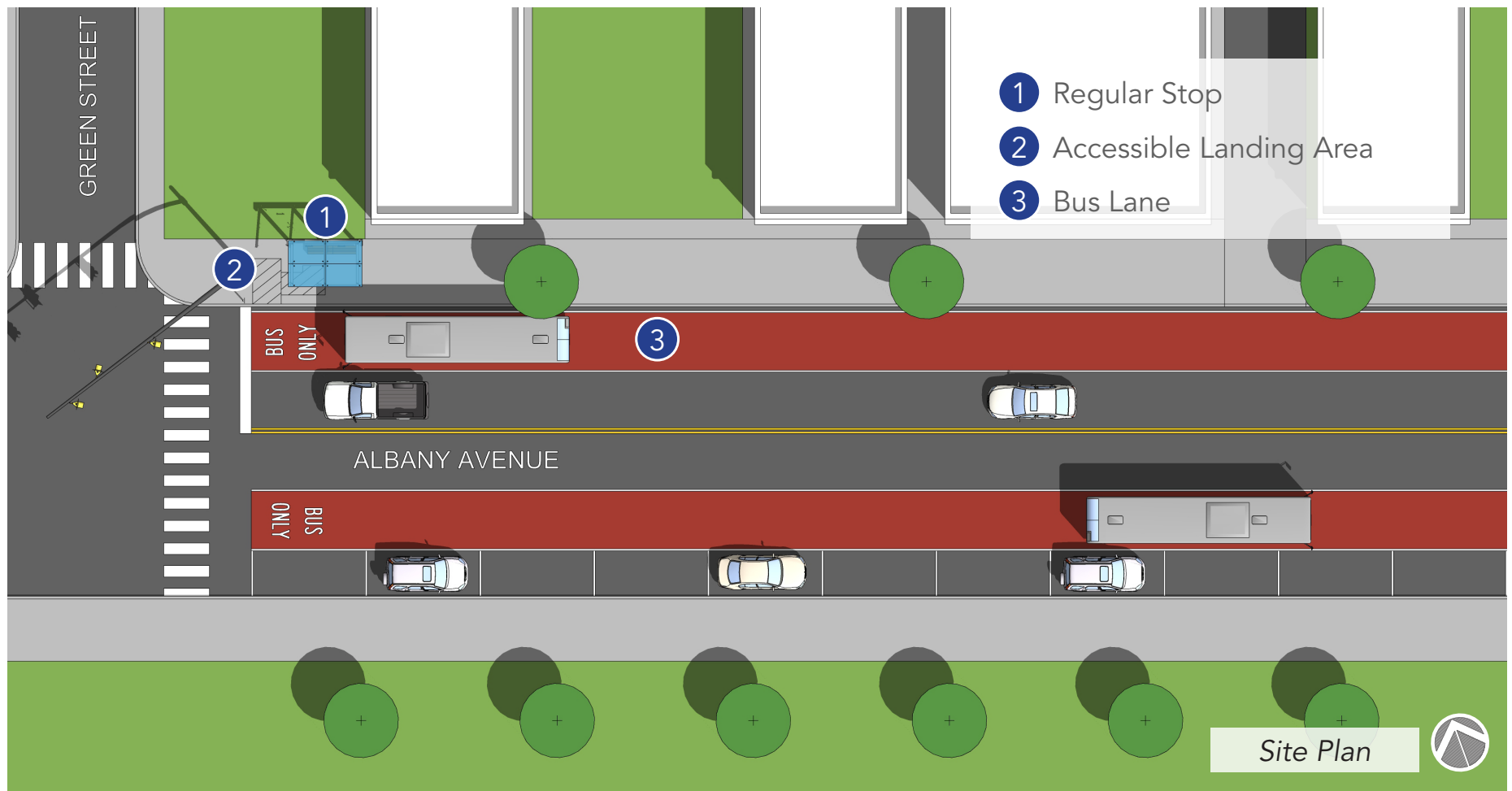
2 Bench

3 Route Maps

4 Detectable Warning Plates

Curbside Bus Lane Taking Place Of On-Street Parking

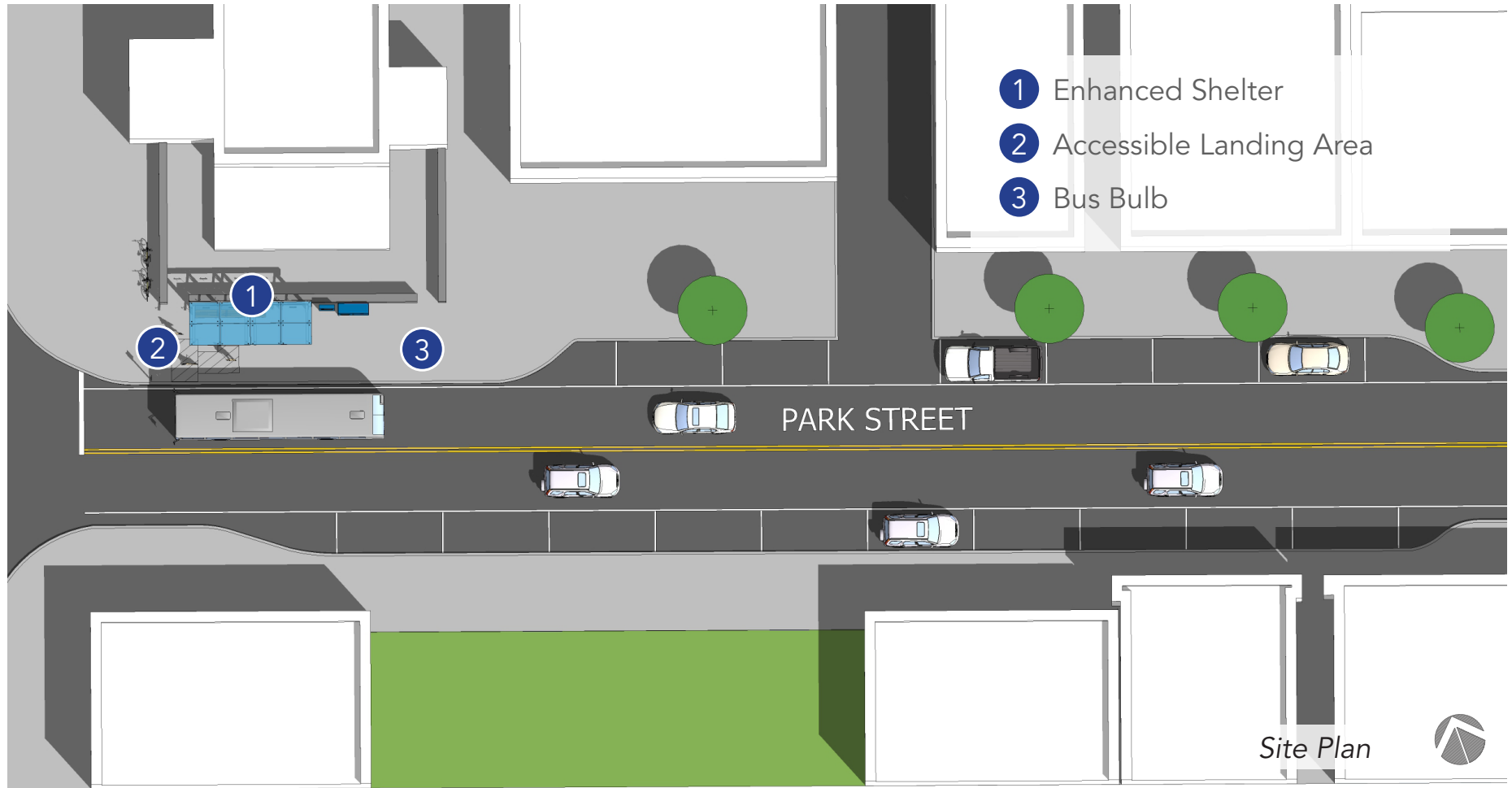
(Albany Ave Northbound Approach to Green St)



- Bus stops in bus lane
- Coordinate bus stop locations with driveways
- Coordinate parking locations with businesses

Bus Bulb (Full Width, Near Side of Crosswalk)

(Park St Northbound Approach to Putnum St)

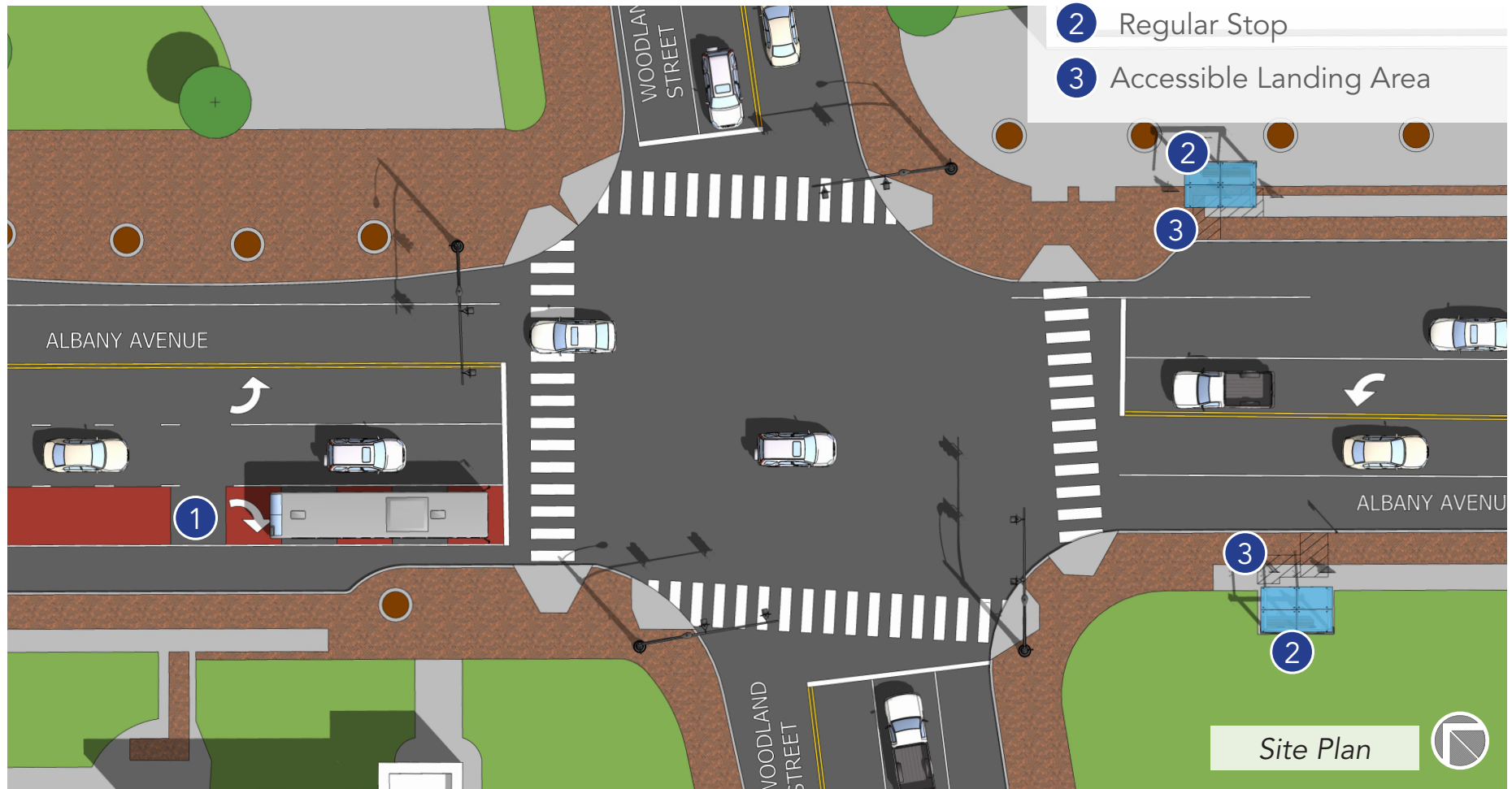


- Improve travel time for buses by stopping in-lane and not having to re-enter traffic
- Widen sidewalk to provide more space for passengers at high ridership stops, and to install amenities
- Impacts vehicular flow operations

Queue Jump

(Albany Ave Approach to Woodlawn St)

- 1 Queue Jump
- 2 Regular Stop
- 3 Accessible Landing Area

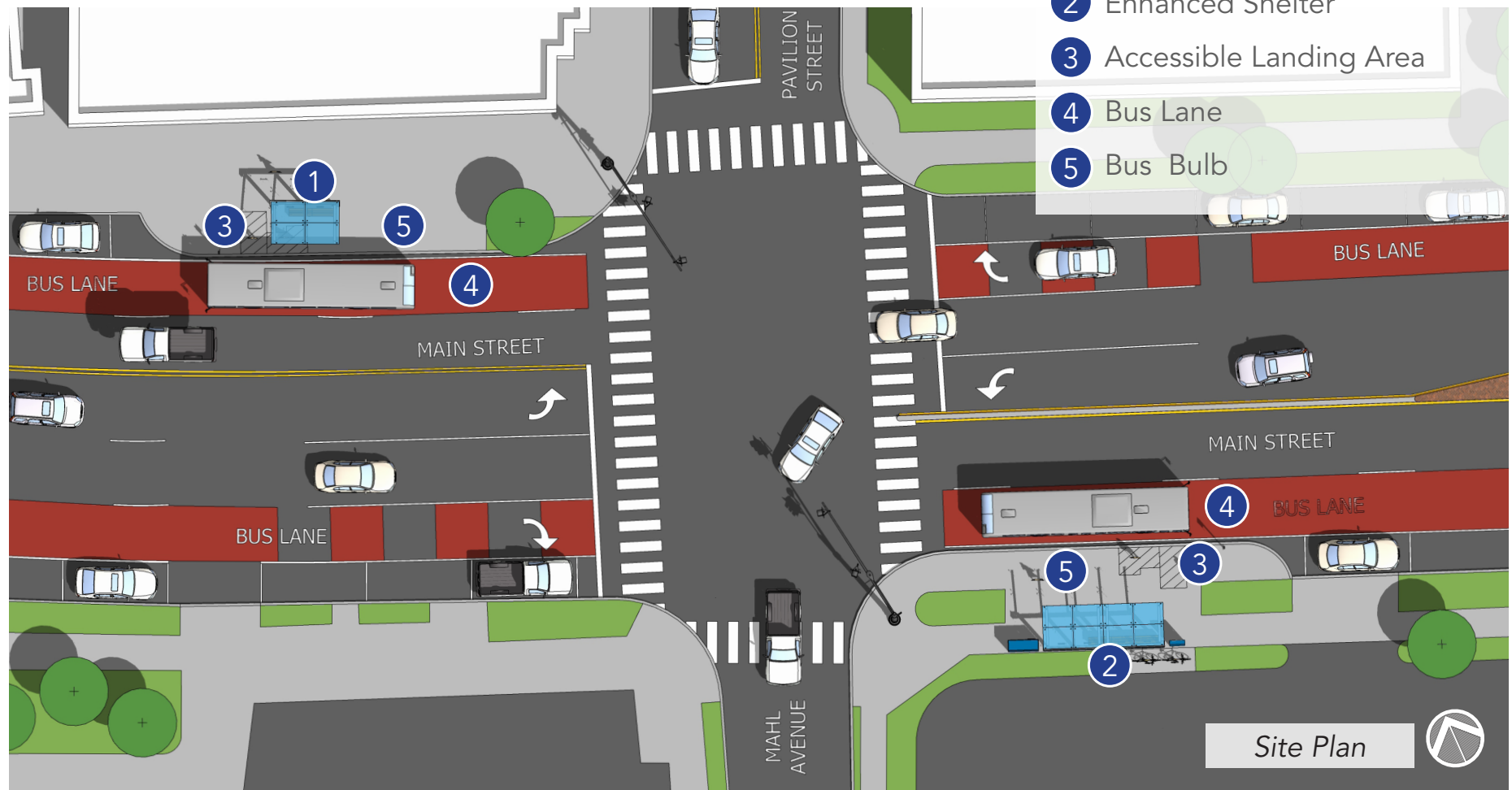


- Bus queues can be combined with right turns

Dedicated Offset Bus Lane with Bus Bulb

(Main Street Approach to Mahl Street)

- 1 Regular Stop
- 2 Enhanced Shelter
- 3 Accessible Landing Area
- 4 Bus Lane
- 5 Bus Bulb



- Bus queues can be combined with right turns
- Widen sidewalk to provide more space for passengers at high ridership stops, and to install amenities

Appendix G
Public Comments and Feedback on
Draft Recommendations Report



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- 1. Feedback on Draft Recommendations.....1
- 2. Comments Received3
- 3. Endorsements of the Plan6



1. Feedback on Draft Recommendations Report

The Metro Hartford RapidRoutes study released a draft Recommendations Report for review and public comment on May 13, 2022, with the public comment period open from May 13 to July 16. Comments could be submitted through the study website using a feedback form and via email sent to the study email address. Four people provided comments. Those comments are included in the following section of this appendix.

The study team also held a final meeting with the Technical Advisory

Committee (TAC) on May 19, 2022, to present the draft Recommendations Report and receive comments. This meeting was open to the public. TAC representatives shared feedback on the subject of bus stop maintenance and suggested the addition of Adopt-a-Stop programs as another strategy for funding ongoing bus stop maintenance. This was added to the report's discussion of maintenance and funding strategies in Chapter 5.

The study team made two presentations to the City of Hartford Planning & Zoning Commission, on June 28 and July 26, 2022.

Following the first presentation, members reviewed the draft report and submitted comments and questions to the study team.

Comments were made on the following items:

- Concerns about bus stop consolidation and stop spacing
- Funding and resource constraints for corridor investments and associated maintenance

As a result, the study team provided additional language in the following sections to address these concerns:

- Chapter 3 Transit Priority Corridor Improvements, Stop Optimization
- Chapter 5 Implementation, Develop Maintenance Agreements

On September 13, 2022, the City of Hartford Court of Common Council passed a resolution of approval in support of the study's recommendations, which is included in this appendix.

The Town of East Hartford issued a letter of formal endorsement of the study's recommendations, which is also included in this appendix, on July 5, 2022.

On September 28, 2022, the CRCOG Policy Board passed a resolution endorsing the study and its recommendations.

2. Comments Received

The following four comments were received through the study website.

Received 6/13/22

Please find below comments on the Metro Hartford RapidRoutes Transit Priority Corridor Study:

- It is very much welcomed that CRGOG is investigating ways to strengthen our public transit system in the Greater Hartford Region. We need to do so for environmental, health, and equitable reasons. Reducing Vehicle Miles Travelled should be a priority of every level of government, as highlighted by Executive Order 22-3 and the best way to do it is by increasing public transit ridership.
- The six “fundamental” recommendations are coherent and logical:
 - Of course, we need frequent service in order to be reliable and to move as many people as possible
 - Yes, quality stops must be created, that’s just basic decency for a transit operator towards its customers
 - Transit Signals: yes, this type of tweaks can be helpful in fluidifying the traffic
 - Bus lanes: of course, bus should have the priority on any other modes of transportation
 - Stop optimization: a bit of a gimmick
 - Level boarding: isn’t that just being ADA compliant see CFR Title 36, Chapter XI, Part 1192, T404.2?
- On top of these recommendations, here are a few thoughts:
 - Bus lanes must be protected and enforced by cameras (like in NY), otherwise they will have no value. It is mystifying that one of the consultants on this project stressed that protected bus lanes were not even being explored.
 - Bus lanes must be shared with scooters, bicycles, and emergency vehicles
 - Allowing boarding/exit from all doors of a bus allows faster movement of passengers entering and exiting and, hence, shorter period of time at stops. This seems much more important than focusing on bus stop locations.
 - Making those corridor routes fare-free: looking at the delta between the loss of ticket revenue with the proposed cost associated with the implementation of this set of recommendations. We need to get more people take the bus and fewer people to take their car to whenever they go in and out of Hartford. The current experiment of fare-free is massively successful: higher ridership and better service as stops are shorter.
 - Every single stop should, at the very least, have live time for
 - Specifically on Park Street: I’m surprised that getting the street as a one-way for regular traffic, and bus only the other way, is not being explored. Park Street buses are notoriously slow and other ways must be explored.

Received 7/12/22

I suggest supplementing or replacing the Franklin Av corridor with these corridors:

- Wethersfield Av - Silas Deane Highway
- Maple Av - Berlin Turnpike
- New Britain Av - Newington Av

My suggestions are based on my interest in bolstering regional transit and also prioritizing corridors with Complete Streets infrastructure and transit-oriented development.

As a Wethersfield resident, I know that Wethersfield Av to Silas Deane Highway corridor would better regionalize transit to Wethersfield and Rocky Hill. The proposed corridor along Franklin Av does not extend outside of Hartford, and would also not be a good fit for TOD if it did extend into Wethersfield.

The Silas Deane Highway is poised to be an economic and TOD engine provided the traffic were slowed with Complete Streets measures, and transit and bike-ped infrastructure were provided. Its current primary use as an alternate to I-91 is not a sustainable economic or community use.

Interest is gaining among town leaders and citizens about transforming Silas Deane Highway to Silas Deane Boulevard. Our town's Economic Development and Improvement Committee is working on this now.

I apologize for these late comments. I had not heard of this study before, but just heard about it today through a Greater Hartford Mobility Study meeting.

I am not a town official, but have been trying to support efforts of any kind that improve the safety of all road users. Transit and Complete Streets for a Silas Deane Boulevard would be a great way to do that and provide a more sustainable local business climate.

Received 7/15/22

I read with great interest the CRCOG Metro Hartford Rapid Routes Transportation Priority Study. Thank you for the opportunity to comment on this study. My major comment is to urge that the Silas Deane Highway (SDH) be added as a transportation priority within this study. SDH receives 18,000 to 25,000 vehicles per day and meets the criteria as an artery extending from Hartford that functions as a "Neighborhoods and Suburban Mixed Use" as well as a "Mixed Neighborhoods" corridor. Improved bus transportation would substantially reduce car dependency significantly and improve economic development and safety along the SDH. The SDH should link with Wolcott Hill Road at the Jordan Lane intersection.

The SDH has never been redesigned from its original purpose as a car dependent transportation artery. It needs a redesign to function as a multimodal, transportation oriented development corridor. This will integrate SDH into the greater Hartford transportation system, improve economic development along the highway, and improve safety for pedestrians and bicyclists. As SDH is a state road, CT DOT needs to prioritize SDH for a redesign to accommodate multimodal transport and transportation oriented development. As such, the SDH should receive infrastructure improvements, such as those outlined in your Corridor Concept document: improved bus shelter, lighting, route maps, bike racks, benches, and bus bulbs. Please address the omission of the SDH by including it as part of the CRCOG Metro Hartford Rapid Routes Transportation Priority Study.

Received 7/16/22

Fantastic plan, truly well done! Clearly a well thought through and developed plan that would dramatically increase transit usability and visibility as proposed. Importantly you married capital and operations considerations perfectly, the second is often forgotten. I encourage all six routes to be implemented at once with the \$36m estimated cost being an attainable funding goal between state and federal funds. Build off the success of the free bus fare program and don't let it become stagnant. Worry about improving the bus and not about slowing down cars, they will be okay, I promise.

The only constructive feedback is on wide thoroughfares center/median running bus lanes are far superior and allow for easy priority at intersections. Fast, visible bus service with level boarding in the center of streets such as albany, main, franklin, and burnside would essentially expand the "fast trax" network significantly and increase ridership. This may be slightly more money today but will pay dividends for a generation.

Final comment - fight for 24hr bus lane restrictions, again the cars will deal.

I can't wait to ride all these improved routes!

(P.S. - there might be a math error in your funding estimate, The basic stops are listed at \$80,000 and more expensive than the Signature stops, seems wonky)

3. Endorsements of the Recommendations

- Resolution for Endorsement, Capitol Region Council of Governments (CRCOG) Policy Board, September 28, 2022
- Resolution of Approval, City of Hartford Court of Common Council, September 13, 2022
- Letter of Support, Office of Mayor Michael P. Walsh, Town of East Hartford, July 5, 2022

Capitol Region Council of Governments (CRCOG) Policy Board: Resolution for Endorsement



860.522.2217 | 241 Main Street, Hartford, CT 06106 | crcog.org

**RESOLUTION
FOR ENDORSEMENT OF THE
TRANSIT PRIORITY CORRIDORS STUDY**

WHEREAS, the Capitol Region Council of Governments worked with the Connecticut Department of Transportation (CTDOT) to undertake a Transit Priority Corridors Study, also known as Metro Hartford Rapid Routes, related to improving the speed, reliability, and overall quality of transit along major corridors in the metro Hartford area; and

WHEREAS, a Technical Advisory Committee comprised of representatives of CTDOT, CTrides, CTtransit, Transport Hartford, municipalities, and other regional stakeholders met throughout the study effort to provide input; and

WHEREAS, the public had numerous opportunities to offer input via a survey, a study website, online informational meetings, and in-person outreach at bus stops; and

WHEREAS, the Technical Advisory Committee has reviewed and accepted the recommendations of this study; and

WHEREAS, the City of Hartford and Town of East Hartford have reviewed and accepted the recommendations of this study; and

WHEREAS, the CRCOG Transportation Committee has reviewed the study, has found its recommendations to be reasonable, and has endorsed the effort;

NOW THEREFORE BE IT RESOLVED THAT, the Capitol Region Council of Governments does hereby endorse the Metro Hartford Rapid Routes Transit Priority Corridors Study inclusive of the *Recommendations and Implementation Strategy* and *Executive Summary* dated May 2022. Furthermore, these study documents may be marked Final and dated September 2022, and study recommendations may henceforth be incorporated into CRCOG's planning documents.

CERTIFICATE

I certify the above is a true copy of a resolution adopted by the Policy Board at its meeting held on September 28, 2022.

BY: Jason E. Bowsza DATE: 9/28/22
Jason Bowsza, Secretary

Andover | Avon | Berlin | Bloomfield | Bolton | Canton | Columbia | Coventry | East Granby | East Hartford
East Windsor | Ellington | Enfield | Farmington | Glastonbury | Granby | Hartford | Hebron | Manchester | Mansfield
Marlborough | New Britain | Newington | Plainville | Rocky Hill | Simsbury | South Windsor | Southington | Stafford
Suffield | Somers | Tolland | Vernon | West Hartford | Wethersfield | Willington | Windsor | Windsor Locks



Court of Common Council

7.5

CITY OF HARTFORD
550 MAIN STREET
HARTFORD, CONNECTICUT 06103

Maly D. Rosado, Council President
Thomas J. Clarke II, Majority Leader
Wildaliz Bermúdez, Councilwoman
John Q. Gale, Councilman

Nick Lebrón, Councilman
Joshua Michtom, Councilman
Marilyn E. Rossetti, Councilwoman
James Sánchez, Councilman
Shirley Surgeon, Councilwoman

Noel F. McGregor, Jr, Town and City Clerk

September 13, 2022

This is to certify that at a virtual meeting of the Court of Common Council, September 12, 2022, the following RESOLUTION was passed.

WHEREAS, in 2017, the Capitol Region Council of Governments (CRCOG), in coordination with the Connecticut Department of Transportation and CTtransit, completed a Comprehensive Service Analysis of the CTtransit Hartford Division, including recommendations that infrastructure improvements be made in six major transit corridors, which are used by 68% of all Hartford area bus riders; and

WHEREAS, the Metro Hartford RapidRoutes Transit Priority Corridors Study builds upon the recommendations of the Comprehensive Service Analysis and presents recommendations for implementation, with the goals of improved service, reliability and passenger comfort along the six Transit Priority Corridors; and

WHEREAS, the recommendations of the RapidRoutes Study include schedule adjustments, upgrades to existing bus stops, transit signal priority, dedicated bus lanes, level boarding, and stop optimization, involving the removal of many existing bus stops identified as impediments to overall efficiency of service; and

WHEREAS, staff from the Department of Development Services (Planning Division) and Department of Public Works provided written comments on CRCOG's RapidRoutes Study during the Study's public comment period, for consideration by the City of Hartford Planning & Zoning Commission at its meeting June 28, 2022; and

WHEREAS, the Planning & Zoning Commission reviewed staff comments, and heard a presentation by CRCOG staff and consultants on the RapidRoutes Study, and directed City and CRCOG staff to address questions and concerns which had been raised by City staff and by Planning & Zoning Commissioners before the Commission could endorse the Study; and

City of Hartford, Court of Common Council: Resolution of Approval (page 2)

7.5

WHEREAS, CRCOG staff subsequently provided responses to the aforementioned questions and concerns, in the form of written responses, meetings with City staff, and intended revisions to the RapidRoutes Study, and City staff found those responses to be substantive in addressing the questions and concerns raised, and recommended endorsement of the Study by the Planning and Zoning Commission; and

WHEREAS, the Planning and Zoning Commission voted unanimously to endorse the recommendations of the RapidRoutes Study, with the understanding that no commitment was thereby being made regarding maintenance of CTtransit bus facilities by the City, that in the process of removing bus stops, due consideration would be given to concerns raised specific to the environment or population local to those stops, and that any impacts on riders with mobility challenges will be avoided or mitigated to the extent possible; now, therefore be it

RESOLVED, that The City of Hartford Court of Common Council hereby approves the recommendations of the CRCOG Metro Hartford RapidRoutes Transit Priority Corridors Study.

Attest:


Noel F. McGregor, Jr.
City Clerk

Town of East Hartford, Office of the Mayor: Letter of Support

MICHAEL P. WALSH
MAYOR

TOWN OF EAST HARTFORD

(860) 291-7200

OFFICE OF THE MAYOR

740 Main Street
East Hartford, Connecticut 06108

WWW.EASTHARTFORDCT.GOV

July 5th, 2022

Capital Region Council of Governments
241 main St. #4
Hartford CT. 06106

Dear Capital Region Council of Governments,

Town of East Hartford would like to inform you of our support for the Metro Hartford Rapid Routes Transit Priority Corridor Study involving Burnside Avenue. The Town supports the addition and implementation of bus lanes, transit signals and enhanced bus shelters contingent upon a proper maintenance agreement with the Connecticut Department of Transportation (DOT). Any maintenance agreement must not result in the full burden of bus shelter maintenance falling solely on the participating municipality. We welcome working closely with the DOT and CROCG to develop an agreement that satisfies for all parties involved.

Please advise to next steps in this process and how the Town of East Hartford can be of further support.

Sincerely,

Michael P. Walsh

Michael P. Walsh
Mayor