

# Brockton Area Transit Authority



## Brockton – Taunton Bus Route Feasibility Study

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*Old Colony Planning Council  
70 School St. Brockton MA 02301*

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## Executive Summary

The Brockton Taunton Route Study seeks to understand how a cross-border public transportation service can link the cities of Brockton and Taunton while connecting the Brockton Area Transit Authority (BAT) and Greater Attleboro Taunton Regional Transit Authority (GATRA). This study reviews how other communities along the route, such as the towns of Raynham and Easton, might affect route ridership and operations. The study will review elements that will affect how the proposed bus route may perform. An examination of current land-use patterns, shopping destinations, sites of public and social services, and entertainment venues was undertaken to understand potential bus ridership. The study examines the type of service programming that may be deployed in revenue service, whether or not paratransit service will be needed, and where the stops should be placed. This document also explores three different route terminus options in the BAT service area.

### Potential Route Alignments

#### Option One

This potential route would directly connect both the GATRA Bus Terminal in downtown Taunton to the BAT Intermodal Centre.

Example of Option One key destinations:

- In Brockton:
  - Brockton Veteran Affairs Administration Hospital
  - Brockton City Hall
  - Brockton District and Superior Courts
  - Plymouth County District Attorney
  - MBTA Brockton Commuter Rail Station
  - BAT Intermodal Centre
- In Easton:
  - Easton Industrial Park
  - Downtown Easton
  - Easton Town Hall
  - Stonehill College
- In Raynham:
  - Proposed Raynham South Coast Rail Station
  - Raynham Dog Track/Park-and-Ride Lot
  - Market Basket/Wal-Mart Shopping Center (160 – 240 Broadway, Raynham, MA02767)
- In Taunton:
  - Proposed Taunton South Coast Rail Station
  - Taunton City Hall

- Taunton District Courts
- Morton Hospital

#### Option Two

This potential route alignment would connect the GATRA Bus Terminal in downtown Taunton to the BAT system terminating the line at the Westside Plaza located at 687 Belmont Street in Brockton rather than the BAT Intermodal Centre.

Example of Option Two key destinations:

- In Brockton:
  - Brockton Veteran Affairs Administration Hospital
  - Brockton High School
- In Easton:
  - Easton Industrial Park
  - Downtown Easton
  - Easton Town Hall
  - Stonehill College
- In Raynham:
  - Proposed Raynham South Coast Rail Station
  - Raynham Dog Track/Park-and-Ride Lot
  - Market Basket/Wal-Mart Shopping Center (160 – 240 Broadway)
- In Taunton:
  - Proposed Taunton South Coast Rail Station
  - Taunton City Hall
  - Morton Hospital

#### Option Three

Option Three would have the route terminate at the Easton Industrial Park. At this terminus, passengers seeking to travel into the City of Brockton would need to transfer to BAT's Route 9 Pearl via W Elm & Torrey to complete their journey.

Example of Option Three key destinations:

- In Easton:
  - Easton Industrial Park
  - Downtown Easton
  - Easton Town Hall
  - Stonehill College
- In Raynham:
  - Proposed Raynham South Coast Rail Station
  - Raynham Dog Track/Park-and-Ride Lot
  - Market Basket/Wal-Mart Shopping Center (160 – 240 Broadway)

- In Taunton:
  - Proposed Taunton South Coast Rail Station
  - Taunton City Hall
  - Taunton District Courts
  - Morton Hospital

## Major Employers

Many large employers can be found along the proposed Brockton Taunton route, with the majority located in the City of Brockton and the City of Taunton. The concentration of the location of these major employers does differ when we look at both cities. In the City of Brockton, there is a large concentration of major employers located just off Route 24's exit 31. Most of these major employers lie along West Chestnut Street between Pearl Street and Linwood Street, with some companies employing at least 1,000 people. Beyond the exit 31, there are major employers dotted along Belmont Street and clustered in Downtown Brockton near the BAT Intermodal Centre.

In the City of the Taunton, many major employers are in its historic downtown, with a few employers like Morton Hospital employing over a thousand people. The high concentration of major employers will provide the Brockton Taunton route significant opportunities for collaboration.

## Brockton Taunton Route as Micro Transit or Mobility on Demand

There is potential to operate the proposed Brockton Taunton route as Micro Transit or as a mobility on demand service. Servicing the proposed Brockton Taunton route as either Micro Transit or as a mobility on demand service could provide public transportation users a lot of flexibility in how and when they will travel between the City of Brockton and the City of Taunton.

Three years of past TNC ridership data has showed there has been tremendous growth in the utilization of mobility on demand services. In the City of Brockton alone, there has been a 126% increase in the use of mobility on demand transportation service between 2017 and 2019. Utilizing a Micro Transit or mobility on demand model in service delivery of the proposed Brockton Taunton route could be an option that allows the service to begin operating sooner and at a lower cost than could be provided utilizing a large public transit bus.

## Potential Ridership

Using U.S. Census Journey to Work Data and demographic information provided by American Community Survey 5-year Estimate datasets, potential route ridership was modeled for the proposed Brockton Taunton route. It is projected that there will be around 288 daily boardings (1,385 weekly boarding and 6,000 monthly boardings). Annual ridership would be 72,000.

### Cost of Service

It is estimated that the cost to operate the route would be \$293,760 per year. The cost of operation could differ depending on variables such as labor, parts, and fuel cost at the time of route launch.

### Fare Revenue

Estimated farebox revenue would be \$126,000 per year.

### Other Discretionary Grants

- *Access and Mobility Partnership Grants*
- *Enhanced Mobility of Seniors & Individuals with Disabilities - Section 5310*
- *Formula Grants for Rural Areas – 5311*

### Recommendations

1. The Old Colony Planning Council (OCPC) recommends launching the Brockton Taunton Route as a pilot service in order to gauge real demand.
2. Operate the route Monday through Friday. Micro Transit would offer a low cost option to test service due to most major employers being closed on weekends.
3. Ultimately route alignment Option One should be the preferred choice because the cities of Brockton and Taunton are the major ridership generating communities.
4. BAT would not need to provide complementary ADA paratransit service because the route would operate like a commuter bus rather than urban fixed route and public transit authorities do not need to provide ADA service for commuter bus service. BAT should engage in talks with GATRA to see if it could offer paratransit service as a courtesy.
5. BAT should engage GATRA to see if they may partner in providing Brockton Taunton cross-border bus service.

## Introduction

For many years, there has been interest in linking the city of Brockton and the city of Taunton with a bus route via Route 138 in order to service the abundance of businesses and social services, and other offers along the route as well as to connect the Brockton Area Transit Authority (BAT) to the Greater Attleboro Taunton Regional Transit Authority (GATRA). The discussion to connect both cities with a public transit route has not only been a discussion among planners and public transportation officials, but it has been cited in reports such as the BAT Comprehensive Regional Transportation Plan and surveys fielded over the years to members of the public in the BAT service area.

This study seeks to understand how public transportation service may connect the Cities of Brockton and Taunton while also providing a cross-border connection between regional transit authorities. This study reviews other communities along the route such as the towns of Raynham and Easton, to understand how they may effect route ridership and operations. The study also reviews elements that will affect how the proposed bus route may perform. An examination is made of current land-use patterns, locations of major employers, shopping destinations, sites of public and social services, and entertainment venues will be identified to understand potential bus ridership. The document will explore the type of service programming that may be deployed in revenue service, whether or not paratransit service will be needed, and where stops should be placed. The report will also explore three different route terminus options in the BAT service area.

## Vision and Goals from Connecting Brockton and Taunton

### Vision Statement

The Brockton Taunton Study seeks to understand how the establishment of a bus route between the cities of Brockton and Taunton can facilitate greater interurban travel between these communities in order promote greater economic opportunities, provide individuals the ability to access public, and social services with greater ease, and provide an option to move about southeastern Massachusetts more economically than currently available.

### Vision of Route

The potential route alignment proposes bus travel between the city of Brockton and the City Taunton via Route 123 in Brockton/Easton and then along Route 138 into Taunton traveling through the communities of Easton and Raynham on its way to its two termini.

### Goals of Route

The proposed Brockton-Taunton route seeks to give public transit passengers seeking travel between the city of Brockton and the city of Taunton an alternative way of traveling between both cities and points of interest along the way. The establishment of this route would offer those looking for a public transportation alternative to driving between these two destinations. This proposed route would also provide transportation to individuals that may not have access or may have limited access to a private automobile. The route would also provide service to those who cannot drive due to a condition, because of age, or any physical or mental restriction..

In addition to connecting the Cities of Brockton and Taunton along with those communities in between, this route would provide the ability for individuals to travel to points south of Taunton and points north of Brockton. This route would put communities in the South Coast region and places like the city of Boston within reach of those who cannot travel to these destinations currently due to a lack of transportation options or cost. The Brockton Taunton route would allow individuals that may not have an automobile or cannot drive to seek jobs, visit places of entertainment, see friends and family, or utilize community or Commonwealth services. As a result, the Brockton Taunton route would be a catalyst for greater economic activity and social interaction.

## Potential Route Alignments

The Brockton Taunton route would operate between the city of Brockton or be adjacent to the Cities of Brockton and Taunton. There are three potential route alignments being proposed that change the terminus on the northern portion of the route near or in the city of Brockton. The three route options are discussed below.

### Option One

Option one would have the route terminate at the BAT Intermodal Centre in downtown Brockton. This potential route would directly connect both the GATRA Bus Terminal in downtown Taunton to the BAT Intermodal Centre, providing passengers with a one-seat ride between the city of Brockton and the city of Taunton. This option would reduce the need for additional transfers to make this trip. This alignment would provide direct service to many health and social services, the court system, and the city of Brockton municipal services. Additionally, this particular alignment would reduce the number of transfers needed to just one for those seeking transportation into Boston and those wanting access to Bristol Community College and Massasoit Community College along with the hospitals and medical facilities residing in both the city of Taunton and the city of Brockton.

Example of Option One key destinations:

- In Brockton:
  - Brockton Veteran Affairs Administration Hospital
  - Brockton City Hall
  - Brockton District & Superior Courts
  - Plymouth County District Attorney
  - MBTA Brockton Commuter Rail Station
  - BAT Intermodal Centre

- In Easton:
  - Easton Industrial Park
  - Downtown Easton
  - Easton Town Hall
  - Stonehill College
- In Raynham:
  - Proposed Raynham South Coast Rail Station
  - Raynham Dog Track/Park-and-Ride Lot
  - Market Basket/Wal-Mart Shopping Center
- In Taunton:
  - Proposed Taunton South Coast Rail Station
  - Taunton City Hall
  - Taunton District Courts
  - Morton Hospital

### Option Two

Option Two would still have the route end in the city of Brockton, but this terminus would be at the Shaws West Side Plaza, located across the street from Brockton High School at 687 Belmont Street. At this location, passengers needing to travel deeper into the city would have to transfer to another bus to complete their trip. At this terminus, passengers would have two BAT bus routes they could use to continue to the BAT Intermodal Centre. These two route options would be Route 3 VA Hospital via Belmont and the Route 9 Pearl via W Elm and Torrey.

Example of Option Two key destinations:

- In Brockton:
  - Brockton Veteran Affairs Administration Hospital
  - Brockton High School
- In Easton:
  - Easton Industrial Park
  - Downtown Easton
  - Easton Town Hall
  - Stonehill College
- In Raynham:
  - Proposed Raynham South Coast Rail Station
  - Raynham Dog Track/Park-and-Ride Lot
  - Market Basket/Wal-Mart Shopping Center
- In Taunton:
  - Proposed Taunton South Coast Rail Station
  - Taunton City Hall
  - Taunton District Courts

- Morton Hospital

### Option Three

Option Three would have the route terminate at the Easton industrial park in the Town of Easton. At this terminus location, passengers seeking to travel into the city of Brockton or points north would need to transfer to BAT's Route 9 Pearl via W Elm & Torrey to complete their journey.

Example of Option Three key destinations:

- In Easton:
  - Easton Industrial Park
  - Downtown Easton
  - Easton Town Hall
  - Stonehill College
- In Raynham:
  - Proposed Raynham South Coast Rail Station
  - Raynham Dog Track/Park-and-Ride Lot
  - Market Basket/Wal-Mart Shopping Center
- In Taunton:
  - Proposed Taunton South Coast Rail Station
  - Taunton City Hall
  - Taunton District Courts
  - Morton Hospital

### Provision of American Disability Act Service

According to requirements laid out in the American Disability Act (ADA) on public transportation service, public transportation providers must provide complementary paratransit service that is comparable to service provided by a regular fixed-route bus line or system if a person is not able to use the regular bus service. This means that the service area, the span of operating hours, and destinations one would be able to reach must resemble a public transportation provider's fixed route system or a bus route in each area. The boundaries for the provision of complementary service must be provided to areas along the corridor and up to three-fourths of a mile in width from the bus routes corridor.

However, not all bus service requires there to be complementary paratransit service. If the bus being placed in service is being operated as a commuter bus route, then it is exempt from the requirements to provide complementary paratransit service.



Currently, paratransit service is already being provided by BAT in the city of Brockton and Easton. In the Town of Raynham and the city of Taunton, GATRA provides paratransit service currently. Additionally, service for the transportation of those over 65 years of age is being provided by local Councils on Aging.

Due to the limited-stop nature of the proposed Brockton Taunton route, and its primary goal of transporting individuals between the city of Brockton and the city of Taunton, this service would be categorized as commuter bus service meaning there would be no need to provide complementary paratransit service. However, BAT should work with GATRA to establish an inter-agency agreement to provide complementary paratransit service to the Brockton Taunton route corridor as a courtesy to those seeking paratransit service in the city of Taunton.

## Current Conditions

### Current Land-Use Conditions

The land-uses along the potential route vary depending on location and the proposed terminus. From Brockton to Taunton, the route transitions from urban to rural and back to urban. Route Option One would have the bus ending at the BAT Intermodal Centre. Route Option One would operate along a corridor of medium to high-density housing with retail on the ground floor of buildings and including commercial office space. This section of the proposed route is a pedestrian focused environment due to historic land-use patterns established in Brockton before the automobile became the primary mode of transportation.

Route Option Two terminates at the Shaws West Side Plaza, across from the Brockton High School, which is an auto-oriented land use. At this terminus, strip mall-style shops and low density, mainly single-family housing hug the corridor and make up the dominant commercial and housing structures. As the route exits the city of Brockton heading towards Taunton and enters the Town of Easton, the intensity of land-uses eases and becomes more suburban strip mall in nature with few residential dwellings along the route.

If the route were to terminate at the Easton Industrial Park, as in Option Three, the land-uses found at this terminus would be small scale industrial with commercial office space dotted throughout the industrial park and would be across the street from Stonehill College. A short distance from this terminus, the land-use is auto-oriented strip mall development. The land-use along the route segment in the Town of Raynham is auto-dependent suburban, which transitions to rural with pockets of business and shopping scattered along Route 138. Single-family housing units also dot this segment and either abut the corridor or are located just off the corridor. As the route enters the city of Taunton, the land-use turns back into an urban landscape, with retail, restaurants, or office space located on the bottom floor of buildings and housing or office space above. It is here in the historic city center of Taunton that the GATRA bus terminal is located.

## Current Public Transportation Service

The availability of public transportation service currently operating along the proposed corridor, or adjacent to it, varies depending upon the proposed route. Within the city of Brockton, there is well established public transit service along the proposed corridor, and areas adjacent to it, provided by BAT. BAT service encompasses 15 fixed bus routes and dial a ride service called Dial-A-BAT. In addition to the BAT service, there are three MBTA Commuter Rail Stations in the city of Brockton with the Brockton MBTA Commuter Rail Station located across the street from the BAT Intermodal Centre. BAT also operates service to the MBTA's Ashmont Red Line Station in the city of Boston, and the Quincy Center and Braintree Redline Station are both serviced by the MBTA's 230 bus which services the BAT Service area. In the Town of Easton, there is very limited public transportation service with only one fixed-route bus operating in town along Route 123 between the Brockton city line and the Easton Industrial Park. Service in Easton is offered by the town's Council on Aging (COA) and along BAT's ADA Corridor. Besides COA service and one fixed route bus line operating in the Town of Easton (BAT Route 9), the nearest option would be MBTA Commuter Rail service in the City of Brockton, town of Mansfield and the town of Stoughton. This limited availability of public transportation service in the town of Easton make automobile ownership a necessity in the community.

In the town of Raynham there is no fixed route public transit service, but GATRA does offer dial-a-ride service in town. There is a private commuter bus carrier, Bloom, that operates along the proposed corridor providing commuter service into the city of Boston with stops at the Raynham Dog Track. There are some other private transportation providers like A&A Metro offering transportation services for a fee in the town.

In the city of Taunton, fixed-route bus service is operated by GATRA along with their Dial-A-Ride service. Bloom bus has two stops located in Taunton with one of these stops being a terminus at the GATRA bus terminal and the other stop located at Route 138 and Oxford Street.

## Proposed Service Area Demographics

The proposed Brockton Taunton route would operate through four different communities. These four communities would be the city of Brockton, town of Easton, town of Raynham, and the city of Taunton. These four communities vary in racial demographics, income, automobile ownership, and population. Due to the demographic variations of each community, ridership and user experience of the proposed bus route would be different depending on the municipality being reviewed.

### City of Brockton

The city of Brockton would be the largest community along the proposed route based on population, with 95,426 individuals calling the city home. Out of those 95,426 residents, 74.7%

of Brocktonians are 18 years and older and only 6.8% are under the age of five. The percentage of Brockton residents 65 years and older is 12.8% and 13.6% of the city's population identifies as having a disability. The median age for a Brockton resident is 36 years of age.<sup>1</sup>

Brockton has a median income of around \$55,140 per year. The city is very diverse, with individuals identifying as African American making up 42.3% of the population followed by those who identify as White making up 39.8% of the city's residents. After these two large groups, the rest of the city is made up of many different ethnic groups or those who identify as two or more races.<sup>1</sup>

Fifty-five percent of Brockton residents speak only English at home. However, due to Brockton's vast diversity, it is a multilingual community with a large percentage of household speaking Portuguese, Haitian Creole, and Spanish.<sup>2</sup> These other language speakers constitute 44.8% of Brockton households.

Most Brockton residents drive to work, 74.7% driving alone. Many Brockton households, 37.9% of them, with workers 16 years and older have access to at least two vehicles at home. 29.8% of Brockton households with workers 16 years or older come from households that have three or more vehicles available to them. 27% of Brocktonians reside in households with at least one vehicle available. Only 5.3% or approximately 2,392 individuals that are at least 16 years and older come from no-car households. While the majority of Brocktonians drive to work, 7% of them also take public transportation to work. After driving and taking public transportation, 2.4% walked to work, another 2.3% took a motorcycle, cab, or other means to work, while 0.2% cycled to their place of employment. Two percent of Brockton residents worked from home.<sup>3</sup>

### Town of Easton

The Town of Easton is a small suburban community of 24,306 individuals. There are 78.2% of Easton residents 18 years and older, and only 4% are under 5 years old. Those who are 65 and older make up 14.4% of the town's population. The median age of an Eastonian is 40.5 years of age and 8% of Easton residents are identified as having a disability. The Town of Easton has a median income of \$109,719 per year. Easton is a predominantly White community regarding ethnic makeup, making up 90.7% of the community's population. The next large ethnic group would be Eastonians that identify as African American constituting 4.4% of the town's population followed by those that identify as Asian Alone making up 2.2% of town residents. The Town of Easton predominantly speaks English, 89.7% in total. The next most spoken language in town is Spanish with 1.9% of Easton residents speaking it at home. There are 6.4% of Eastonians speaking one of the many European languages not significant in population size to single out in the Census data and 0.9% speak an Asian or Pacific Islander language at home. There are 1.1% speak some other language at home.<sup>4</sup>

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<sup>1</sup> <https://data.census.gov/cedsci/profile?q=1600000US2509000&q=Brockton%20city,%20Massachusetts>

<sup>2</sup> BAT LIMITED ENGLISH PROFICIENCY (LEP) PLAN/ LANGUAGE ASSISTANCE PLAN (LAP) Providing Meaningful Language Assistance 2020

<sup>3</sup> [https://data.census.gov/cedsci/table?q=Brockton%20city,%20Massachusetts&g=1600000US2509000&tid=ACSST1Y2018.S0802&layer=VT\\_2018\\_160\\_00\\_PY\\_D1&vintage=2018](https://data.census.gov/cedsci/table?q=Brockton%20city,%20Massachusetts&g=1600000US2509000&tid=ACSST1Y2018.S0802&layer=VT_2018_160_00_PY_D1&vintage=2018)

<sup>4</sup> <https://data.census.gov/cedsci/profile?q=0600000US2500520100&q=Easton%20town,%20Bristol%20County,%20Massachusetts>

Due to the high medium income of Easton residents, the majority of individuals of working age, 16 years and older, have access to vehicles at home, and 39.3% of households have three or more vehicles at home. Those households that have at least two vehicles at home make up 48.3% followed by 11.2% of households having access to at least one. Only 1.2% of households in Easton have no access to a vehicle. Due to the high median income and the vast availability of vehicles to Easton households, it should not be surprising the 84.9% of working individuals travel by car, truck, or van. Out of all working adults 16 years or older, 79.6% drive to work alone. Besides driving to work, the next means of transportation to work was by public transportation, which made up 5.1% of those 16 years or older. There are 3.7% of Eastonians that walk to work followed by 0.1% that cycled to their place of employment. Those who took a motorcycle, taxi or some other means to work were 0.9% of the population and 5.4% of Easton residents worked from home.<sup>5</sup>

#### Town of Raynham

The Town of Raynham is a community made up of 14,010 individuals and has a median household income of \$99,554 per year. Most town residents, 77.9%, are 18 years and older and those under five years of age make up 5.5% of the population. Raynham residents 65 years or older make up 17.8% of the population. The median age of a person living in Raynham is 42.2 years old. 92.4% of Raynham residents identify as ethnically White. The next large ethnic groups are those who identify as Asian alone making up 3.2% of Raynham resident followed by 2.6% that identify as being of two or more races. 10.8% of Raynham residents identify as having a disability.

Many Raynham residents, 91.4%, speak only English at home. After English, the next most spoken language at home is Spanish at 1.4%. There are 4.5% of Raynham residents that speak one of the many European languages not significant in population size to single out in the Census data and 2.1% spoke an Asian or Pacific Islander language.<sup>6</sup>

Many Raynham residents 16 years or older, 90.4% of them, drove or were a passenger in a car, truck, or van when going to work. Those who were 16 years or older that drove to work alone made up 86.7% of town residents. Due to this high degree of travel by automobile, Raynham has a high degree of car ownership per household. There are 42.3% of Raynham residents 16 years or older that live in households that have access to three or more vehicles. Households where two vehicles are available make up 48.2% of vehicle owning households and are the majority. One vehicle owning household make up 8.8% of vehicle owning households and only 0.7% of households have no access to a vehicle. Although most Raynham residents drive to work, about 3.7% of individuals take public transportation to work. Only 1.3% of Raynham residents walked to work and 0.6% of workers took a taxi, motorcycle, other means of travel to their places of employment. Four percent of Raynham residents work from home.<sup>7</sup>

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<sup>5</sup>[https://data.census.gov/cedsci/table?q=Easton%20town,%20Bristol%20County,%20Massachusetts&g=0600000US2500520100&tid=ACST5Y2018.S0801&layer=VT\\_2018\\_060\\_00\\_PY\\_D1&vintage=2018](https://data.census.gov/cedsci/table?q=Easton%20town,%20Bristol%20County,%20Massachusetts&g=0600000US2500520100&tid=ACST5Y2018.S0801&layer=VT_2018_060_00_PY_D1&vintage=2018)

<sup>6</sup><https://data.census.gov/cedsci/profile?q=Raynham%20town,%20Bristol%20County,%20Massachusetts&g=0600000US2500556060>

<sup>7</sup>[https://data.census.gov/cedsci/table?q=Raynham%20town,%20Bristol%20County,%20Massachusetts&g=0600000US2500556060&tid=ACST5Y2018.S0801&layer=VT\\_2018\\_060\\_00\\_PY\\_D1&vintage=2018](https://data.census.gov/cedsci/table?q=Raynham%20town,%20Bristol%20County,%20Massachusetts&g=0600000US2500556060&tid=ACST5Y2018.S0801&layer=VT_2018_060_00_PY_D1&vintage=2018)

## City of Taunton

The city of Taunton would be the second-largest community along the proposed route and its potential terminus. The city of Taunton has a population of approximately 56,963 individuals. Out of those 56,963 city residents, 77.7% are 18 years and older and 6.1% are under five. Taunton residents that are 65 years or older make up 15.2% of the town's population. Taunton has a median income of \$62,185 per year. The city of Taunton is primarily White in ethnic makeup, with 82.2% of community residents identifying as such. The next largest ethnic group to call Taunton home would be those who identify as being African American making up 8.6% of city residents. Besides those who identify as White or African American, 4.2% of Taunton residents are some other race alone or constitute 3.5% of those residents that are two or more races. Taunton residents identify as having a disability make up 16.7% of the town's population.

Taunton residents mainly speak English only at home, making up 79.4% of the population. Besides English, 4.3% of city residents speak Spanish at home followed by 15% that speak one of the many European languages not significant in population size to single out in the Census data and 0.8% speak an Asian or Pacific Islander language. Tauntonians speak some other language at home besides those listed above constitute 0.5% of the town's population.<sup>8</sup>

Many Taunton residents 16 and older have access to a vehicle at home. According to the U.S. Census American Community Survey data, 93.8% of Taunton residents travel by car, truck, or van to work. Out of that 93.8 %, 84.9% of those who drive to work drive alone. Taunton residents living in households that have access to three or more vehicles are 37% of the town's households. Forty percent of Taunton households have at least two cars at home and 19.5% had one car they could use. Only 3.3% of Taunton residents reported having no access to a vehicle at home. Although most Taunton residents mainly drive to work, there are some individuals who travel to work by other means. Two percent of city residents take public transportation and 1.4% walked to work. Besides walking and taking transit, 0.2% cycled to work and another 0.9% took a taxi, motorcycle, or some other mode of transportation to their place of employment. Taunton citizens working from home 1.7% of the workforce.<sup>9</sup>

## Major Trip Generators

### Major Employers

Many large employers found along the proposed Brockton Taunton route are in the City of Brockton and the city of Taunton, with a concentration of major employers located in the Town of Easton at the Easton Industrial Park. The focus of major employers in these two locations should come as no surprise, given Brockton's and Taunton's population sizes. The concentration of these major employers does differ geographically when we look at both cities. In the city of

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<sup>8</sup> <https://data.census.gov/cedsci/profile?q=Taunton%20city,%20Massachusetts&g=1600000US2569170>

<sup>9</sup> [https://data.census.gov/cedsci/table?q=Taunton%20city,%20Massachusetts&g=1600000US2569170&tid=ACSST5Y2018.S0801&layer=VT\\_2018\\_160\\_00\\_PY\\_D1&vintage=2018](https://data.census.gov/cedsci/table?q=Taunton%20city,%20Massachusetts&g=1600000US2569170&tid=ACSST5Y2018.S0801&layer=VT_2018_160_00_PY_D1&vintage=2018)

Brockton, there is a large concentration of major employers located just off Route 24's exit 31. Most of these major employers located near exit 31 lie primarily along West Chestnut Street between Pearl Street and Linwood Street. Beyond the exit 31 area of Brockton and along the proposed Brockton Taunton route, there are major employers dotted along Belmont Street and clustered in Downtown Brockton near the BAT Intermodal Centre.

In the city of the Taunton, many major employers are in its historic downtown, with a few employers like Morton Hospital employing over a thousand people. This high concentration of centrally located major employers will provide the Brockton Taunton route a great advantage. These employers will be served by the bus route providing significant ridership potential.

### Easton Industrial Park

The Easton Industrial Park is a 200-acre business park that is industrially zoned and contains 1.2 million square feet of building space and 52,550 square feet of residential usage. The industrial park is just over 2,000 feet east of the Route 123 and Route 138 intersection with entrances to the park on Belmont Street (Route 123) on Washington Street (Route 138) Turnpike Street. Tenants of the Easton Industrial Park provide professional services or are in the wholesale, manufacturing, or distribution sector. Despite the success of the industrial park and the low vacancy rate, there is a need for infrastructure and zoning improvements to increase its potential. A lack of a sewer system or connection to one is an issue keeping the industrial park from adding more tenants or increasing business and industrial capacity. Current zoning is stunting the growth of the Easton Industrial Park, and if it could be changed, it would allow for more robust buildings to be built, increasing space for business and industrial growth. If these two major limiting factors, a lack of a sewer connection and perceived outdated zoning, the potential ridership from the Easton Industrial Park would grow for the Brockton Taunton route.

### Stonehill College

Stonehill College is a private Catholic College located in the Town of Easton. The college has a full-time student body of 2,509 individuals with 84% of the student body residing on campus. In addition to the student population, the college also employs 183 full-time teaching faculty and approximately 258 nonacademic staff positions. Stonehill College does host of number of school sponsored events and provides event hosting space throughout the year which could generate demand for public transportation service.

### Shopping Centers

There are numerous shopping centers along the proposed Brockton Taunton route; however, these shopping areas are not evenly distributed along the corridor. Depending on which alignment of the route is being reviewed, most shopping destinations are in five clusters. On the northern portion of the proposed routes, the largest concentration of shopping destination will be within the city of Brockton in a few shopping centers along Route 123 and in downtown Brockton. Outside Brockton, there is a concentration of shopping establishments located around the junction of Route 123 and Route 138. South of the Town of Easton, the number of shopping

centers and retailers in general starts thin with shops scattered along the route until you reach the Wal-Mart/Market Basket shopping center near the Raynham/Taunton line. Once in the city of Taunton, there are many retailers located in their historic downtown.

### Entertainment Venues

Along the corridor are few large entertainment venues. Most entertainment venues along the route are the local dining establishments. However, there are entertainment venues of significant size as well. Such large entertainment venues would be the Brockton Fair Grounds in the city of Brockton and The Natural Resources Trust. Also, in Easton within reach of the proposed corridor is the Easton Country Club. In the Town of Raynham, there is the Raynham Dog Park which is an offsite horse racing venue that is also used to host events and the Raynham Ice-Plex ice rink. In the city of Taunton, there is more activity and more options for entertainment. There are a number of entertainment venues in the vicinity of the proposed route alignment including the Taunton Rifle and Pistol Club, numerous municipal parks and greens, as well as other venues within an additional bus transfer such as the Aleixo Arena.

### Social Services

There are numerous social services in the Cities of Taunton and Brockton. Both communities are the sites of district courts, Registry of Motor Vehicles, career services, medical centers, the Veteran Affairs Hospital (VA) and other Commonwealth services such as Registries of Deeds. Besides local interactions, many municipal services can be accessed directly from the proposed route especially those of Brockton and Taunton due to the route directly traveling into their city centers. A desire to access these social services, especially for residents living in the GATRA service area, is something that was identified in the Southeastern Regional Planning and Economic Development District (SRPEDD) Coordinated Human Service Plan. With a reduction of medical service at Morton Hospital

### MassDOT Park-and-Ride Lots

Along the proposed corridor there are three MassDOT Park-and-Ride lots. These three Park-and-Ride lots would be the Raynham Exit 8 Park-and-Ride lot, The Raynham Dog Track Park-and-Ride lot, and the GATRA Bus Terminal Park-and-Ride lot. The Raynham Exit 8 Park-and-Ride lot has available 79 parking spaces and a utilization rate of about 27% or 21 vehicles on an average weekday. There is no overnight parking allowed at this facility. The Raynham Dog Track Park-and-Ride lot has 200 parking spaces available and on an average weekday and a parking utilization of about 17% or 34 parked cars. The Raynham Dog Track Park-and-Ride lot is also a Bloom Bus commuter pick up location. The third Park-and-Ride lot facility would be the GATRA bus terminal. The park-and-ride lot located at the GATRA bus terminal has 160 parking spots available and is also the site of the Bloom bus terminal in Taunton. There is no overnight parking at this location.



## South Coast Rail

South Coast Rail (SCR) is a passenger rail project that will restore Massachusetts Bay Transportation Authority (MBTA) commuter rail service between the city of Boston and communities in south eastern Massachusetts. The SCR project will be built in two phases. Phase One of the SCR project will utilize the Old Colony Line to connect the city of Boston with the communities of south eastern Massachusetts. Phase Two – Full Build will operate the commuter rail via the Providence/Stoughton Line using the Stoughton spur of the alignment to make the journey to the communities of south eastern Massachusetts.

SCR Phase Two – Full Build would have two stations in the Brockton Taunton route service area and Phase One would not. These two Phase Two – Full Build stations would be the Raynham Place Station located just south of the Raynham Dog Track on Route 139 and the Taunton Station located one mile outside the Brockton Taunton route corridor on William Hooke Lane. According to the Central Transportation Planning Staff (CTPS) Updated Ridership Analyses for the Full Build Final Environmental Impact Statement/Final Environmental Impact Report, ridership for the Raynham Place Station would be 430 daily boarding and the Taunton Station would have 670 daily boarding if the Stoughton electrified option for Phase Two – Full Build is chosen.<sup>10</sup> It is estimated SCR Phase Two – Full Build would begin revenue service in 2035.

## Off Corridor Ridership Generators

### Queset Commons & Queset Commercial District

Queset Commons is a development located in Easton Massachusetts, near the Route 123 and Route 138 intersection. According to drafted plans, when completed, Queset Commons will be a mixed-use development containing residential housing units, retail, and commercial office space. The developed plans call for the Queset Commons development area to be divided into three subzones: Residential Subzone A, Mixed-use Subzone B, and Commercial Subzone C. Residential Subzone A will contain a 60-unit condominium building. Mixed-use Subzone B will include 83-unit assistant living apartments, a 99-unit over 50 years of age community, and 137 apartment units. In addition to residential development, Subzone B will contain a 16,000 square foot conference center and a wastewater treatment facility. Commercial Subzone C is proposed to have 28,000 square feet of office space and a 15,000 square foot grocery store.

Due to long-running market conditions, such as an overbuilt retail space rental market, much of what is described in the Queset Commons plans have not been built. Currently occupying the Queset Commons development area is the waste-water treatment facility, two residential apartment buildings, Edgewater Condominiums, and the over 50 age-restricted residential

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<sup>10</sup><https://www.nae.usace.army.mil/Portals/74/docs/topics/SouthCoastRail/VolIV/Appendix3.2HRidershipAnalyses.pdf>



development. Due to these market conditions and other market influences, it could be sometime before Queset Commons is fully built out.

The issue of transportation to Queset Commons has been discussed in the project's Final Environmental Impact Report (FEIR) and the Queset Commons Transit Feasibility Study. The FEIR calls for various transportation mitigation measures to offset potential traffic impacts created by the development of Queset Commons. Mitigations recommended in the FEIR that would be relevant to the development of the Brockton Taunton route would be the establishment of a Transportation Management Association and the project proponent working with the Old Colony Planning Council and BAT to see how public transit might serve the development. Some of the transportation recommendations in the FEIR and the Queset Commons Transit Feasibility Study were perused. Such suggestions acted on by the project proponent were the consultations with BAT to see if public transportation could serve the development site. After talks with the transit authority, it was determined to service Queset Commons with public transport would not be feasible due to the current state of development. It is unclear if the project proponent engaged Stonehill College and companies located at the Easton Industrial Park to see if they could partner to form the Transportation Management Association. Another recommendation suggested by recommendation in both the FEIR and Queset Commons Transit Feasibility Study was the establishment of a shuttle service for residents and visitors to the development. While the Queset Commons commercial website has a shuttle service listed, the phone number provided to contact the service is no longer working, and it appears the shuttle service is no longer operating.

The Queset Commercial District is an area located around the intersection of Route 123 and Route 138 and along Route 138 between Belmont Street and Depot Street. Looking to spur more significant economic activity in the Town of Easton and focus development along existing corridors, the Queset Commercial District has been reviewed in three different studies. These three studies are the Queset Commercial District Land-use and Development Study, the town's comprehensive plan Envision Easton, and recently in the Queset Commercial District Economic Development Strategy report. In each of these reports, the focus is to see how the Queset Commercial District can transform into an area of economic growth for the Town of Easton. The Queset Commercial District is envisioned as a place where town residents can live, work, and play with less dependence on motor vehicles. Through the redesign of the Queset Commercial District, the Town of Easton hopes residents of this area will be able to walk, bike, and take public transportation for most of their daily needs.

In all three of the Queset Commercial District studies, there has been a call for better public transportation in this area. In these documents, recommendations centered on extending existing public transportation services like BAT's Route 9 Pearl via W Elm & Torrey or the establishment of new bus routes that could circulate people through the Queset Commercial District. The Brockton Taunton route, if established, would fulfill the recommendations of developing transit in the Queset Commercial District.

## Lakeshore Center

Lakeshore Center is a development located in the Town of Bridgewater on Route 104 between Route 495 and Route 24. Lakeshore Center is a multi-lot development on three parcels containing the Axis at Lakeshore residential development, the Residence Inn by Marriott Boston hotel, and commercial office space. In addition to currently established development, the project calls for the construction of 474,500 square feet of retail space built in two phases. To date, no commercial retail space has been built.

The Lakeshore Center project proponent was required to conduct a transit study as part of the issuing requirements for the Massachusetts Environmental Policy Act (MEPA) certificate for its Supplemental Draft Environmental Impact Report (SDEIR). In the FEIR, the Lakeshore Center project proponent stated that there were talks between them, Bridgewater State University, and BAT concerning the establishment of public transit service to the project site. The outcome from these discussions between all parties was that operating public transportation to the site was not feasible because there were no confirmed tenants.

Despite the development of the residential units, a hotel, and other commercial buildings on the Lakeshore Center development parcels, the need for public transportation service to this development is questionable. Data showing a demand for public transit service to Lakeshore Center and the continued absence of retail establishments, the ridership potential from this site on the proposed Brockton Taunton route is could be further reviewed as development of the area continues. BAT should reach out to the Axis at Lakeshore property management team, the hotel, and businesses residing in the commercial office space to see if there might be a need for public transportation service. BAT should also inquire about whether the project proponent ever established the Transportation Demand Management (TDM) program, as indicated in the FEIR.

## Silver City Galleria

The Silver City Galleria was a former shopping center located off Route 140 just east of Route 24. In the shopping center's more prosperous days, it contained 125 stores along with a 12-unit food court and movie theater. Due to changing market conditions and the growth of online retailing, the Silver City Galleria had declined and closed its doors. There has been talk of establishing a transfer station at the shopping center site, but no confirmed plans have been released. Most recently according to a Taunton Guzzette Newspaper story, there have been discussions of possible lite industrial usage being established at former mall site, but no plans has been released to confirm these rumors. Silver City Galleria is also a 187 space MassDOT park and ride lot, which serves as a pickup location for both DATTCO commuter bus service to Boston and GATRA bus service, and allows motorists to park overnight.

## First Light Resort & Casino

The Mashpee Wampanoag Tribe has proposed the development of a casino called First Light Resort and Casino in the city of Taunton located near Route 24 and Route 104. First Light Resort and Casino would be a 150,000 square foot casino with a three-building 300 room hotel complex. In addition to gaming and hotel space, First Light Resort and Casino has proposed multiple dining and retail establishments, a 25,000 square foot water park, and 15,000 square foot event space. ~~Proposed~~ First Light Resort and Casino estimate that the development may produce up to 2,500 permanent and part-time jobs.

Despite the potential economic benefits that might be brought by the development of the First Light Resort and Casino, there is opposition to the development of the casino. A recent court decision reversed an earlier decision taken by the Bureau of Indian Affairs to take the land the casino would be built on out of trust, refuting the Mashpee Wampanoag Reservation claims. Had the Reservation been taken out of trust successfully, it would have ended the Mashpee Wampanoag Tribe's chances of building a casino. Currently, there is a bill sponsored by Representative William R. Keating of the Massachusetts 9th district that has been passed in the U.S. House of Representatives reaffirming the Mashpee Wampanoag Reservation claims. House Bill H.R.312: Mashpee Wampanoag Tribe Reservation Reaffirmation Act now awaits action by the U.S. Senate. Another issue affecting the viability of the First Light Resort and Casino is the abandonment of the casino's financial backing the Genting Group. It is still unknown how the exit of the casino's financial backer will affect the project.

## Other MassDOT Park-and-Ride Lots

There are a few Park-and-Ride lots outside the proposed Brockton Taunton route corridor. At Route 24 and Route 106 in West Bridgewater, there is a Park-and-Ride lot. The West Bridgewater Park-and-Ride lot, located less than a mile away from the corridor, has 185 available parking spots that can be used for overnight parking. This park-and-ride lot is served by Bloom Bus commuter service to Boston. According to the Old Colony Congestion Management Process Report, this lot has a high utilization rate, with an average 87.15% or 156 cars regularly parked during a given weekday and 21.43% rate of utilization of handicap parking spaces on average, which amounts to about two cars.

The Bridgewater Park-and-Ride lot is approximately 2.2 miles away from the proposed corridor and has 60 parking spaces available for use. Parking is allowed throughout the day, but cars are not permitted to parking overnight. The Park-and-Ride lot has an average utilization rate of about 66.67% or about 40 cars parked daily.

## Potential for Express or Limited Stop Service

The proposed Brockton Taunton route lends itself to be a limited stop or express bus service due to its route destinations and the communities through which it would operate. The Cities of Brockton and Taunton would be the route's biggest ridership generating communities due to their population size, community demographics, commercial and entertainment opportunities, and large number of employers. The communities of Easton and Raynham would generate potential ridership, but due to their geography, limited population and population density, and demographics, would not be high bus ridership communities. Due to limited ridership potential in the Towns of Easton and Raynham, the best course of actions for bus service in these communities would be to have a few strategically located bus stops.

Along the proposed Brockton Taunton route corridor in the city of Brockton are well established BAT bus routes. Due to the presence of these other bus routes along the corridor, BAT should consider operating the proposed Brockton Taunton route as a limited stop or express service in Brockton to avoid local bus service redundancy. Operating the proposed Brockton Taunton route as a limited stop or express service would provide passengers traveling along the route's corridor a premium service option that would complement existing bus service and potentially increase ridership along the proposed route corridor. Below are potential limited and express service stops in the city of Brockton.

### Limited Service Stops:

- Starbucks/Bertucci's Plaza & Michael's Plaza Shopping Center
- Brockton Veteran Affairs Administration Hospital
- Westside Plaza - 687 Belmont Street, Brockton
- Downtown Brockton
- BAT Intermodal Centre

### Express Service Stops:

- Brockton Veteran Affairs Administration Hospital
- BAT Intermodal Centre

Public transportation in the Town of Easton is limited. The only bus route operating in the Town is the Route 9 Pearl via W Elm & Torrey, which terminates at the Easton Industrial Park. Due to the potential of limited ridership, the proposed route might be better served by having a few strategic stops located within the community. Below are potential limited and express service stops in the Town of Easton.

Limited Service Stops:

- Intersection of Route 123/Route 138
- Easton Industrial Park

Express Service Stop:

- Easton Industrial Park

The Town of Raynham is not currently served by public transportation and only has a private commuter bus carrier operating within the town. However, due to its high vehicle ownership and low population density, bus ridership will be limited. Below are potential limited and express service stops in the Town of Raynham.

Limited Service Stops:

- Proposed Raynham South Coast Rail Station
- Raynham Dog Track Park-and-Ride Lot
- Market Basket/Wal-Mart Shopping Center

Express Service Stop:

- Market Basket/Wal-Mart Shopping Center

GATRA operates bus service in the city of Taunton. Due to the presence of these other bus routes, bus stops along the proposed corridor could be limited to key ridership destinations and be an express service for GATRA users traveling along Washington Street in the city of Taunton. Due to the small geographic size of the Taunton's city center, both a limited and express stop would be the same. Below are the potential limited or express stops in the city of Taunton.

Limited or Express Service Stop:

- Washington/Pleasant

## Micro Transit & Mobility on Demand

Micro Transit and mobility on demand are relatively new types of transportation services. While Micro Transit and mobility on demand are very similar in how a passenger initiates a trip, the journey's delivery can be very different. Micro Transit and mobility on demand services' goals are to provide the most significant amount of transportation access while being cost-effective.

### Micro Transit

Micro Transit service is usually transportation provided by an established public transportation authority using existing rolling stock or smaller vehicles purchased explicitly to launch a Micro Transit program. Micro Transit tends to operate on a predetermined route. However, Micro Transit can serve individuals dynamically depending on where the passenger initiates the ride and provide door-to-door transportation service. Micro Transit services operate by request in almost all cases, activated via a smartphone application or through a customer service call center.

### Mobility on Demand

Mobility on demand is a by request transportation service like Micro Transit using smartphone-based applications or customer call centers to schedule a trip. One of the main differences between Micro Transit and mobility on demand is how transportation service is received. Mobility on demand can incorporate several different modes of transportation. It is not unusual for a mobility on demand service to offer door to door transportation via a private contractor utilizing their automobile. Still, options like bike share and scooter share can also be part of the suite of choices users seeking transportation might have available to them on a Mobility on Demand platform. Mobility on demand tends to be offered by Transportation Network Companies (TNCs) like Uber and Lyft.

### Brockton Taunton Route as Micro Transit or Mobility on Demand

There is the potential to operate the proposed Brockton-Taunton route as Micro Transit or as a mobility on demand service. Servicing the proposed Brockton Taunton route as either Micro Transit or as a mobility on demand services could provide public transportation users a lot of flexibility in how and when they will travel between the city of Brockton and the city of Taunton along with destinations in between. There is evidence that people are regularly using mobility on demand services, like Uber and Lyft, in the BAT and GATRA service areas.

In 2019 alone, 978,639 mobility on demand trips originated in the city of Brockton. Out of the 978,639 mobility on demand trips started in Brockton, 74.02% or 724,366 trips stayed within the city. The city of Brockton saw 952,347 mobility on demand trips end in the city. Of those trips ending in Brockton, 76.06% or 724,366 were trips traveling within city limits. However, not all trips originating in Brockton end in the city. Those trips initiated in the city of Brockton, 15,164, or 1.55% of those trips ended in the Town of Easton. Another 1,703 or 0.17% of mobility on demand Trips started in the city of Brockton and finished in the Town of Raynham. The city of

Taunton saw 4,996 or 0.51% of trips originating from the city of Brockton end in their community<sup>11</sup>.

In [YEAR?] 118,760 mobility on demand trips originated in the city of Taunton, and 112,527 trips end in the community. Those trips beginning in Taunton, 70,683, or 59.2% traveled exclusively within its borders and made up 62.81% of all trips ending in the city. Those trips initiated in the city of Taunton, 12,570, or 12.64% of those trips were to the Town of Raynham. Another 829 trips or 0.70% of mobility on demand journeys were to the Town of Easton from the city of Taunton. Tauntonians made 4,653 or 3.92% of their mobility on demand trips to the city of Brockton<sup>11</sup>.

The smaller communities that lie along the proposed Brockton Taunton route also have significant mobility on demand usage. The Town of Easton in 2019 saw 50,841 mobility on demand trips originate in town, and 54,281 trips end there. Of those trips originating in Easton, 12,367 or 24.32% were to the city of Brockton. Another 486 or 0.96% of mobility on demand trips were to the Town of Raynham, and 789 or 1.55% of the total 50,841 trips were to the City of Taunton<sup>11</sup>.

In the Town of Raynham 29,728 mobility on demand trips were requested in the community, and 32,503 ended in Raynham. Of the total mobility on demand trips originating in Raynham, 12,570, or 42.28% of those journeys were to the city of Taunton. Another 456 or 1.53% of the total trips were to the Town of Easton. Raynham residents also took 1,556 or 5.23% of the entire 2019 mobility on demand trips to the city of Brockton<sup>11</sup>.

Reviewing three years' worth of available TNC ridership data showed there has been tremendous growth in the utilization of mobility on demand services. In the city of Brockton alone, there has been a 126% increase in the use of mobility on demand transportation service between 2017 and 2019<sup>11</sup>. Utilizing a microtransit or a mobility on demand model in service delivery of the proposed Brockton Taunton route could be an option that allows the service to begin operating sooner and at a lower cost than could be provided utilizing a large public transit bus.

The potential of operating the proposed Brockton Taunton route as microtransit or as a mobility on demand service possesses numerous advantages. Due to both microtransit and mobility on demand being on-demand transportation service, there is the potential of operational cost savings for BAT. Under traditional forms of providing public transportation, such as fixed-route bus service, there are numerous operating expenses associated with such an operation. Some of these operating costs are fuel, wear and tear on a transit vehicle, and operator salary. Running the proposed Brockton Taunton route as an on-demand service using either the microtransit or mobility on demand model has the potential to reduce or eliminate some of these operating costs. A reduction of these costs could potentially allow the proposed route to start service much sooner than might be financially possible with a large transit vehicle.

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<sup>11</sup> <https://tnc.sites.digital.mass.gov>

## Potential Ridership

Using U.S. Census Journey to Work Data and demographic information provided by American Community Survey 5-year Estimate datasets, potential route ridership was modeled for the proposed Brockton Taunton line. Understanding the number of commuters in flow between the city of Brockton and the city of Taunton for work, the study was able to gain an understanding of the percentage of people traveling between these two cities which will be major ridership drivers. The percentage of workers traveling between Brockton and Taunton was then applied to the number of single-vehicle and no vehicle owning households with workers 16 years and older, which would be the most likely population to use this bus route because they lack motor vehicle availability or have limited access. The Towns of Easton and Raynham were not included in this calculation due to a lack of available data to project potential ridership.

Table 1: City of Brockton Potential Ridership

<b>Travel to Taunton from Brockton</b>	
<b>City of Brockton</b>	
<i>Number of Total Workers 16 years or Old</i>	45,208
<i>Number of Workers Traveling to Taunton from Brockton</i>	441
<i>% of Workers Compared to Population</i>	47.40%
<i>% of Workers Traveling to Taunton Compared to Total Working Population</i>	0.98%
<i>Brockton Public Transportation Utilization Rate</i>	7%
<i># of Individuals in 1 Vehicle Households</i>	6,005
<i># of Individuals in 1 Vehicle Households traveling to Taunton</i>	59
<i># of Individuals in 0 Vehicle Households</i>	2,358
<i># of Individuals in 0 Vehicle Households traveling to Taunton</i>	23
<i>Potential Transit Rider using 7% Utilization Rate 1 Vehicle Household</i>	4
<i>Potential Transit Rider using 7% Utilization Rate 0 Vehicle Household</i>	2



Table 2: City of Taunton Potential Ridership

<b>Travel to Brockton from Taunton</b>	
<b>City of Taunton</b>	
<i>Number of Total Workers 16 years or Old</i>	23,878
<i>Number of Workers Traveling to Brockton from Taunton</i>	1,020
<i>% of Workers Compared to Population</i>	41.9%
<i>% of Workers Traveling to Brockton Compared to Total Working Population</i>	4.27%
<i>Taunton Public Transportation Utilization Rate</i>	2%
<i># of Individuals in 1 Vehicle Households</i>	2303
<i># of Individuals in 1 Vehicle Households traveling to Brockton</i>	98
<i># of Individuals in 0 Vehicle Households</i>	779
<i># of Individuals in 0 Vehicle Households traveling to Brockton</i>	33
<i>Potential Transit Rider using 7% Utilization Rate 1 Vehicle Household</i>	2
<i>Potential Transit Rider using 7% Utilization Rate 0 Vehicle Household</i>	1

Using the information obtained through analysis of ACS 5- year Estimate datasets and Journey to Work data in Tables 1 and 2 above, route ridership was estimated to show daily, weekly, monthly, and yearly ridership potential. Route ridership was only calculated for weekday purposes and a service span of hours that would match most working hours and social service office hour schedules. It is envisioned the span of service would operate from 6am to about 7pm to accommodate work dismissal times and the amount of extra time someone might need to walk or take another bus to meet the Brockton Taunton route. No weekend service ridership was reviewed due to a lack of potential ridership because most employers and social services will not be open during the weekend hours. Given the potential route ridership and using BAT's 2018 Ridership Report calculated days of service of 250 service days, it is projected that there will be around 288 daily boardings. There is the anticipation there would be 1,385 weekly boarding and 6,000 monthly boardings. Annual ridership would be 72,000 boardings.

Table 3: Potential Route Ridership

<b>Potential Brockton - Taunton Route Ridership</b>	
<i>Number of Daily Round Trips (Monday - Friday)</i>	<b>16</b>
<i>Number of Riders By Community</i>	
<i>Brockton:</i>	<b>6</b>
<i>Taunton:</i>	<b>3</b>
<i>Total Riders:</i>	<b>9</b>
<i>Daily Ridership:</i>	<b>288</b>
<i>Weekly Ridership:</i>	<b>1,385</b>
<i>Monthly Ridership:</i>	<b>6,000</b>
<i>Annual Ridership:</i>	<b>72,000</b>

\*\*\*Figures in this table have been rounded to the next whole number\*\*\*

## Environmental Impacts

The proposed Brockton Taunton route would have a modest impact on air quality. According to CMAQ’s new bus service air quality analysis, the Brockton Taunton route would reduce Summer CO<sub>2</sub> by 24,976.929 kilograms per year. Summer NO<sub>x</sub> would see a 0.963-kilogram reduction and Summer VOC would see a 0.022-kilogram increase. Winter CO<sub>2</sub> would be reduced 24.713 kilograms per year.

If the emissions impacts were converted into a dollar amount, Summer CO<sub>2</sub> would see a cost savings of \$8 per kilogram per year followed by Summer NO<sub>x</sub> producing a cost savings of \$207,653 per kilogram per year. With the increase of Summer VOC, there is increased cost associated with that increase of \$9,275,189 per kilogram per year. The reduction of Winter CO<sub>2</sub> would see a cost-saving of \$8,093 per kilogram per year.

Table 4: Emission Impact Savings Calculations

Calculate net emissions change in kilograms per year (seasonally adjusted)						
Pollutant			change/day (NET) in kg	X operating days per year	X seasonal adj factor	= change per year in kg
Summer VOC			0.000	249	1.0188	-0.022
Summer NOx			0.004	249	1.0188	0.963
Winter CO			0.101	249	0.9812	24.713
Summer CO2			100.309	249	1.0000	24976.929
Calculate cost effectiveness (cost per kg of emissions reduced)						
Pollutant			Total Project Cost	/ Project Life in years	/ reduction per year in kg	= annual cost per kg
Summer VOC			\$200,000	1	0.022	\$9,275,189
Summer NOx			\$200,000	1	-0.963	(\$207,653)
Winter CO			\$200,000	1	-24.713	(\$8,093)
Summer CO2			\$200,000	1	-24976.929	(\$8)

## Service Cost and Funding

### Cost of Service

Using BAT’s National Transit Database (NTD) 2018 Annual Agency Profile to ascertain its cost per unlinked passenger trip, it is anticipated that the cost to operate the route could be around \$ \$293,760 per year. The cost of operation could differ depending on variables such as labor, parts, and fuel cost at the time of route launch.

### Funding Sources

#### Farebox Revenue

Part of BAT’s funding for the proposed Brockton Taunton route would come from passenger fares. If we use the average fare of \$1.75 for the BAT Ashmont Route, the most similar route in operating characteristic, farebox revenue would come in at \$126,000 per year. It should be noted that this farebox return would not be achieved at the introduction of the line. This farebox return would be obtained as the route realized its full passenger boarding potential. Additionally, farebox revenue could differ depending on the average fare at the time of the route’s launch.

#### Other Discretionary Grants

##### *Access and Mobility Partnership Grants*

The Access and Mobility Partnership Grants seek to improve access to public transportation by building partnerships among health, transportation, and other service providers. This program provides competitive funding to support innovative projects for the transportation disadvantaged that will improve the coordination of transportation services and non-emergency medical transportation services.

#### *Accelerating Innovative Mobility (AIM) Grant*

Accelerating Innovative Mobility grant highlights FTA's commitment to support and advance innovation in the transit industry. AIM will drive innovation by promoting forward-thinking approaches to improve financing, system design and service.

#### *Mobility for All Pilot Program Grants*

This funding opportunity seeks to improve mobility options through employing innovative coordination of transportation strategies and building partnerships to enhance mobility and access to vital community services for older adults, individuals with disabilities, and people of low income. As required by federal transit law, funds will be awarded competitively to finance innovative capital projects for the transportation disadvantaged that will improve the coordination of non-emergency medical transportation (NEMT) services. Eligible applicants are designated or direct recipients of 5307, 5310, or 5311 FTA program funds.

#### *Enhanced Mobility of Seniors & Individuals with Disabilities - Section 5310*

This program (49 U.S.C. 5310) provides formula funding to states for the purpose of assisting private non-profit groups in meeting the transportation needs of older adults and people with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs. The program aims to improve mobility for seniors and individuals with disabilities by removing barriers to transportation service and expanding transportation mobility options. This program supports transportation services planned, designed, and carried out to meet the special transportation needs of seniors and individuals with disabilities.

#### *Formula Grants for Rural Areas - 5311*

The Formula Grants for Rural Areas program provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations of less than 50,000, where many residents often rely on public transit to reach their destinations. This program provides funding for activities that include planning, capital, operating, job access and reverse commute projects, and the acquisition of public transportation services.

#### *Mobility on Demand (MOD) Sandbox Demonstration Program - 5312*

Funds projects that promote innovative business models to deliver high quality, seamless and equitable mobility options for all travelers.

#### *The Grants for Buses and Bus Facilities Program – 5339*

The 5339 Grants for Buses and Bus Facilities Programs makes federal resources available to states and direct recipients to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities including technological changes or innovations to modify low or no emission vehicles or facilities. Funding is provided through formula allocations and competitive grants. A sub-program, the Low- or No-Emission Vehicle Program, provides competitive grants for bus and bus facility projects that support low and zero-emission vehicles.

## Conclusion

The proposed Brockton-Taunton route would generate moderate ridership annually, by establishing a flexible route along low-density corridors that currently do not have access to public transportation. The Brockton Taunton route is similar in length to BAT's Route 12 Ashmont, which operates between the city of Boston and the city of Brockton. The proposed Brockton-Taunton route but would potentially take less travel time to operate due to lower traffic density areas.

Due to current community demographics, population density, and the concentration of major trip generators, the city of Brockton and the city of Taunton will be the main drivers of route ridership. This study does not see the Towns of Easton and Raynham being a major destination for passengers of this route but there are benefits of making sure they are served by it. What the route does achieve despite its modest ridership is that it facilitates the movement of individuals between the Brockton and Taunton areas. This ability to travel between these two cities helps individuals access the large number of social services residing in these two communities and opens the potential for those looking for employment additional job access opportunities. The proposed route would facilitate greater economic activity as shopping destinations and entertainment venues that were not accessible to those that do not have access to a vehicle would be able to reach these destinations using this bus route. Additionally, the establishment of a Brockton Taunton route would spur greater collaborations between GATRA and BAT as they partner to establish this new transit service. This need and desire to connect and foster greater collaboration between BAT and GATRA is cited in both the OCPC Long-range Transportation Plan and SRPEDD's Regional Transportation Plan as well. The proposed Brockton Taunton route would also provide the opportunity for greater social interaction as it would allow individuals to visit friends and family that might not be able to do so because they lack transportation.

The proposed Brockton Taunton route would also provide environmental benefits as well. By removing vehicle trips, greenhouse gas emissions will be reduced as some individuals take transit rather than drive. Also, it would reduce new greenhouse gas emissions from being emitted as it will provide transportation to those that do not currently own a vehicle, possibly keeping them from purchasing vehicles that might not be the most fuel-efficient.

With the rise of microtransit and mobility on demand services and their popularity with people, there is the potential individuals still might opt for taking a TNC ride rather than using the proposed Brockton Taunton route to travel between the city of Brockton and the city of Taunton. However, with a TNC fare that can be between \$30 and 60\$ per trip<sup>12</sup>, some individuals might be willing to use the proposed Brockton Taunton route or a BAT sponsored microtransit or mobility on demand like services to help reduce transportation cost.

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<sup>12</sup> Fare quote taken from Uber & Lyft ride hailing apps.

## Recommendations

The Old Colony Planning Council (OCPC) would only recommend launching the proposed Brockton-Taunton route on a pilot basis to see if demand would materialize. Also, OCPC recommends operating the Brockton Taunton route only Monday through Friday like BAT's Route 9 Pearl via W Elm & Torrey. Due to most social service and employers being closed on the weekend, there would be limited demand for service on the weekend since most household shopping needs and entertainment venues could be reached using other bus routes.

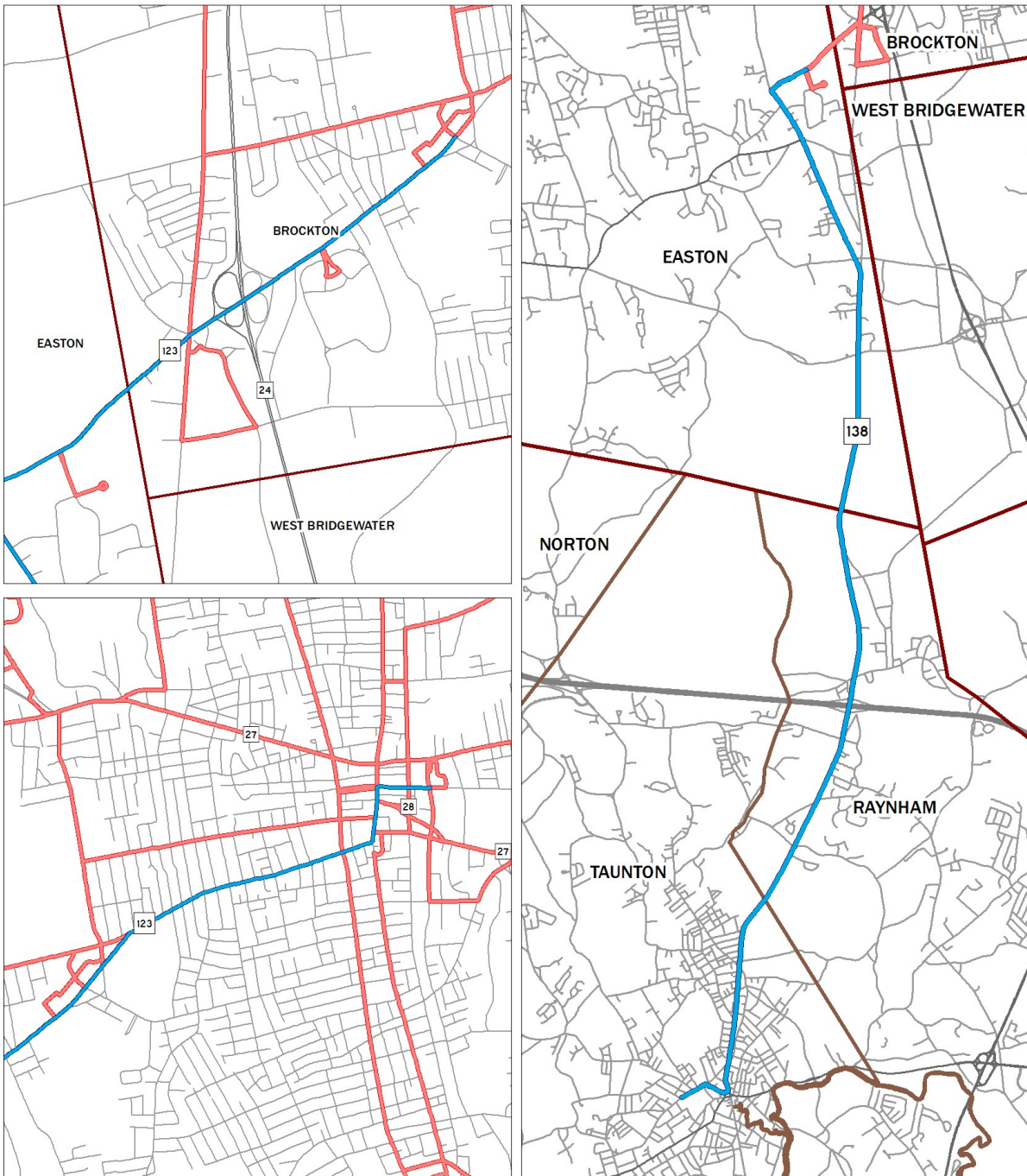
OCPC also recommends that BAT choose route Option One as it would provide the greatest utility for potential passengers. Option Two and Three would add additional travel time to a route that would already be long and could translate into an up to three-seat ride for most passengers. BAT should also service key corridor destinations to maximize passenger convenience and monitor ridership trends closely. BAT should discuss potential partnerships with GATRA in providing Brockton-Taunton service to reduce the service cost to BAT.

An alternative cost-effective option for providing cross-border transportation between the city of Brockton and the city of Taunton would be to explore launching the proposed Brockton-Taunton route as a microtransit or as a mobility on demand service. Utilizing a microtransit or mobility on demand model could translate into lower operating costs while providing the most transportation access to the riding public. One potential microtransit or mobility on demand service programming would be running the service between the GATRA bus station in Taunton and the Veterans Affairs (VA) Medical Center in the city of Brockton. Having microtransit or mobility on demand service operate between the GATRA bus station and the VA Hospital in the city of Brockton would provide veterans in the GATRA service area with a direct connection to medical services provided by the VA medical system, which is currently very limited in the GATRA service area .

The provision of ADA services is not required because the route would operate as commuter bus service. However, BAT should consider partnering with GATRA to discuss the feasibility of providing paratransit service as a courtesy to those along the corridor. If the proposed Brockton Taunton route were to operate as microtransit or mobility on demand service, the door to door nature of these two types of service would provide transportation service to those that fall under the protection of ADA.

# APPENDIX

## Brockton-Taunton Extension

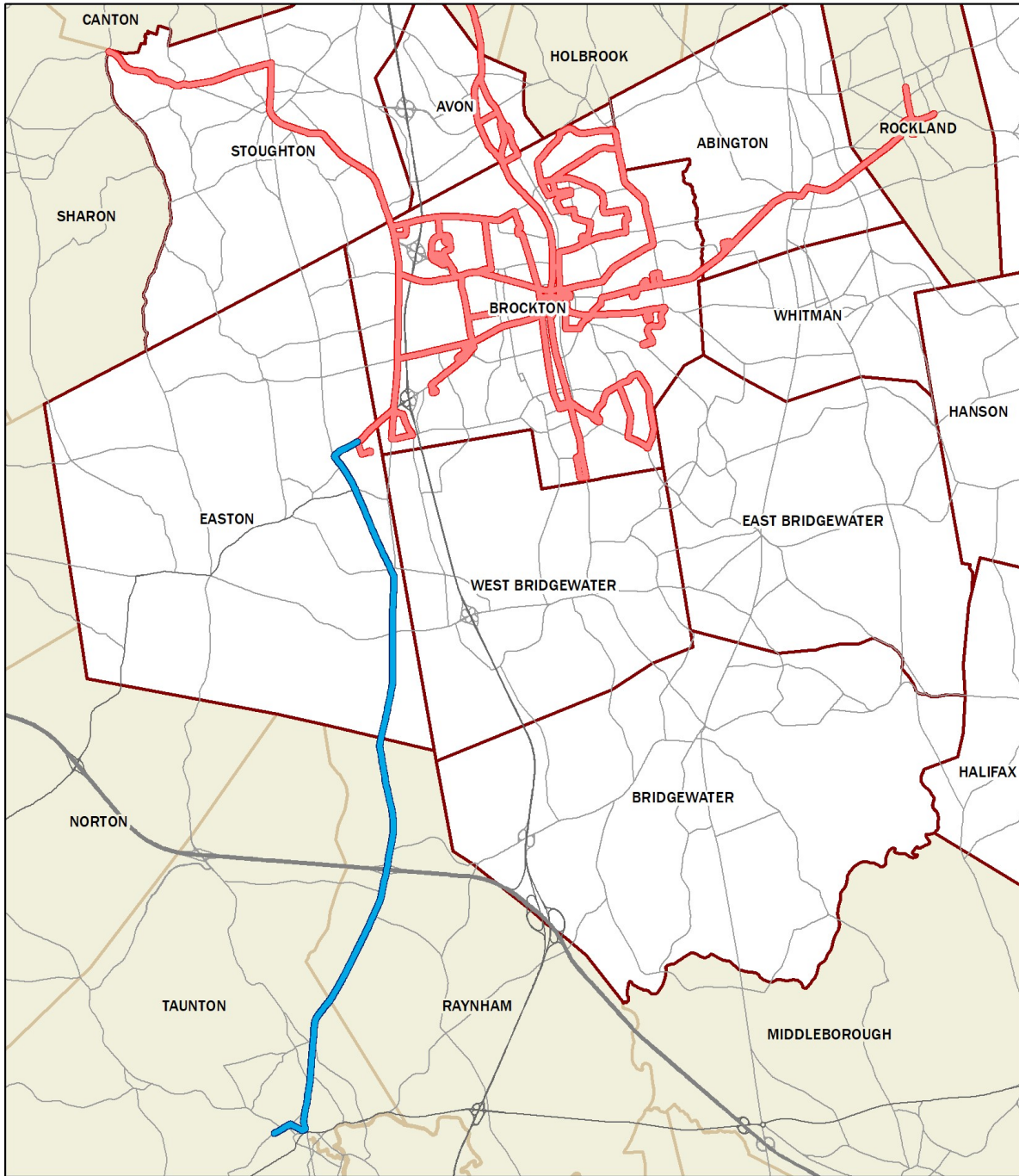


- Brockton-Taunton Extension
- Brockton Area Transit Existing Network

Old Colony Planning Council  
70 School Street, Brockton, MA 02301  
July 2020  
Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC



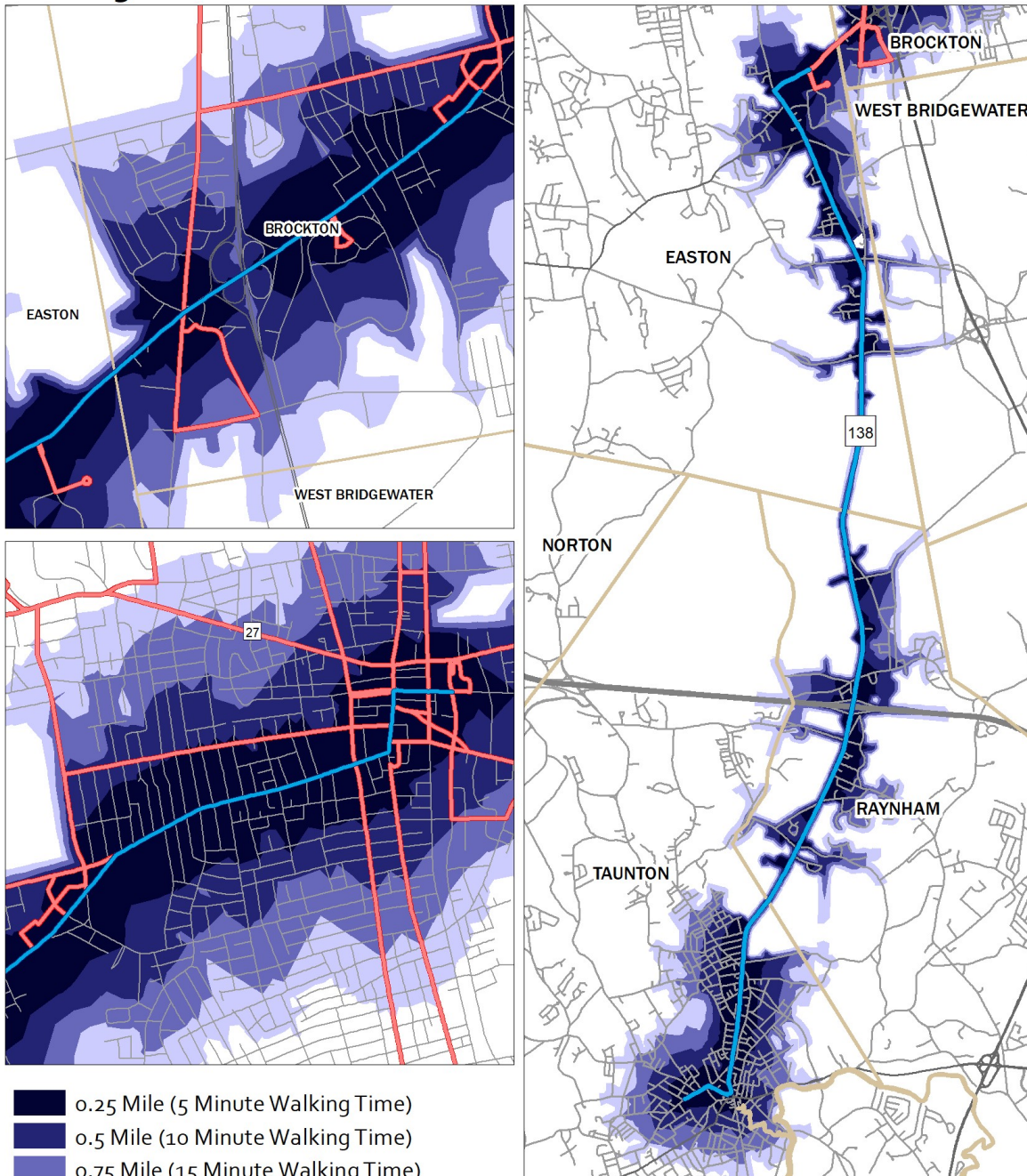
### Brockton Area Transit (BAT) Network



- Brockton-Taunton Extension
- Brockton Area Transit Existing Network

Old Colony Planning Council  
70 School Street, Brockton, MA 02301  
July 2020  
Data Sources: Brockton Area Transit Authority, Office of Geographic Information (MassGIS), MassDOT, OCPC

### Walking Time to Brockton-Taunton Extension Route

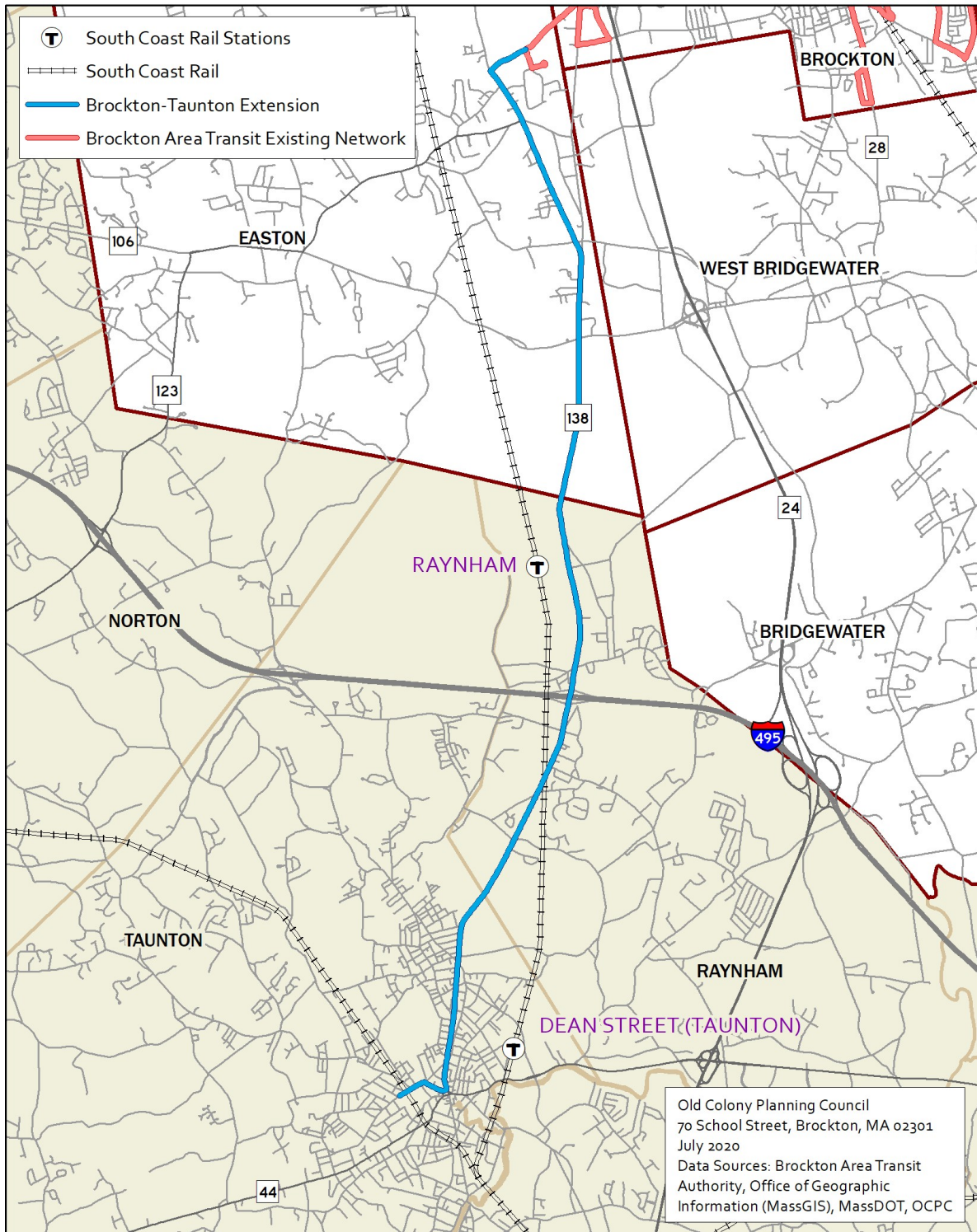


- 0.25 Mile (5 Minute Walking Time)
- 0.5 Mile (10 Minute Walking Time)
- 0.75 Mile (15 Minute Walking Time)
- 1.00 Mile (20 Minute Walking Time)
- Brockton-Taunton Extension
- Brockton Area Transit Existing Network

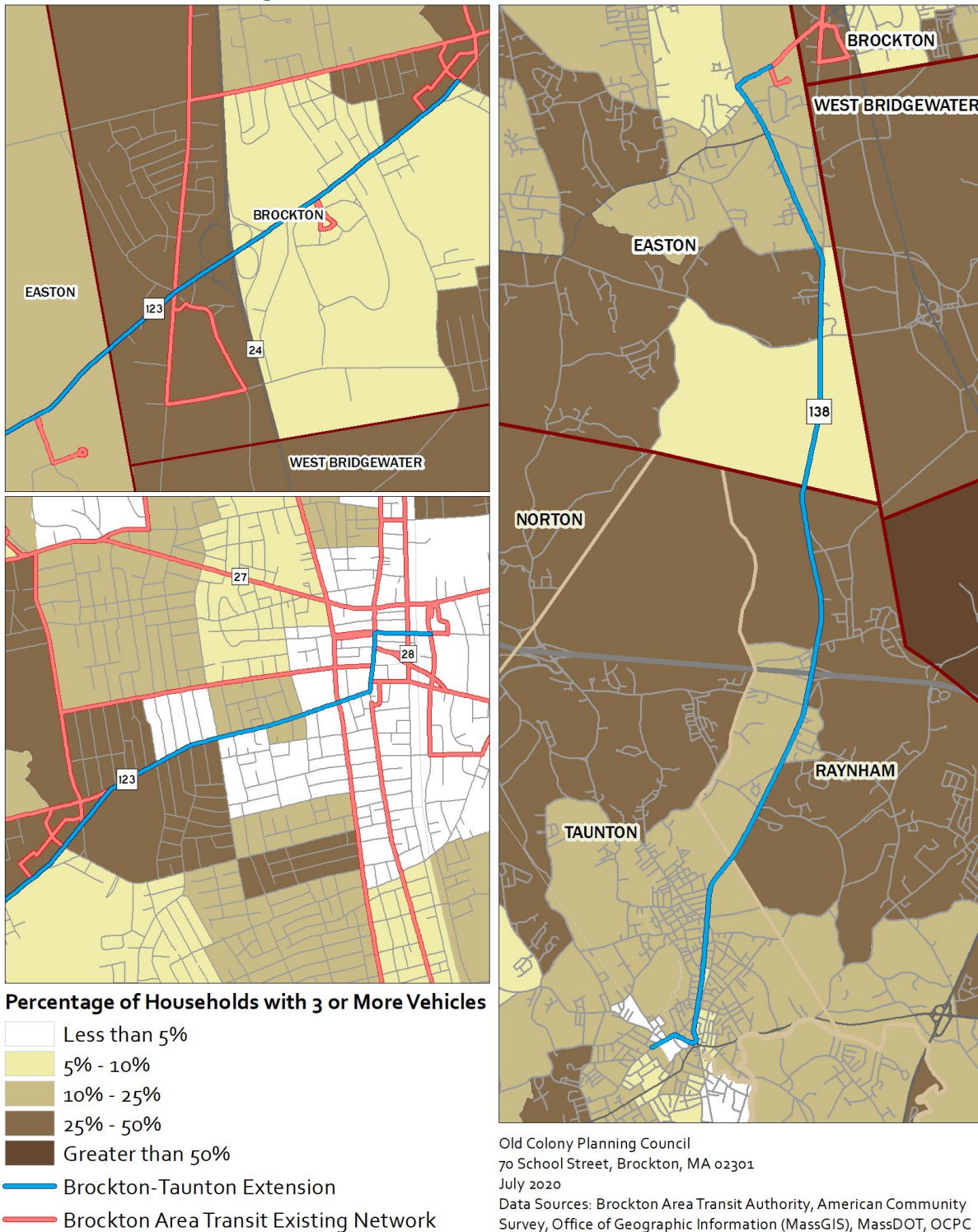
Old Colony Planning Council  
 70 School Street, Brockton, MA 02301  
 July 2020  
 Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC



### Brockton-Taunton Route with South Coast Rail



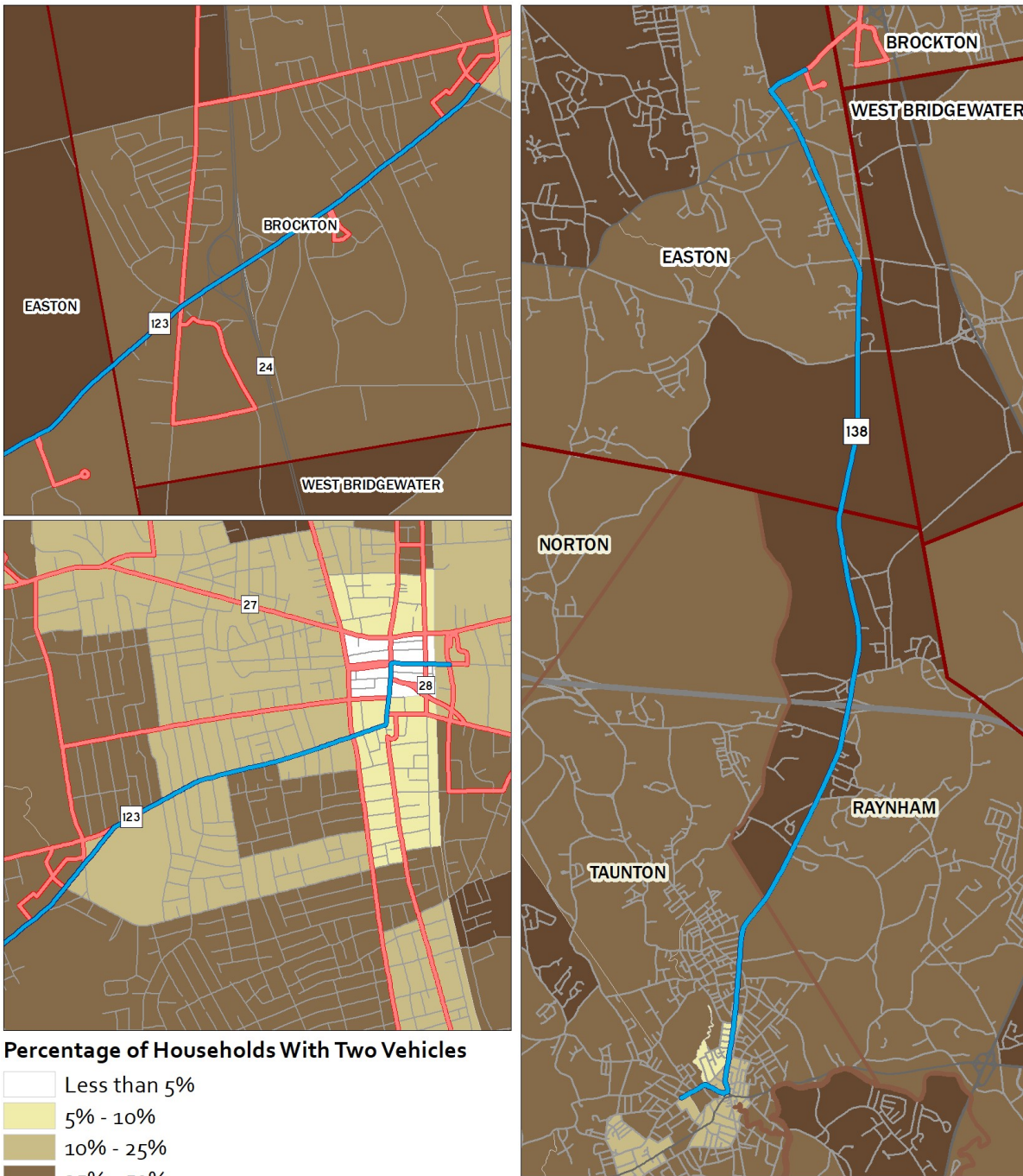
## Households with 3 or More Vehicles





Appendix F: Households with 2 Vehicles

### Households with 2 Vehicles



**Percentage of Households With Two Vehicles**

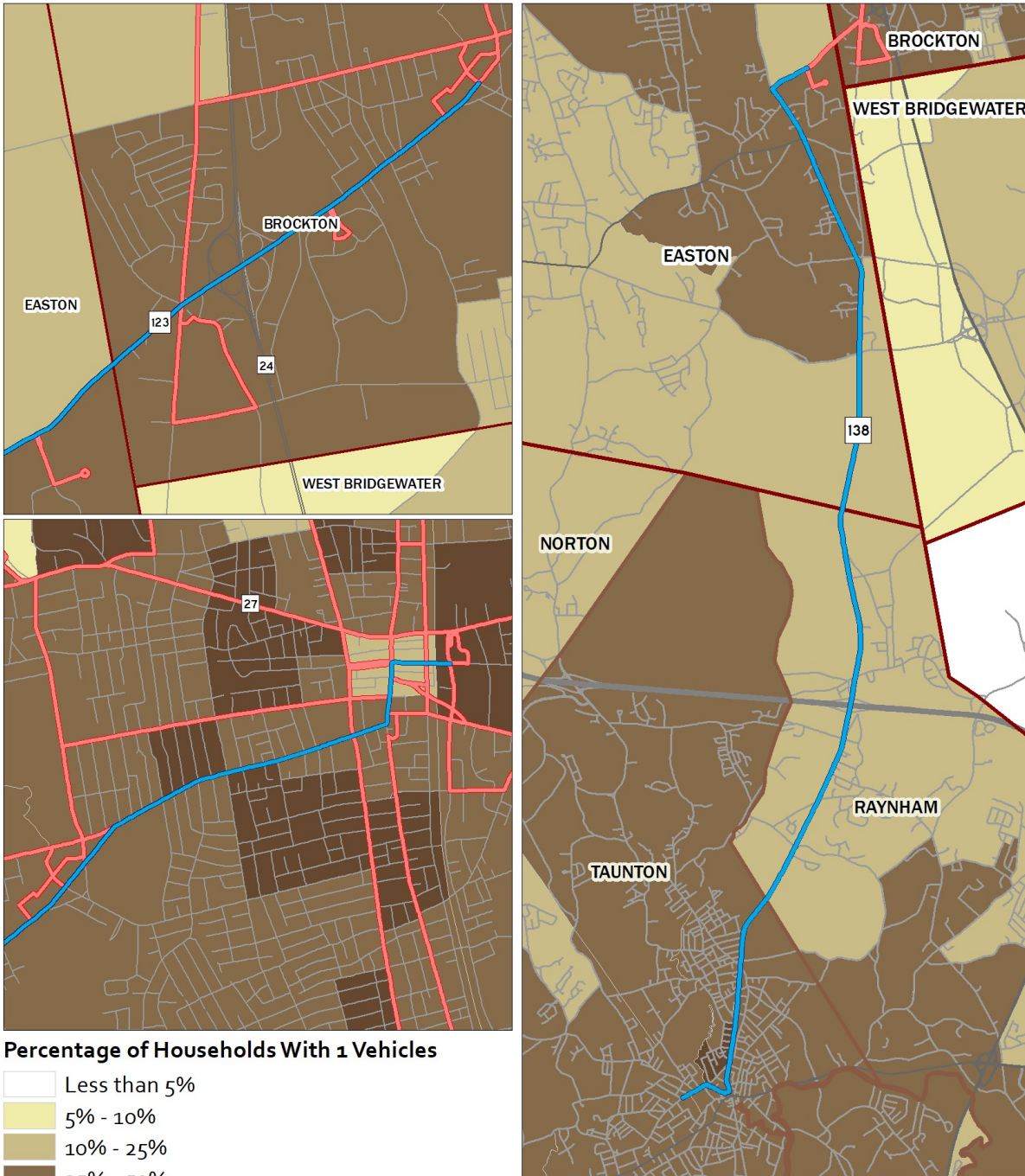
- Less than 5%
- 5% - 10%
- 10% - 25%
- 25% - 50%
- Greater than 50%
- Brockton-Taunton Extension
- Brockton Area Transit Existing Network

Old Colony Planning Council  
 70 School Street, Brockton, MA 02301  
 July 2020

Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC

Appendix G: Households with 1 Vehicle

### Households with 1 Vehicle



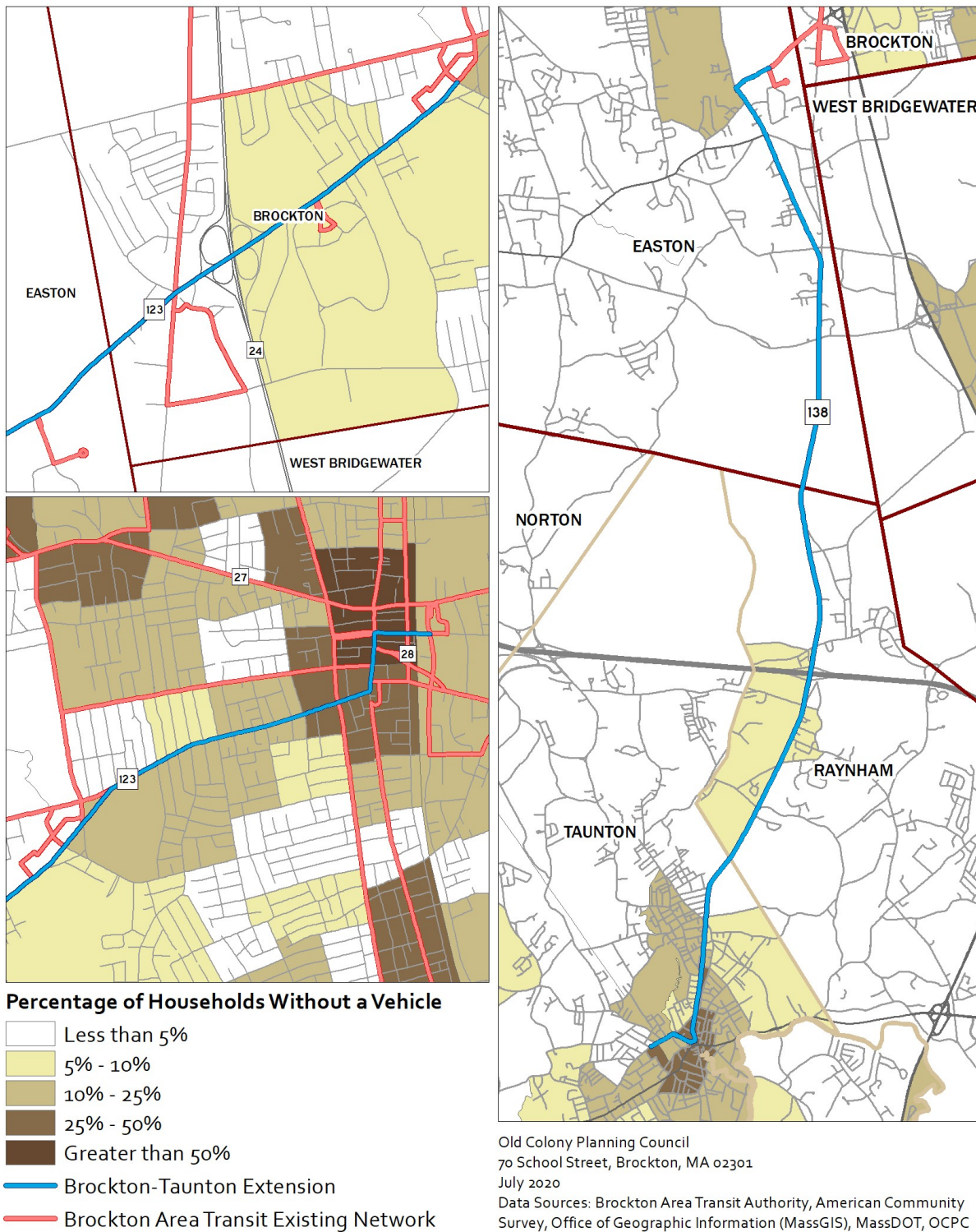
**Percentage of Households With 1 Vehicles**

- Less than 5%
- 5% - 10%
- 10% - 25%
- 25% - 50%
- Greater than 50%
- Brockton-Taunton Extension
- Brockton Area Transit Existing Network

Old Colony Planning Council  
 70 School Street, Brockton, MA 02301  
 July 2020  
 Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC

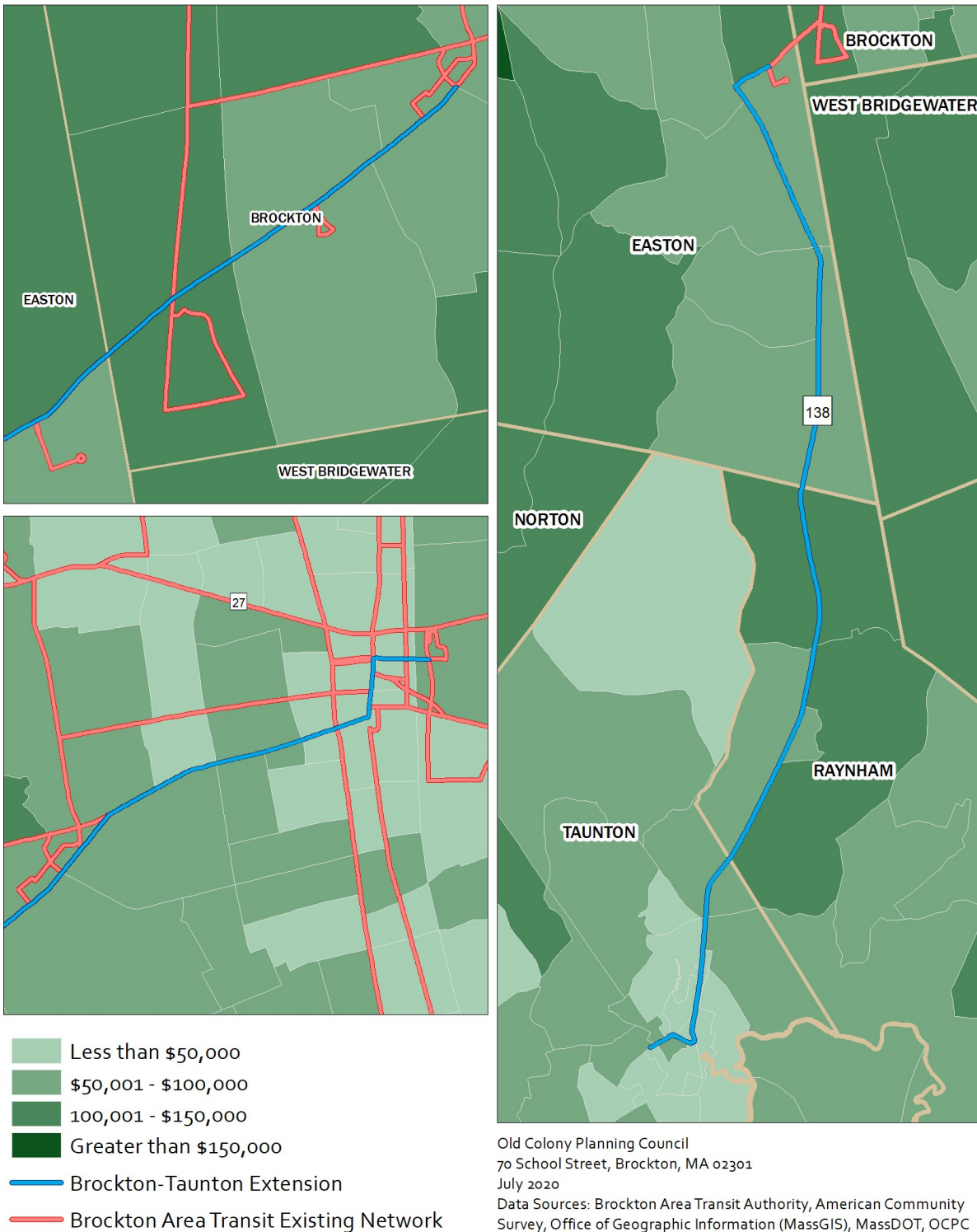


## Households without a Vehicle



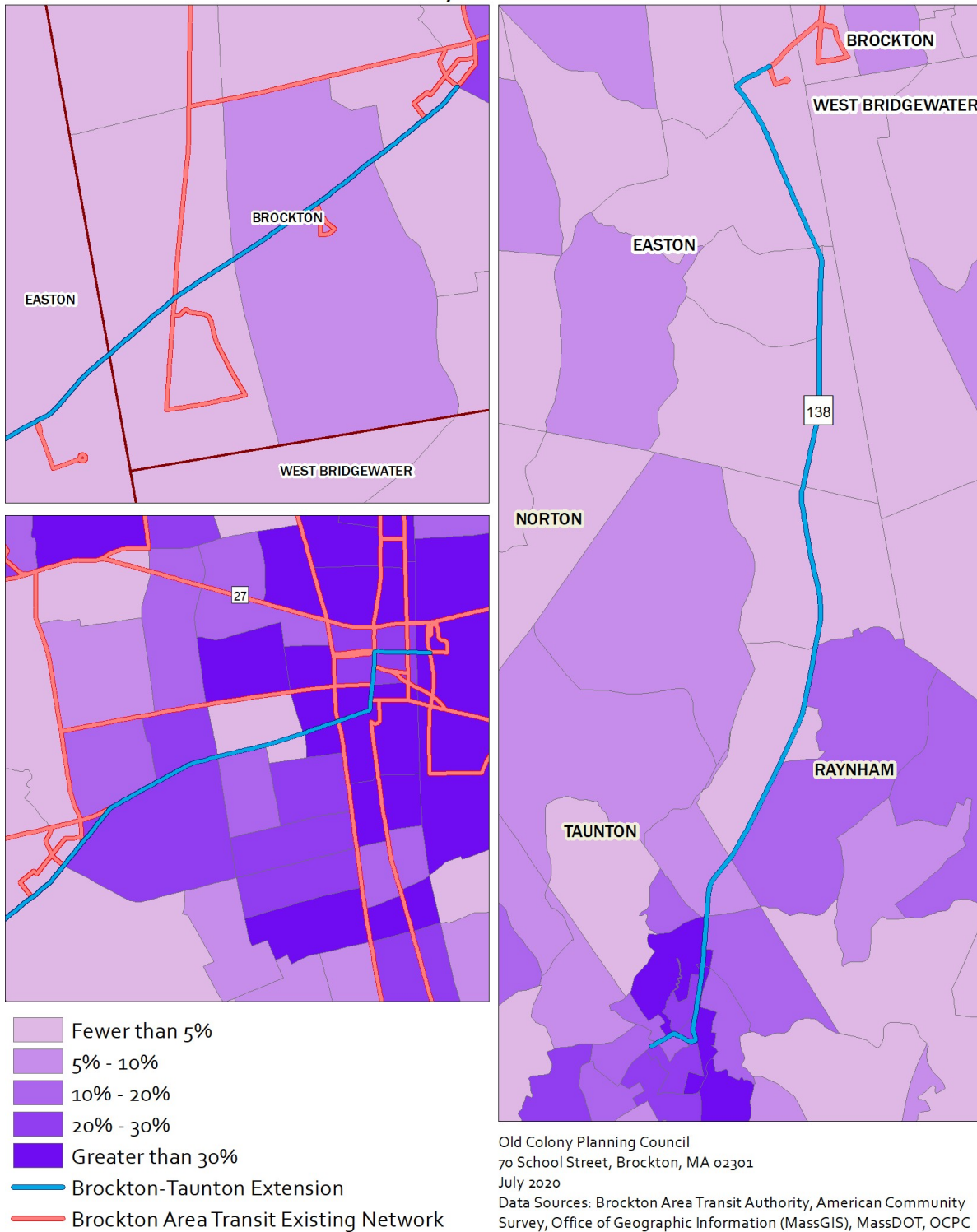
Appendix I: Income Along Corridor

Median Household Income

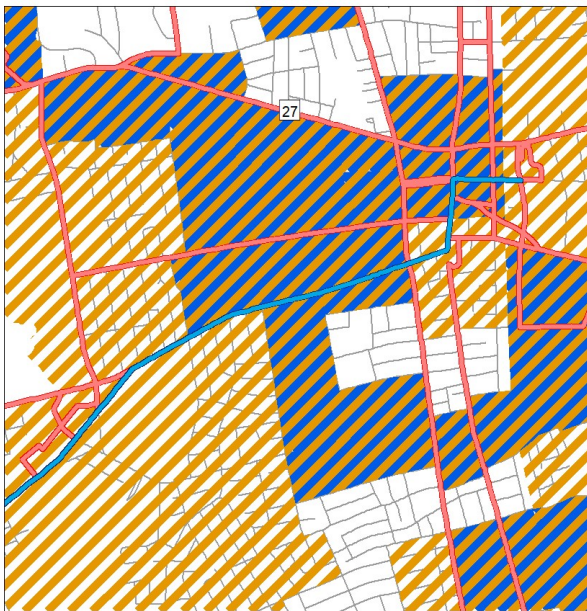
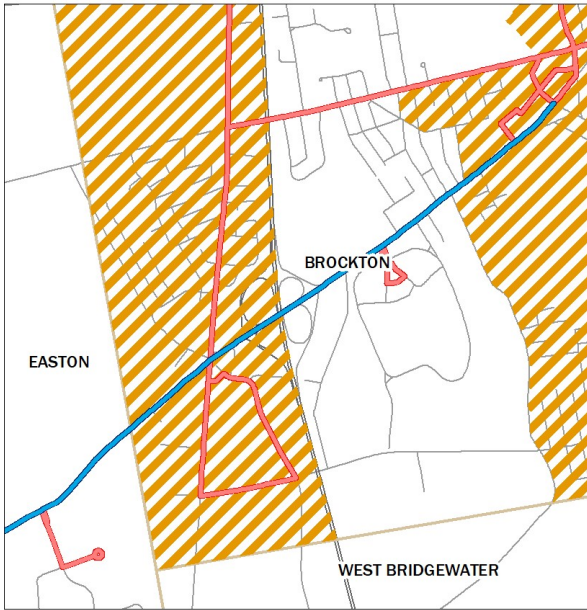









### Households Below the Poverty Level

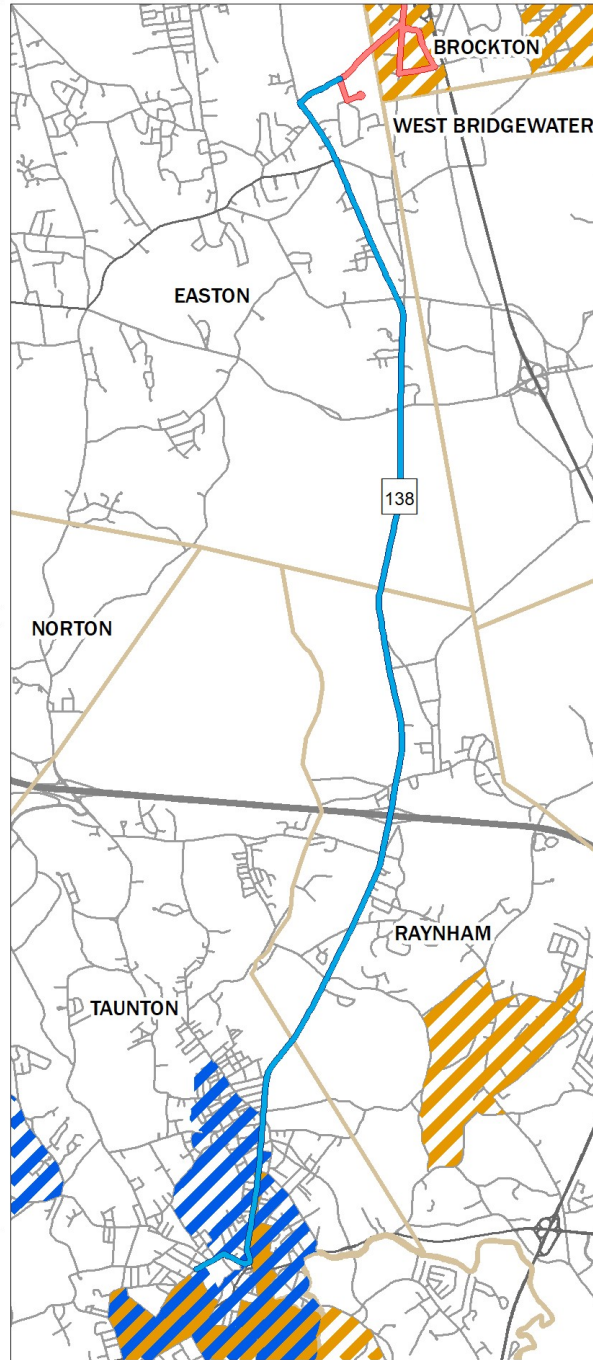


## Environmental Justice Areas



### Environmental Justice Criteria

-  Low Income
-  Minority Population
-  Low Income & Minority Population
-  Brockton-Taunton Extension
-  Brockton Area Transit Existing Network

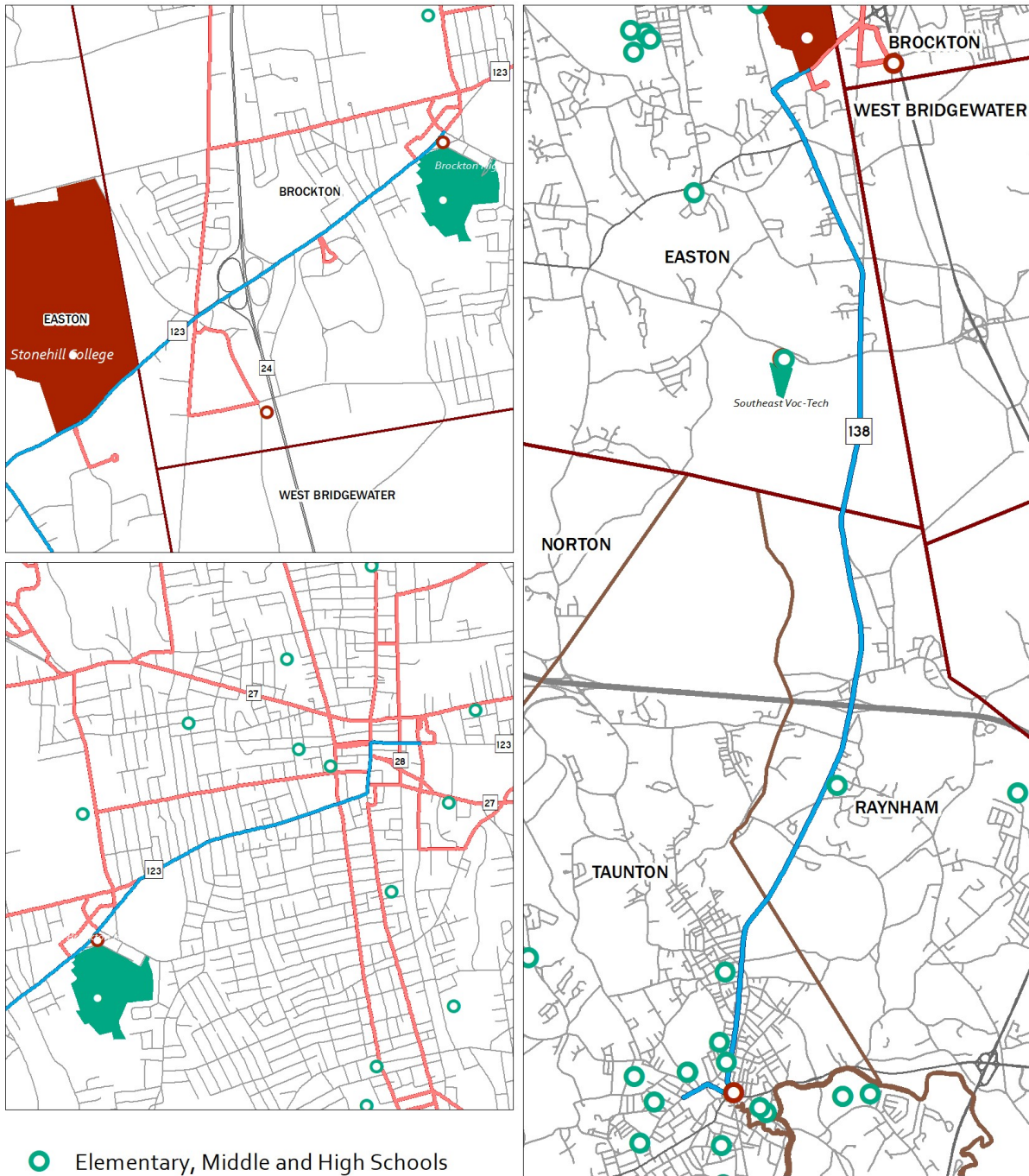


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Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC



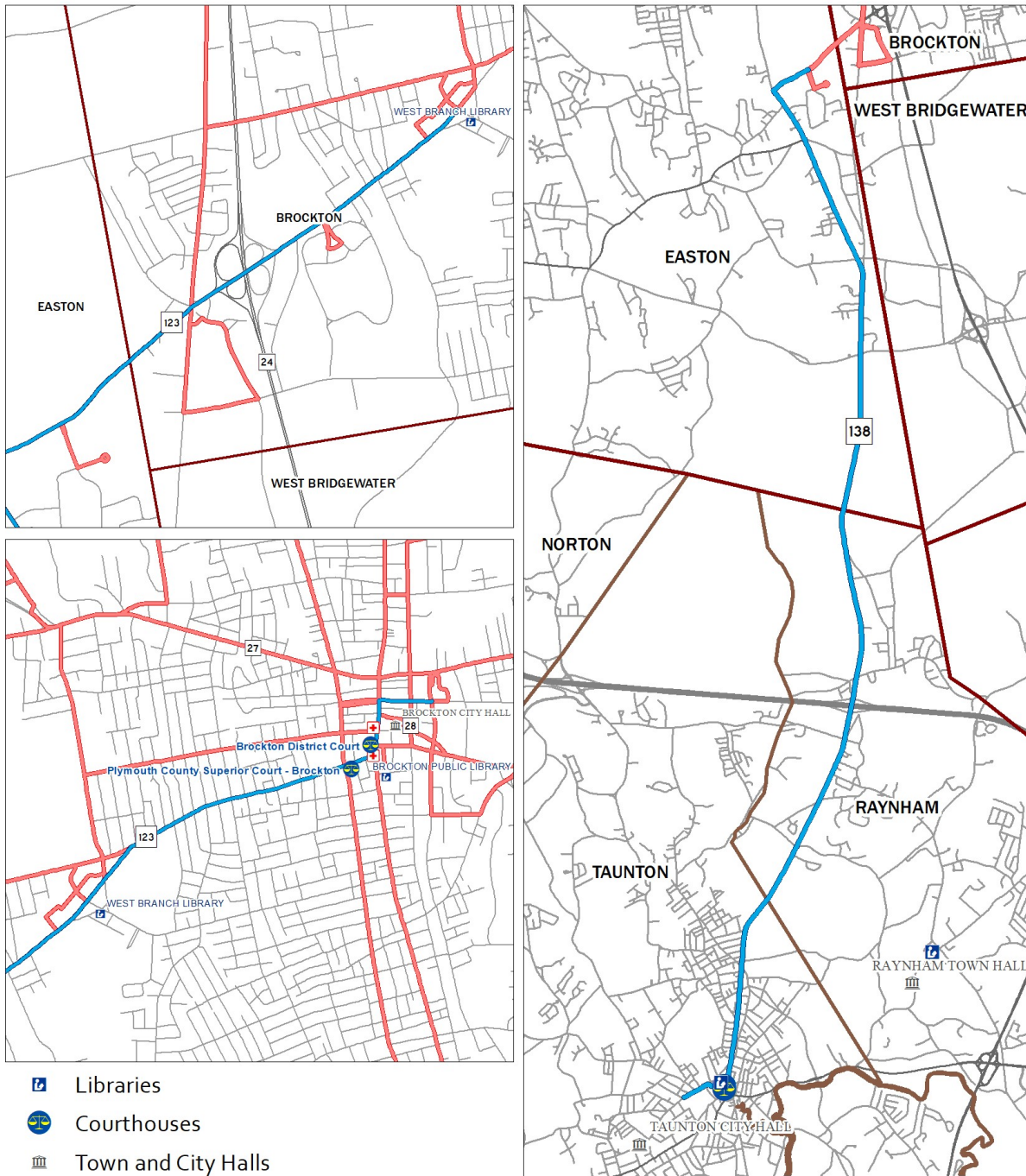
## Educational Institutions









- Elementary, Middle and High Schools
- Post Secondary Schools
- Brockton-Taunton Extension
- Brockton Area Transit Existing Network

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 70 School Street, Brockton, MA 02301  
 July 2020  
 Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC

## Brockton-Taunton Extension

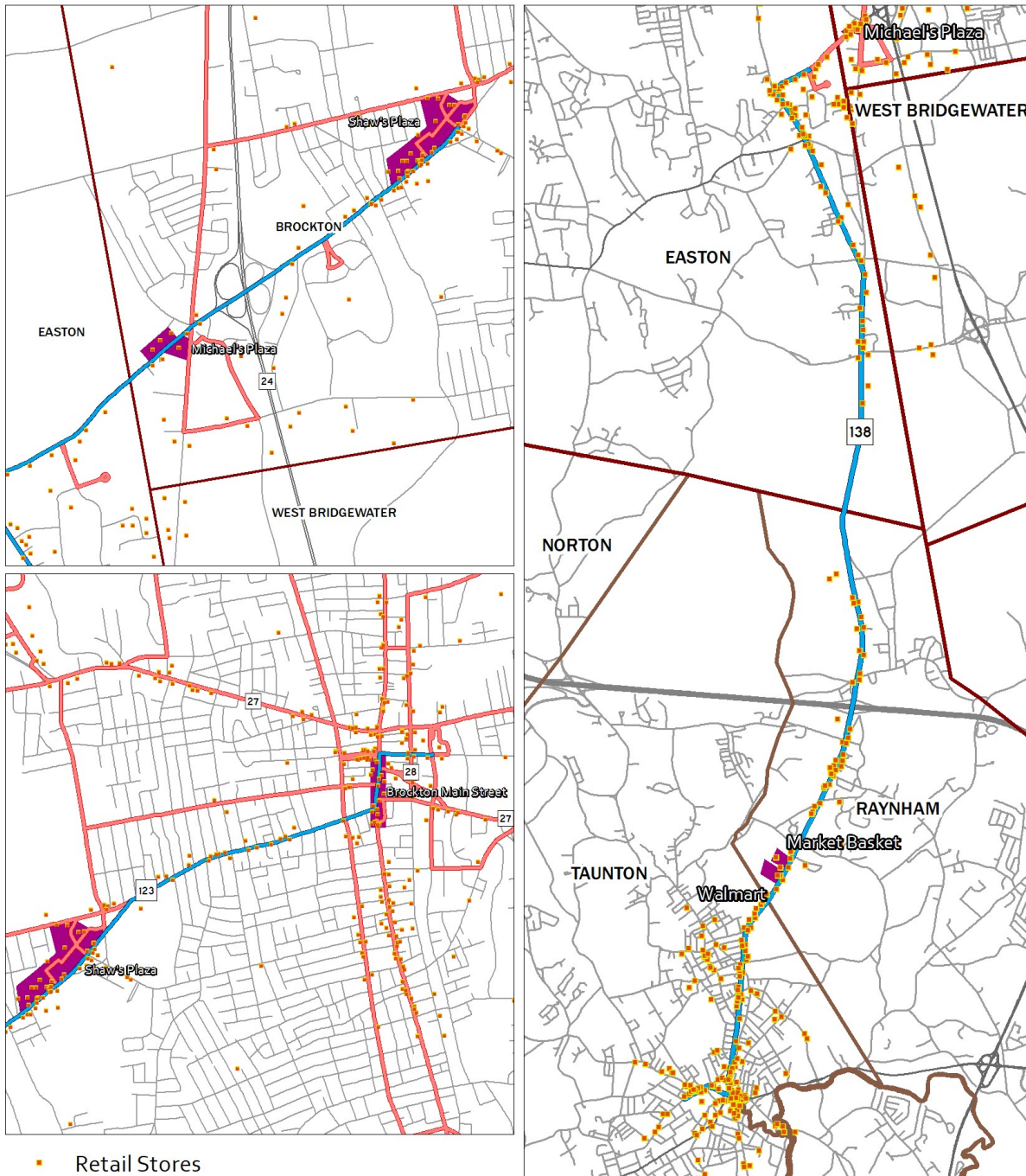


-  Libraries
-  Courthouses
-  Town and City Halls
-  Community Health Centers
-  Brockton-Taunton Extension
-  Brockton Area Transit Existing Network

Old Colony Planning Council  
 70 School Street, Brockton, MA 02301  
 July 2020  
 Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC



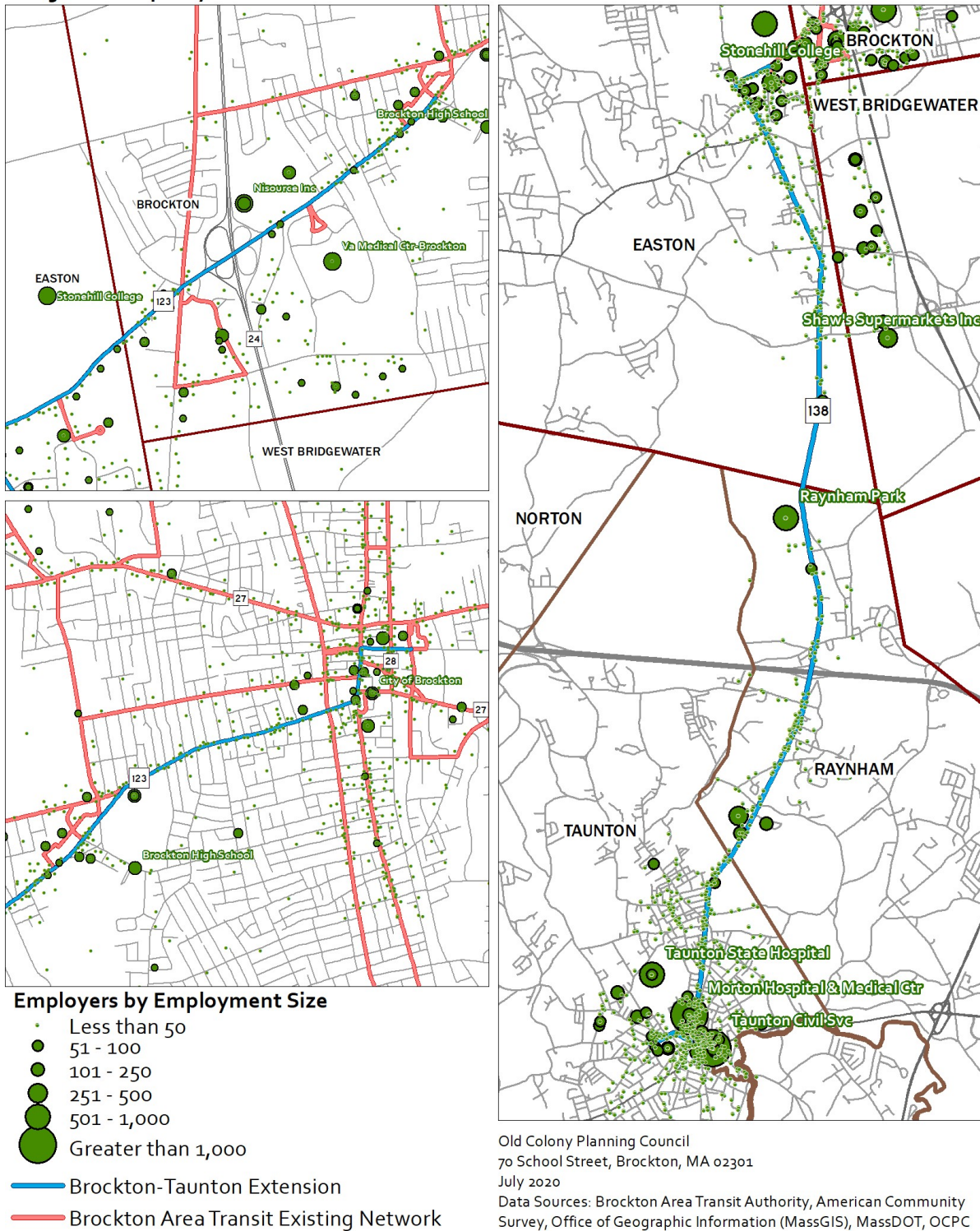
## Retail Centers and Stores



- Retail Stores
- Large Retailers and/or Retail Plazas
- Brockton-Taunton Extension
- Brockton Area Transit Existing Network

Old Colony Planning Council  
 70 School Street, Brockton, MA 02301  
 July 2020  
 Data Sources: Brockton Area Transit Authority, American Community Survey, Office of Geographic Information (MassGIS), MassDOT, OCPC

## Major Employers





## Recreational Areas

