Old Colony Metropolitan Planning Organization (MPO)

Old Colony Congestion Management Process (CMP) 2019 Year-End Report

August 2020

Prepared Under Task 2500 (Management Systems & Travel Demand Modeling) of the
FFY 2019 Old Colony Unified Planning Work Program – MassDOT Contract #108210

Old Colony Planning Council
70 School Street
Brockton, MA 02301-4097
www.ocpcrpa.org
(508) 583-1833

Old Colony Metropolitan Planning Organization (MPO)

The Honorable Robert Sullivan	Mayor, City of Brockton
Kenneth Tavares	Chairman, Board of Selectmen, Town of Plymouth
Eldon Moreira	Chairman, Board of Selectmen, Town of West Bridgewater
Daniel Salvucci	Vice Chairman, Board of Selectmen, Town of Whitman
Stephanie Pollack	Secretary and CEO, Massachusetts Department of Transportation (MassDOT)
Jonathan Gulliver	Highway Administrator, Massachusetts Department of Transportation (MassDOT)
Michael Lambert	Administrator, Brockton Area Transit Authority (BAT)
Christine Joy	President, Old Colony Planning Council (OCPC)

Joint Transportation Committee (JTC)

JTC Officers

JTC Chairman	Noreen O'Toole
JTC Vice Chairman	Daniel Salvucci

COMMUNITY	DELEGATE / ALTERNATE
Abington - Delegate	John Stone
Abington - Alternate	Bruce Hughes
Avon - Delegate	William Fitzgerald
Bridgewater - Delegate	Robert Wood
Brockton - Delegate	Lawrence Rowley
Duxbury - Delegate	Peter Buttkus
East Bridgewater - Delegate	John Haines
Easton - Delegate	David Field, P.E.
Easton - Alternate	Greg Swan, P.E.
Halifax - Delegate	R. Steven Hayward
Hanson - Delegate	Donald Howard
Hanover - Delegate	Victor Diniak
Kingston - Delegate	Paul Basler
Pembroke - Delegate	Gene Fulmine
Plymouth - Delegate	James Downey
Plympton - Delegate	Scott Ripley
Stoughton	Marc Tisdelle
West Bridgewater - Delegate	Chris Iannitelli
Whitman - Delegate	Noreen O'Toole
Whitman - Alternate	Daniel Salvucci
Delegate-at-Large	Troy E. Garron

Agency Representation

MassDOT	David Mohler, AICP
MassDOT	Benjamin Muller
MassDOT District 5	Mary-Joe Perry
MassDOT District 5	Pamela Haznar, P.E.
MassDOT District 5	Cheryll-Ann Senior
BAT	Michael Lambert
BAT	Glenn Ann Geiler
FHWA	Jeff McEwen
FHWA	Kenneth Miller
FHWA	Cassandra Ostrander
FTA	Peter Butler
FTA	Leah Sirmin
FTA	Kristin Wood
Brockton Traffic Commission	Captain John Hallisey

OCPC Transportation Staff

Charles Kilmer, AICP	Assistant Director/ Transportation Program Manager
Shawn Bailey	Transportation Planner
Paul Chenard	Senior Transportation Planner
Raymond Guarino	Principal Transportation Planner
William McNulty	Principal Transportation Planner
Kyle Mowatt	Senior Transportation Planner
Jimmy Pereira	Community/ Transportation Planner
Andrew Vidal	GIS Manager

Old Colony Planning Council (OCPC)

OCPC Officers

President	Christine Joy
Treasurer	Robert G. Moran, Jr.
Secretary	Sandra Wright

COMMUNITY	DELEGATE	ALTERNATE
Abington	Steven Santeusanio	
Avon	Frank Staffier	John Costa
Bridgewater	Sandra Wright	
Brockton	Robert G. Moran, Jr.	Preston Huckabee, P.E.
Duxbury	Valerie Massard, AICP	George D. Wadsworth
East Bridgewater	Vacant	
Easton	Jeanmarie Joyce	
Halifax	Amy Troup	
Hanover	Vacant	
Hanson	Deborah Pettey	Phillip Lindquist
Kingston	Robert Downey	Paul Basler
Pembroke	Rebecca Colletta	Daniel Trabucco
Plymouth	Lee Hartmann, AICP	
Plympton	Christine Joy	
Stoughton	Douglas Sylvestre	Forrest Lindwall
West Bridgewater	Eldon F. Moreira	
Whitman	Fred Gilmetti	Daniel Salvucci
Delegate-at-Large	Troy E. Garron	

OCPC Staff

Mary Waldron	Executive Director and Records Access Officer (RAO)
Brenda Robinson	Fiscal Officer
David Klein	Area Agency on Aging Administrator
Lila Burgess	Ombudsman Program Director
Jane Selig	Ombudsman Program Assistant Director
Laurie Muncy, AICP	Director of Community Planning and Economic Development
Joanne Zygmunt	Senior Comprehensive Planner
Jimmy Pereira	Community/Transportation Planner
Dottie Fulginiti	Economic Recovery Planner
Bruce Hughes	Economic Development/Community Planner
Andrew Vidal	GIS Manager
Charles Kilmer, AICP	Assistant Director/Transportation Program Manager
Raymond Guarino	Principal Transportation Planner
William McNulty	Principal Transportation Planner
Paul Chenard	Senior Transportation Planner
Kyle Mowatt	Senior Transportation Planner
Shawn Bailey	Transportation Planner

Notice of Nondiscrimination Rights and Protections to Beneficiaries

Federal "Title VI/Nondiscrimination" Protections

The Old Colony Metropolitan Planning Organization (MPO) operates its programs, services, and activities in compliance with federal nondiscrimination laws including Title VI of the Civil Rights Act of 1964 (Title VI), the Civil Rights Restoration Act of 1987, and related statutes and regulations. Title VI prohibits discrimination in federally assisted programs and requires that no person in the United States of America shall, on the grounds of **race**, **color,** or **national origin** (including **limited English proficiency**), be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal assistance. Related federal nondiscrimination laws administrated by the Federal Highway Administration, the Federal Transit Administration, or both prohibit discrimination on the basis of **age**, **sex**, and **disability**. These protected categories are contemplated within the Old Colony MPO's Title VI Programs consistent with federal interpretation and administration. Additionally, the Old Colony MPO provides meaningful access to its programs, services, and activities to individuals with limited English proficiency, in compliance with US Department of Transportation policy and guidance on federal Executive Order 13166.

State Nondiscrimination Protections

The Old Colony MPO also complies with the Massachusetts Public Accommodation Law, M.G.L. c 272 §§ 92a, 98, 98a, prohibiting making any distinction, discrimination, or restriction in admission to or treatment in a place of public accommodation based on **race**, **color**, **religious creed**, **national origin**, **sex**, **sexual orientation**, **disability**, or **ancestry**. Likewise, the Old Colony MPO complies with the Governor's Executive Order 526, section 4 requiring all programs, activities, and services provided, performed, licensed, chartered, funded, regulated, or contracted for by the state shall be conducted without unlawful discrimination based on **race**, **color**, **age**, **gender**, **ethnicity**, **sexual orientation**, **gender identity or expression**, **religion**, **creed**, **ancestry**, **national origin**, **disability**, **veteran's status** (including Vietnam-era veterans), or **background**.

Additional Information

To request additional information regarding Title VI and related federal and state nondiscrimination obligations, please contact:

Old Colony Planning Council
Title VI/ Nondiscrimination Coordinator
Mary Waldron
70 School Street
Brockton, MA 02301
508-583-1833 Extension 202
mwaldron@ocpcrpa.org

Title VI Specialist
MassDOT, Office of Diversity and Civil Rights
10 Park Plaza
Boston, MA 02116
857-368-8580
TTY: 857-368-0603
MASSDOT.CivilRights@state.ma.us

Complaint Filing

To file a complaint alleging a violation of Title VI or related federal nondiscrimination law, contact the Title VI Specialist (above) within 180 days of the alleged discriminatory conduct.

To file a complaint alleging a violation of the state's Public Accommodation Law, contact the Massachusetts Commission Against Discrimination within 300 days of the alleged discriminatory conduct at:

Massachusetts Commission Against Discrimination (MCAD)
One Ashburton Place, 6th Floor
Boston, MA 02109
617-994-6000
TTY: 617-994-6196

Translation

English
If this information is needed in another language, please contact the MPO Title VI Coordinator at 508-583-1833 ext. 202.

Spanish
Si necesita esta información en otro idioma, por favor contacte al coordinador de MPO del Título VI al 508-583-1833 ext. 202.

Portuguese
Caso estas informações sejam necessárias em outro idioma, por favor, contate o Coordenador de Título VI da MPO pelo telefone 508-583-1833, Ramal 202

Chinese Simple
如果需要使用其它□ □ □ □ □ □ ，□ □ □ Old Colony大都会□ □ □ □ （MPO）《民□ □ □ 》□ □ □ □ □ □ ，□ □ 508- 583-1833，□ 202。

Chinese Traditional
如果需要使用其他語言瞭解資訊，請聯繫Old Colony大都會規劃組織（MPO）《民權法案》第六章協調員，電話508- 583-1833，轉202。

Vietnamese
Nếu quý vị cần thông tin này bằng tiếng khác, vui lòng liên hệ Điều phối viên Luật VI của MPO theo số điện thoại 508- 583-1833, số máy nhánh 202.

Haitian Creole
Si yon moun bezwen enfòmasyon sa a nan yon lòt lang, tanpri kontakte Koòdonatè a Title VI MPO nan 508-583-1833 ext. 202.

French Creole
Si yon moun vle genyen enfòmasyon sa yo nan yon lòt lang, tanpri kontakte Kowòdinatè MPO Title VI la nan nimewo 508-583-1833, ekstansyon 202.

Russian
Если Вам необходима данная информация на любом другом языке, пожалуйста, свяжитесь с Координатором Титула VI в MPO по тел: 508-583-1833, добавочный 202.

French

Si vous avez besoin d'obtenir une copie de la présente dans une autre langue, veuillez contacter le coordinateur du Titre VI de MPO en composant le 508-583-1833, poste 202.

Italian

Se ha bisogno di ricevere queste informazioni in un’altra lingua si prega di contattare il coordinatore MPO del Titolo VI al 508- 583-1833 interno 202

Mon-Khmer, Cambodian

ប្រសិនបើលោក-អ្នកត្រូវការបកប្រែព័ត៌មាននេះ សូមទាក់ទងអ្នកសម្របសម្រួលជំពូកទី**6** របស់ **MPO** តាមរយៈលេខទូរស័ព្ទ **508-583-1833** រួចភ្ជាប់ទៅលេខ **202**។

Arabic

إذا كنت بحاجة إلى هذه المعلومات بلغة أخرى، يُرجى الاتصال بمنسق الفقرة السادسة لمنظمة التخطيط الحضري على الهاتف: 1833-583 -508 وثم اضغط الأرقام 202.

Updated December 2019

Old Colony Planning Council

ACKNOWLEDGEMENTS

The preparation of this report has been financed in part through grants from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under Metropolitan Planning Program, Section 104(f) of Title 23, U.S. Code, under Contract No. 108210

The views and opinions of the Old Colony Planning Council expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation.

This Annual Report was prepared by the following members of the Old Colony Planning Council staff under the supervision of Charles Kilmer, Assistant Director/Transportation Program Manager, and the direction of Mary Waldron, Executive Director.

Report Preparation

Shawn Bailey, Transportation Planner
sbailey@ocpcrpa.org

Contributing Staff

Paul Chenard, Senior Transportation Planner
pchenard@ocpcrpa.org

Bill McNulty, Principal Transportation Planner
wmcnulty@ocpcrpa.org

Kyle Mowatt, Senior Transportation Planner
kmowatt@ocpcrpa.org

Jimmy Pereira, Community/Transportation Planner
jpereira@ocpcrpa.org

Maps and Graphics

Andrew Vidal, GIS Manager
avidal@ocpcrpa.org

The preparation of this report has been financed in part through a grant[s] from the Federal Highway Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code.

The views and opinions of the Old Colony Planning Council expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation.

Table of Contents

The Congestion Management Process (CMP)

Congestion on a transportation facility may be defined as the level of performance that is deemed unacceptable due to traffic interference. The acceptable level of performance varies from state to state. In addition, the types of transportation modes and links also vary from place to place. Therefore, the regulations require an effective CMP that provides information on enhancing performance and identifies effective congestion reducing strategies that meet the needs of the particular region.

The Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94), the first federal law to fund the nation's surface transportation, provides $305 billion between fiscal years 2016 and 2020. The funding from the FAST Act will go towards highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. The most significant factor of the FAST Act is that it will provide federal funding for freight projects for the first time in the nation's history.[1]

Congestion Management Process:

"A systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs."

Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Planning Federal Highway Administration (FHWA) & Federal Transit Administration (FTA)

The Congestion Management Process (CMP) is intended to bring a substantive change in perspective and practice to address congestion management through a process that provides for effective management and operations, enhanced linkage to the planning and environmental review process based on cooperatively developed travel demand reduction, operational management strategies, and capacity increases.

A CMP is a process that monitors transportation facilities for congestion problems and seeks to implement congestion mitigation strategies through the following MPO Certification Documents: the Unified Planning Work Program (UPWP), the Transportation Improvement Program (TIP), and the Long-Range Transportation Plan (LRTP). A description of the federal requirements related to the CMP may be found in the 2016 Federal Register, section 450.322.

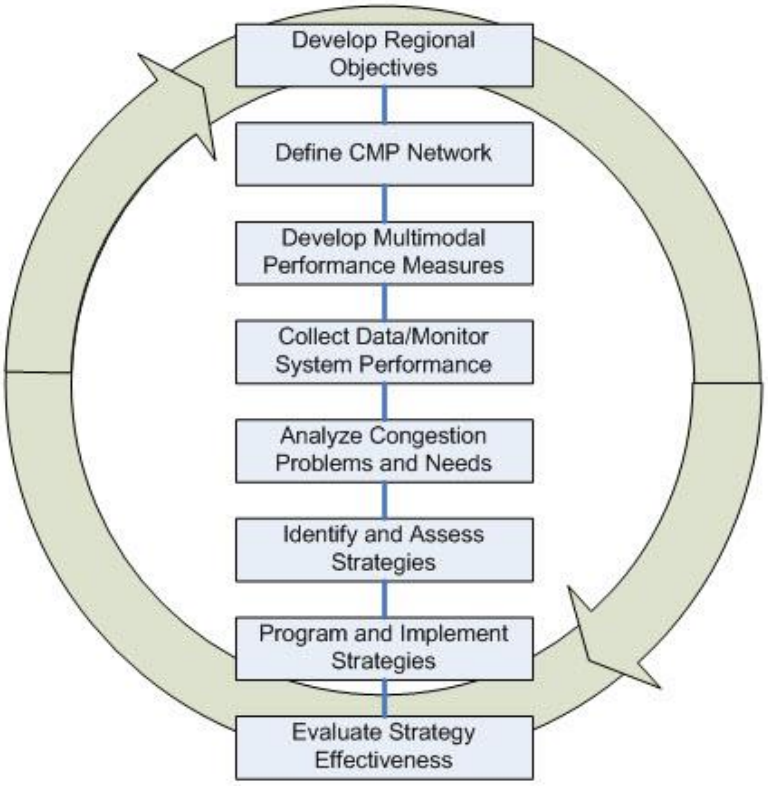
The purpose of the Congestion Management Process (CMP) is to identify congested locations; determine the causes of congestion; develop alternative strategies to mitigate congestion; evaluate the different potential mitigation strategies; propose alternative strategies that best address the causes and impacts of congestion; and track and evaluate the impact of previously implemented congestion management strategies. The CMP is intended to be an integral part of the metropolitan planning process, rather than a stand-alone process or system.

[1] Fixing America's Surface Transportation Act – Federal Highway Administration

Old Colony Congestion Management Process (CMP)

The Old Colony Congestion Management Process (CMP) follows the process model outlined by the Federal Highway Administration in their *Congestion Management Process: A Guidebook*. The Process Model presented by the Federal Highway Administration and Federal Transit Administration is built upon eight actions that are common to successful Congestion Management Processes. The graphic in Figure 1 illustrates these actions and highlights the cyclical nature of the process. These actions, like the overall Congestion Management Process, are not stand alone actions but rather built into the entire transportation planning process and incorporated in MPO products such as the Long Range Transportation Plan, the Transportation Improvement Program, and the Unified Planning Work Program.

Figure 1: Elements of the Congestion Management Process



Development of Regional Objectives

The following Old Colony Congestion Management Process (CMP) objectives were first developed during the development of the 2016 Long Range Regional Transportation Plan, and further refined during the development of the 2020 Long Range Regional Transportation Plan. These objectives were developed in a collaborative effort with stakeholders such as the Federal Highway Administration (FHWA), the Massachusetts Department of Transportation (MassDOT), the Brockton Area Transit (BAT) Authority, and local communities.

Goal: Regional Mobility and Congestion Management: To reduce congestion, improve mobility, and improve access to critical essential services.

Objectives

- Promote Mode Shift by increasing use of transit, carpool/vanpool, and non-motorized transportation modes such as bicycling and walking
- Reduce traffic congestion, and improve level of service and access management
- Maintain and improve transit system efficiency and capacity
- Increase automobile and bicycle parking capacity and usage at transit stations and commuter lots
- Eliminate bottlenecks on limited access highways and on the freight network
- Improve and expand human service coordination, mobility, and accessibility for all modes
- Reduce number and size of gaps in the ADA-accessible sidewalk network
- Increase use of traffic signal priority (hold current green light) for transit vehicles and traffic signal pre-emption for emergency vehicles (override programmed phasing to provide approaching emergency vehicles a green light)
- Monitor utilization and congestion levels at commuter rail and Park & Ride parking facilities
- Improve accessibility for all modes to all users

Definition of the CMP Network

The Old Colony Congestion Management Process (CMP) regional network includes functionally classified roadways and transit facilities in the 17 communities that comprise the Old Colony Planning Metropolitan Planning Organization region in Southeastern Massachusetts. The 17 Old Colony member communities are Abington, Avon, Bridgewater, Brockton, Duxbury, East Bridgewater, Easton, Halifax, Hanover, Hanson, Kingston, Pembroke, Plymouth, Plympton, Stoughton, West Bridgewater, and Whitman.

The Roadway Network

The Old Colony CMP region contains over 2,000 centerline miles of road that provide motorists with the ability to travel throughout the region. The major roadway system in Southeastern Massachusetts and the regional highway network in the Old Colony CMP region are shown in Figure 3. Specifically, the Old Colony CMP region has 2,062.35 miles of urban roadways compared to 29.96 miles of rural roadways. Table 1 displays the characteristics of the centerline miles within the Old Colony CMP region.

Table 1: Old Colony CMP Region Centerline Miles by Functional Classification

Designation	Interstate	Arterial	Collector	Local	*Total*
Urban	1.20	404.56	261.01	1,395.58	***2,062.35***
Rural	0.00	1.49	11.63	16.84	***29.96***
Total	***1.20***	***406.05***	***272.64***	***1,412.42***	***2,092.32***

Source: MassDOT 2018 Road Inventory Year-End Report

Figure 2: Map of the Old Colony Region

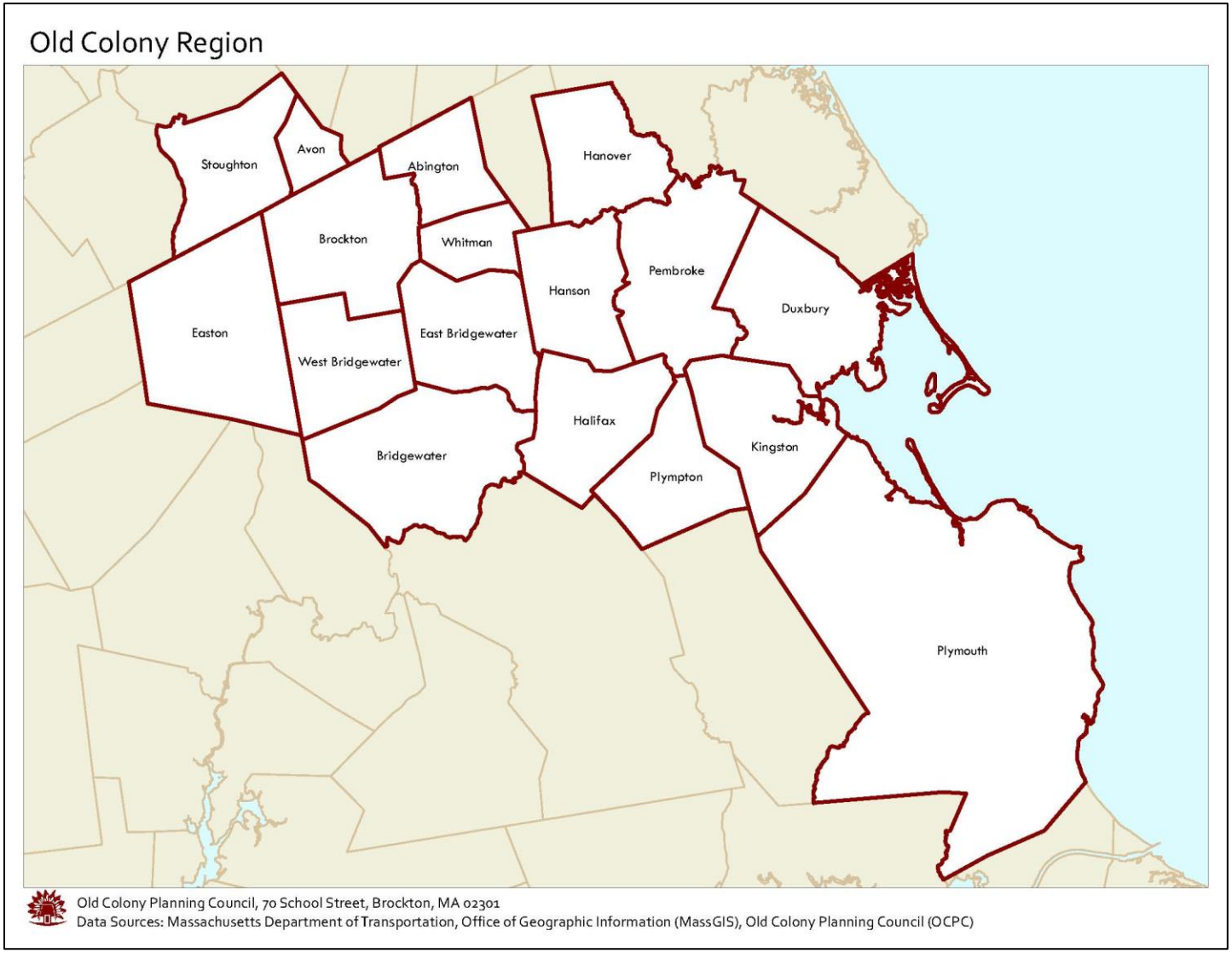
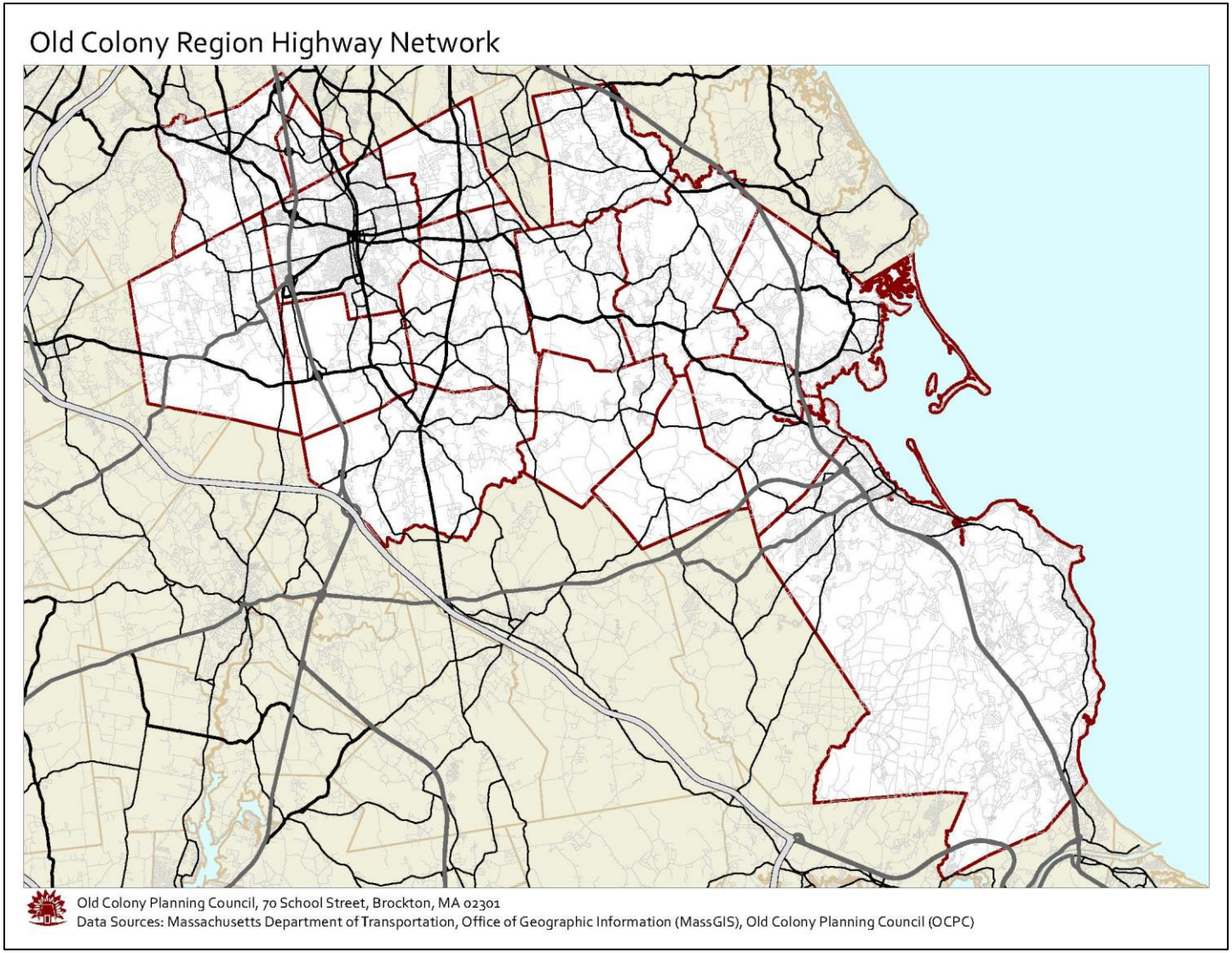


Figure 3: Map of the Old Colony Roadway Network



The Old Colony CMP region contains over 6,000 intersections that provide a variety of functionality and movement. Intersections are categorized by their functionality, ranging from "major" (arterial meeting arterial) to "minor" (local meeting local). This categorization helps determine data collection intervals, level of analysis, and improvement application.

The Old Colony CMP is designed to identify key intersections that demonstrate congestion, excessive delays, and circulation problems. The Old Colony CMP considers a congested intersection to have a Level of Service (LOS) of "D" or below. The LOS "D" threshold was chosen to capture intersections that are nearing congestion as well as those that are currently congested. This method is used to identify intersections that could benefit from short-term improvements rather than waiting for them to fall into the major or long-term improvement category.

Transit

The Old Colony CMP transit facilities include the Brockton Area Transit Authority (BAT) fixed route bus service, the Massachusetts Bay Transportation Authority (MBTA) Commuter Rail service, and Park & Ride commuter lots located along the Route 24 and Route 3 corridors.

Brockton Area Transit Authority (BAT)

BAT provides local transit service in Abington, Avon, Bridgewater, Brockton, Easton, Rockland, Stoughton, West Bridgewater, and Whitman. BAT also provides service to the MBTA Ashmont Station in Dorchester and to Bridgewater State University (BSU). There are currently fourteen regularly scheduled routes in the fixed route system, which all except for Route 13 (the "Mini Maller"), Rockland Flex Ride, and Bridgewater State University originate from the BAT Intermodal Centre in Downtown Brockton.

The BAT system provides transportation to major employment centers and industrial parks, as well as to essential life services such as schools, medical facilities, and grocery and other shopping options. Additionally, BAT provides service to commuter rail stations, the MBTA Red Line (Ashmont Station) and connections to MBTA fixed bus routes.

In 2018, BAT completed a Transit Fare Equity Analysis to see what potential changes a fare increase would have on the low-income and minority populations of BAT's service area. The selected fare increase alternative (an increase from $1.25 to $1.50 on fixed route service for cash fares only) did not create a disparate impact on minority populations and did not create a disproportionate burden on low-income populations. On July 1, 2019, BAT increased the fares on all their CharlieCard and Pass fares that were not changed in 2018. The CharlieCard and Pass fare increases also did not create a disparate impact on minority populations and did not create a disproportionate burden on low-income populations. Also starting July 1, 2019, BAT increased service on the Route 14 Stoughton line which increased the number of trips to the BAT Centre in downtown Brockton (going from four trips to fifteen trips to the BAT Centre).

Massachusetts Bay Transportation Authority (MBTA) Commuter Rail

The MBTA is the fifth largest mass transit system in the nation in terms of daily ridership. It serves a population of 4,817,014 (2010 census) in 176 cities and towns with an area of 3,249 square miles. To carry out its mission, it maintains 183 bus routes (including two Bus Rapid Transit (BRT) lines), three rapid transit lines, five light rail lines, four trackless trolley routes, and 13 commuter rail routes. The average weekday ridership for the entire system is approximately 1.3 million passenger trips.[2]

[2] MBTA.com. *The New MBTA*.

Of the 13 commuter rail lines, three provide service to the Old Colony region:

- Providence/Stoughton Line
- Middleborough/Lakeville Line
- Kingston/Plymouth Line

In total, 16 commuter rail stations within the Old Colony CMP region are surveyed on a regular basis to determine utilization.

Park & Ride

The Old Colony CMP region includes several major limited access highways for interstate travel and inter-regional access. These highways include Route 24 and Route 3 and are an important component of the CMP System Performance Monitoring Program.

Route 24 Corridor

Route 24 (AmVets Memorial Highway) extends from Interstate 195 in Fall River north to Interstate 93 (commonly referred to as Route 128) in Randolph. Route 24 is currently 40 miles in length; has 21 interchanges; and at its busiest point, carries just over 120,000 vehicles per day.

In the Old Colony CMP region, there are two Park & Ride Facilities located on the Route 24 Corridor, which include the following:

- West Bridgewater – Route 24, Exit 16 (Route 106)
- Bridgewater – Route 24, Exit 15 (Route 104)

Route 3 Corridor

Route 3 (Pilgrims Highway) extends from Cape Cod north to Interstate 93 in Boston. Route 3 is currently 56 miles in length; has 26 interchanges; and at its busiest point, carries over 130,000 vehicles per day.

In the Old Colony CMP region, there are four Park & Ride Facilities located on the Route 3 Corridor, which include the following:

- Rockland – Route 3, Exit 14 (Route 228)
- Kingston – Route 3, Exit 10 (Route 3A & 53)
- Plymouth – Route 3, Exit 5 (Long Pond Road)
- Bourne – Route 3, Exit 1B (Route 6) (Sagamore)

Development of Multimodal Performance Measures

The following targets and performance measures were refined during the development of the 2020 Long Range Regional Transportation Plan to measure the progress and effectiveness of the Old Colony CMP concerning the associated specific objectives outlined in the CMP. These targets and performance measures include:

Objectives with specific Targets and Performance Measures

- Reduce traffic congestion and improve level of service management.
    - **Target and Performance Measure:** Monitor congestion levels on federal-aid eligible highway network annually and highlight corridors with volume to capacity (v/c) ratios of 0.8 or greater for targeted study and/or improvements.
- Monitor utilization and congestion levels at commuter rail and park & ride parking facilities.
    - **Target and Performance Measure:** Record utilization data twice annually and report data to MassDOT.
- Improve accessibility for all modes to all users.
    - **Target and Performance Measure:** 50% of available Transportation Improvement Program funding allocated to projects that significantly improve bicycle and pedestrian mobility.
- Reduce greenhouse gas emissions and ground level ozone (NOx and VOCs) by all transportation modes.
    - **Target and Performance Measure:** 50% of TIP projects reduce GHGs while also reducing negative impacts on the natural environment (such as improved storm water management or the addition of green space).
- Monitor Level of Travel Time Reliability (LOTTR) on both the Interstate System and non-Interstate NHS.
    - **Target and Performance Measure:** Achieve a LOTTR of 68% on Interstate roads and 80% on non-Interstate roads by 2020 and 2022.
- Monitor Level of Truck Travel Time Reliability (TTTR) on the Interstate System.
    - **Target and Performance Measure:** Achieve a TTTR of 1.85 on Interstate NHS roads by 2022.
- Increase the Percentage of Non-SOV (Single Occupancy Vehicle) Travel.
    - **Target and Performance Measure:** Achieve 34.82% Non-SOV travel by 2020 and 35.46% by 2022.
- Reduce Peak Hour Excessive Delay (PHED) in the urbanized area (UZA) level.
    - **Target and Performance Measure:** Achieve a PHED of 18.31 annual hours per capita or lower by 2022.
- Reduce the total reduction of on-road mobile source emissions from projects funded under the Congestion Mitigation & Air Quality (CMAQ) program.
    - **Target and Performance Measure:** Reduce the emissions levels down to 1,622 CO_2 by 2020.
- Improve the time it takes commuters to get to work.
    - **Target and Performance Measure:** Reduce the average commute time for commuters who drive to work.
- Increase the amount of registered municipalities for Complete Streets policies.
    - **Target and Performance Measure:** Achieve 250 registered municipalities by 2020 and 275 registered municipalities by 2022 for Complete Streets policies.
    - Increase the amount of approved Complete Streets policies.
        - **Target and Performance Measure:** Achieve 200 approved Complete Streets policies by 2020 and 250 approved Complete Streets policies by 2022.

Collection of Data and Monitoring of System Performance

Roadways

During 2019, Automatic Traffic Recorder (ATRs) counts were collected at 145 locations on the highway network throughout the Old Colony region. These counts were conducted for numerous Local Highway Technical Assistance (LTA) studies; corridor studies such as the Route 139 Corridor Study and Main Street Corridor Study in the Unified Planning Work Program (UPWP); the MassDOT Traffic Count Program; and the Old Colony Congestion Management Process. The data collection program yields several products that OCPC shares with its member communities, federal and state agencies, various stakeholders, and other interested parties on a regular basis. Of these traffic counts, 45 were collected on principal arterials and the Massachusetts state numbered highway network. Table 2 summarizes the data collected from these locations. Figure 4 displays where every ATR in 2019 was conducted, with maps of the individual municipalities in Appendix A, and Figure 5 displays where every LTA study was conducted in 2019, with maps of every municipality that had a study in Appendix B.

This traffic data collection program provides the CMP with Average Annual Daily Traffic, Vehicle Speeds, Percentages of Heavy Vehicles, and Volume-to-Capacity Ratios on major highways in the Old Colony CMP region. These outputs are important to the Old Colony CMP as they help determine where the heaviest traffic exists as well as which facilities are at or near capacity.

Volume-to-Capacity Ratio (V/C Ratio)

The volume to capacity ratio, which is based on the relationship between a facility's theoretical capacities to the actual volumes utilizing the system, is an important performance measure utilized in the congestion management process. The capacity of a road or facility can be thought of as its ability to process traffic, measured in both the physical space available and in time, or the speed in which vehicles can travel (how quickly, measured in time, the vehicle traverses the facility). Therefore, the higher the volume to capacity (V/C) ratio, the more congestion exists. A V/C ratio of 0.80 or above is used as a threshold for screening congested facilities. Table 3 summarizes the state numbered locations and Table 4 summarizes the local locations where there are V/C ratios of 0.80 or higher.

Intersections

In 2019, OCPC staff conducted manual intersection Turning Movement Counts (TMCs) at 50 locations throughout the region. These counts were conducted for numerous Local Highway Technical Assistance (LTA) Studies; UPWP Studies; and the Old Colony Congestion Management Process. Figure 6 displays every TMC locations that was conducted during 2019, with maps of individual municipalities in Appendix C.

The TMCs conducted by OCPC are typically done during the morning (7-9 AM) and afternoon (4-6 PM) peak traffic periods and include data such as: total intersection traffic; peak period traffic; peak hour factors, and percentages of heavy vehicles based on FHWA Scheme F vehicle classification. The TMC counts provide OCPC staff with the ability to perform intersection Level-of-Service (LOS) analyses, which characterizes the operation of the specific facility.

Level of Service (LOS) Analyses

Level-of-service analysis is a qualitative and quantitative measure based on the analysis techniques published in the Highway Capacity Manual by the Transportation Research Board. Level-of-service is a general measure that characterizes the overall operation of an intersection or transportation facility. It is based upon the operational conditions of a facility including lane use, traffic control, and lane width, and considers such factors as operating speeds, traffic interruptions, and freedom to maneuver. Level-of-service represents a range of operating conditions and is summarized with letter grades from "A" to "F", with "A" being the most desirable.

The Old Colony CMP Intersection LOS Table in Appendix D displays the results of LOS analyses for intersections that have been assessed through the Old Colony Congestion Management Process and other planning tasks. The intersections that have been programmed in the Old Colony Unified Planning Work Program, which demonstrated a LOS of "D" or below in either the AM or PM peak hours, are listed in the previously mentioned Table.

As intersections are improved, they are re-analyzed to measure the effectiveness of the improvement. In addition, new intersections, which demonstrated a LOS of "D" or below, are continually added to the list. They are recounted and re-analyzed on a regular schedule (based on functionality rating) to determine trends and identify potential improvements.

Table 2: 2019 Traffic Conditions on the State Numbered Routes and Arterials in the Region

Community	MA Route Number	Location	ADT	85th Percentile Speed	% Heavy Vehicles
Abington	123	Brockton Ave @ Brockton City Line	13,491	45 MPH	10.7%
Abington	139	North Ave @ Rockland Town Line	17,465	39 MPH	8.2%
Abington	58	Plymouth St, N of Summer St	14,825	38 MPH	8.8%
Abington	58	Plymouth St, S of Summer St	16,732	37 MPH	9.7%
Abington	18	Washington St, N of Summer St	22,495	36 MPH	8.7%
Abington	18	Washington St, S of Summer St	24,307	38 MPH	13.8%
Brockton	123	Centre St, E of Plymouth St	12,880	36 MPH	6.1%
Brockton	123	Centre St, W of Plymouth St	10,851	31 MPH	5.5%
Brockton	28	Main St, N of Hayward Ave	16,187	36 MPH	8.3%
Duxbury	14	West St, S of Temple St	6,338	47 MPH	12.7%
Duxbury	14	West St, S of Temple St (Weekend)	5,721	47 MPH	9.8%
Hanover	139	Hanover St @ Rockland Town Line	10,734	44 MPH	13.0%
Hanover	139	Hanover St, E of Grove St	12,601	43 MPH	5.9%
Hanover	139	Hanover St, E of Main St	15,070	42 MPH	10.4%
Hanover	139	Hanover St, E of Plain St	9,737	47 MPH	15.0%
Hanover	139	Hanover St, W of Grove St	9,711	44 MPH	9.6%
Hanover	139	Hanover St, W of Main St	16,862	39 MPH	12.2%
Hanover	139	Hanover St, W of Plain St	10,651	42 MPH	6.7%
Hanover	139	Rockland St, E of Hanover St	13,216	44 MPH	6.4%
Hanson	58	East Washington St, E of West Washington St	11,574	38 MPH	13.8%
Hanson	58	Liberty St, S of East Washington St	9,801	39 MPH	6.1%
Hanson	58	Spring St, N of West Washington St	8,612	39 MPH	10.8%
Plymouth	3A	Court St, N of Cherry St	13,297	37 MPH	11.1%
Plymouth	3A	Court St, N of Cherry St (Weekend)	8,733	39 MPH	12.3%
Plymouth	3A	Court St, S of Prince St	11,847	29 MPH	8.4%
Plymouth	3A	Court St, S of Prince St (Weekend)	8,893	30 MPH	7.8%
Plymouth	3A	State Rd, E of Beaver Dam Rd	15,990	40 MPH	9.4%
Plymouth	3A	State Rd, E of Beaver Dam Rd (Weekend)	14,813	40 MPH	7.2%
Plymouth	3A	State Rd, E of Rocky Hill Rd	15,123	44 MPH	8.8%
Plymouth	3A	State Rd, E of Rocky Hill Rd (Weekend)	13,404	45 MPH	6.5%
Plymouth	3A	State Rd, W of Beaver Dam Rd	15,015	43 MPH	9.6%
Plymouth	3A	State Rd, W of Beaver Dam Rd (Weekend)	13,357	44 MPH	7.5%
Plymouth	3A	State Rd, W of Rocky Hill Rd	18,095	44 MPH	3.6%
Plymouth	3A	State Rd, W of Rocky Hill Rd (Weekend)	16,110	44 MPH	1.7%
Stoughton	27	Park St, N of Turnpike St	21,254	42 MPH	6.0%
Stoughton	27	Park St, S of Turnpike St	24,112	43 MPH	6.2%
West Bridgewater	28	North Main St, N of Matfield St	14,741	42 MPH	11.9%
West Bridgewater	28	North Main St, S of Matfield St	16,138	41 MPH	7.6%
West Bridgewater	106	West Center St, E of Howard St	24,739	38 MPH	10.7%
West Bridgewater	106	West Center St, W of Howard St	26,840	34 MPH	7.0%
Whitman	18	Bedford St @ Abington Town Line	16,955	43 MPH	10.6%
Whitman	27	Franklin St, S of Winter St	5,561	44 MPH	8.8%

Figure 4: All 2019 ATR Count Locations

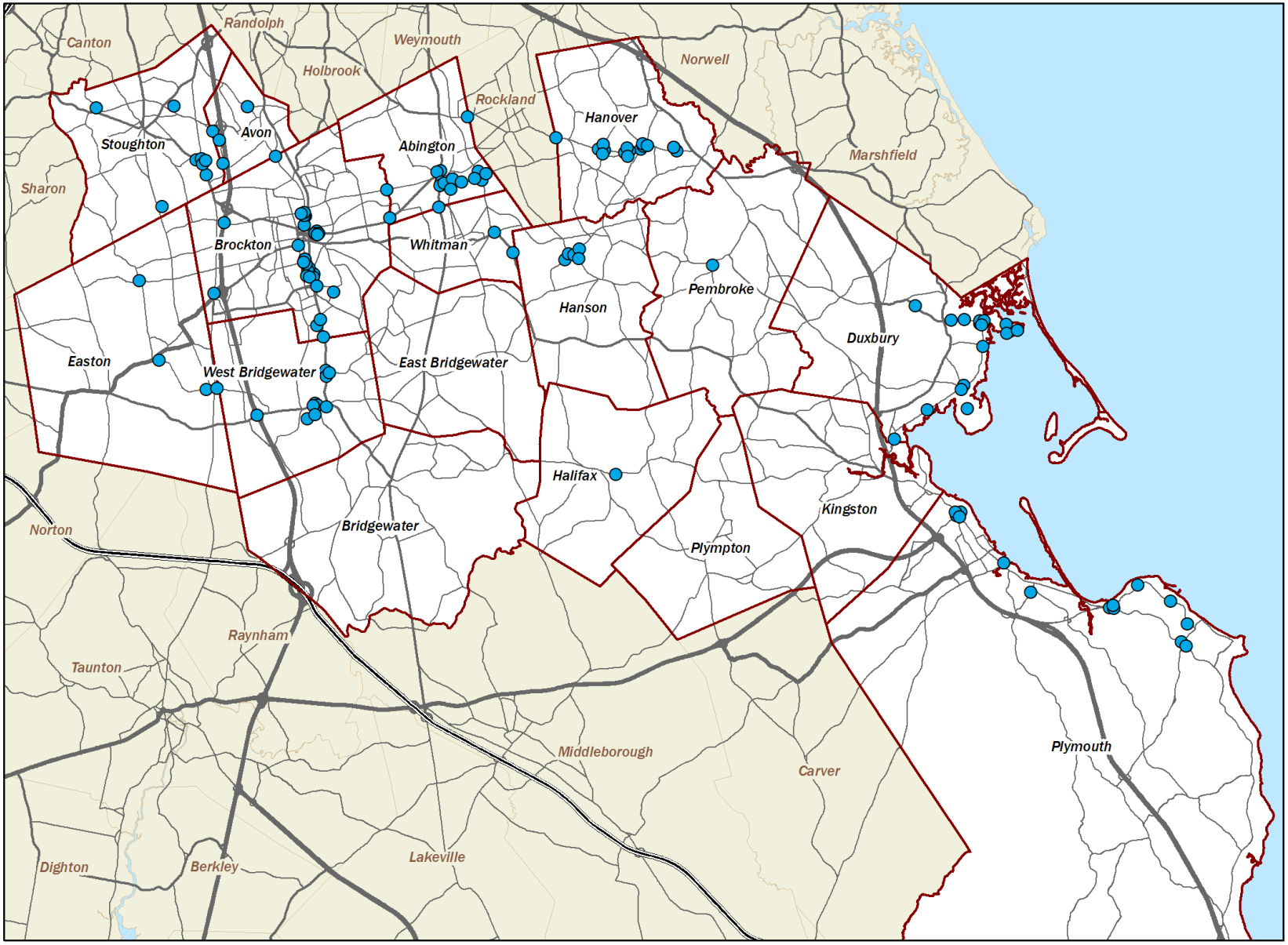


Figure 5: All 2019 LTA Study Locations

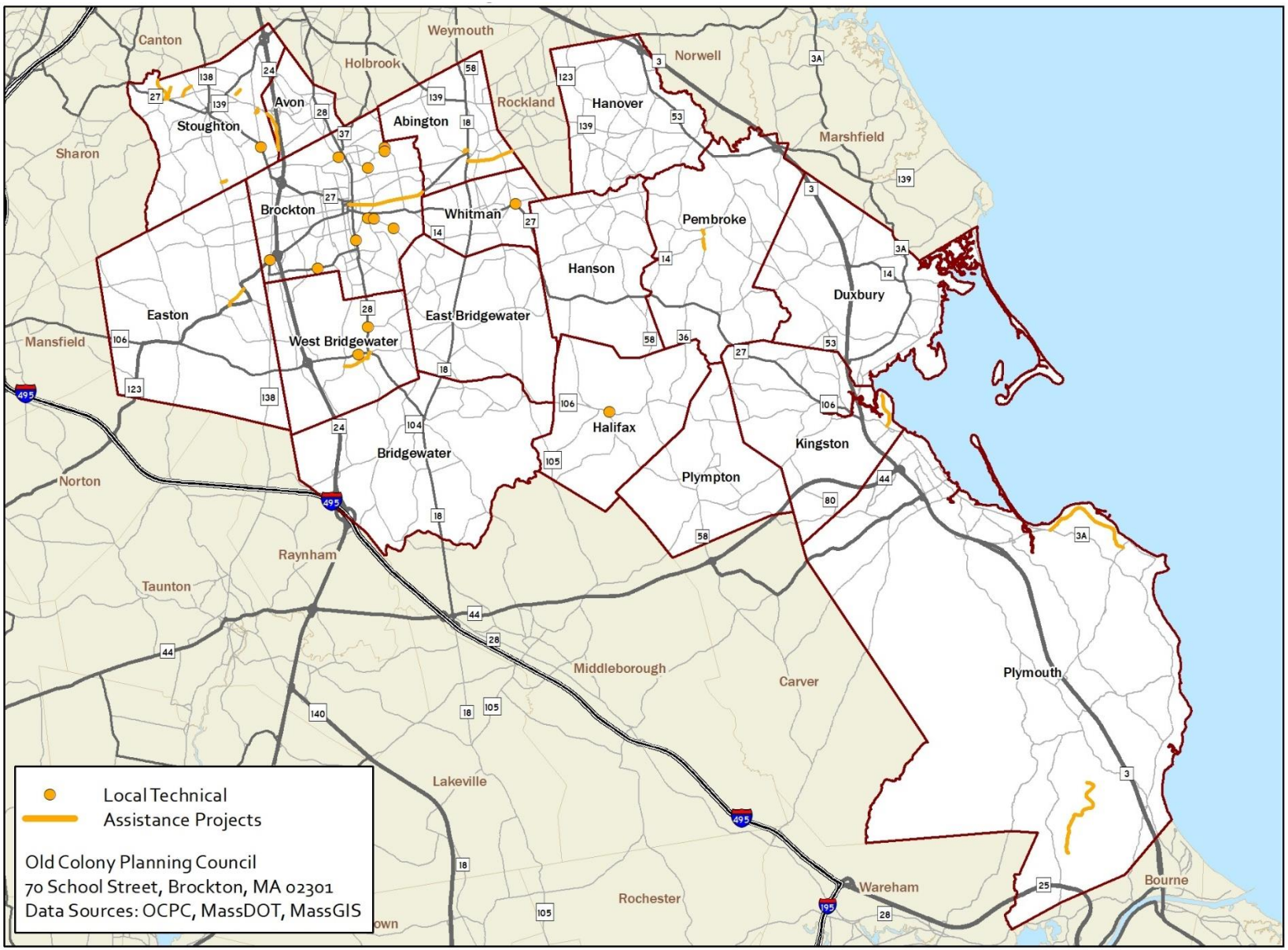


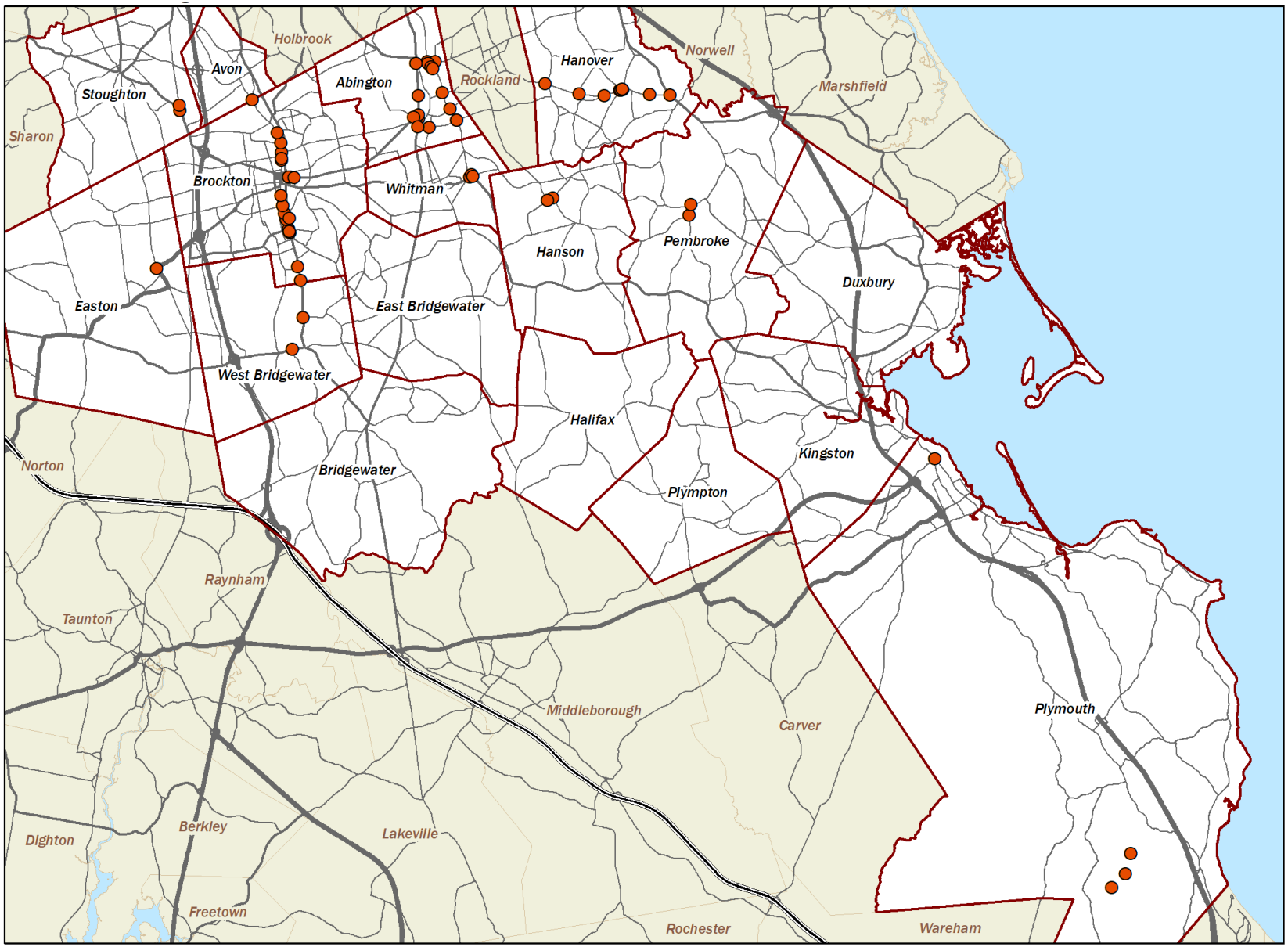
Table 3: State Numbered Locations with a V/C Ratio of 0.80 or Higher

Route	Community	Street	Location	ADT	V/C Ratio
18	Abington	Bedford Street (Route 18)	S of Randolph Street (Route 139)	28,390	0.80
24	Avon	AmVets Memorial Highway (Route 24)	S of Harrison Boulevard	125,982	1.18
24	Bridgewater	AmVets Memorial Highway (Route 24)	N of Interstate 495	98,865	0.93
24	Brockton	AmVets Memorial Highway (Route 24)	At West Bridgewater Town Line	105,251	0.99
24	Brockton	AmVets Memorial Highway (Route 24)	N of Belmont Street (Route 123)	114,015	1.07
24	Stoughton	AmVets Memorial Highway (Route 24)	S of Lindelof Avenue (Route 139)	118,224	1.11
24	West Bridgewater	AmVets Memorial Highway (Route 24)	At Bridgewater Town Line	104,099	0.98
28	Brockton	Main Street (Route 28)	N of Brookside Avenue	30,282	0.85
53/139	Pembroke	Columbia Road (Route 53/139)	At Hanover Town Line	30,000	0.84
106	West Bridgewater	West Center Street (Route 106)	Between Route 24 Ramps	15,006	0.84
106	West Bridgewater	West Center Street (Route 106)	E of AmVets Memorial Highway (Route 24)	28,776	0.81
106	West Bridgewater	West Center Street (Route 106)	E of West Street	29,325	0.82
106	West Bridgewater	West Center Street (Route 106)	W of Howard Street	31,766	0.89
106	West Bridgewater	West Center Street (Route 106)	W of Lincoln Street	30,436	0.86
106	West Bridgewater	West Center Street (Route 106)	W of North Elm Street	30,702	0.86
123	Brockton	Belmont Street (Route 123)	W of School Service Drive	29,096	0.82
138	Stoughton	Washington Street (Route 138)	S of Wyman Street	36,269	1.02
139	Pembroke	Church Street (Route 139)	E of Water Street	28,288	0.80

Table 4: Local Locations with a V/C Ratio of 0.80 or Higher

Community	Street	Location	ADT	V/C Ratio
Avon	Harrison Boulevard	E of AmVets Memorial Highway (Route 24)	31,141	0.88
Avon	Harrison Boulevard	W of AmVets Memorial Highway (Route 24)	32,387	0.91
Plymouth	Samoset Street	W of Algonquin Terrace	30,417	0.86
Plymouth	Samoset Street	W of Pilgrim Highway (Route 3)	36,054	1.01

Figure 6: All 2019 TMC Count Locations



Transit

OCPC uses the data from the Brockton Area Transit Authority (BAT) Farebox Route Revenue Reports to generate average daily ridership. The trends in ridership for the fixed route service, based upon the Old Colony Ridership Analysis tasks prepared for the Brockton Area Transit, show a decreasing trend in ridership from 10,258 per average weekday in FY 2015 to 9,870 in FY 2019. Table 5 shows the trends in ridership based on average daily ridership between FY 2015 and FY 2019 (five-year period).

Table 5: Brockton Area Transit (BAT) Average Daily Ridership

FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
10,258	10,287	10,008	9,840	9,870

Several important factors influence transit ridership such as cyclical downturns in the economy and gasoline prices, which have short-term impacts on travel demand and ridership. In addition, suburbanization of the communities surrounding Brockton, in both residential and job-related uses, affects fixed-route demand. In addition to ridership analysis of Farebox revenue prepared by Old Colony Planning Council, the Brockton Area Transit Authority (BAT) provides fixed-route and demand response (paratransit) service in the Old Colony Region, and regularly collects and reports its performance through its Performance Dashboard. Effective July 1, 2019, BAT increased their fares on all CharlieCard and pass options that they provide to their riders. The listing of each increased fare can be found in Figure 7.

Passengers Per Seat

As a part of the Congestion Management Process, OCPC analyzed ridership data from the FY19 BAT Ridership Report to determine what the Passengers per Seat (PPS) is for their system. To calculate this, OCPC used a randomizer from UMTA Circular 2710.1A, July 18, 1988, to select one of the six random dates in October 2018 (month within FY19 with the highest average ridership) from which ridership data was drawn for the FY19 BAT Ridership Report. The randomizer was also used to pick an interval for both morning (6-9 AM) and afternoon (3-6 PM) peak rush hour service. The randomizer selected October 12, 2018 with the 6 AM and 4:25 PM pulses (3:40 PM pulse for Route 13 Mini-Maller, 3:35 PM pulse for Route 14 Stoughton, and 4:15 PM pulse for Rockland Flex Service). OCPC then requested the list of buses that were used that day, so that the number of seats for each active bus could be determined. Tables 6 and 7 illustrate the raw data for the analysis, which includes pulse, bus number, seats per bus, and passengers per pulse (outbound, inbound, and total).

The Passengers Per Seat (PPS) was calculated for each route in both pulses, which was calculated by dividing the passengers by the number of seats on the bus. This was done for both outbound and inbound pulses (for the morning and afternoon pulses), and then combined to provide the aggregate PPS for the day; Tables 8, 9 and 10 show the calculations. As a system overall, the average PPS for the AM pulses was 0.43 PPS, the average PPS for the PM pulses was 0.76 PPS, and the average PPS for the whole day was 0.59 PPS. As a system without Route 12 Ashmont, the average PPS for the AM pulses was 0.32 PPS, the average PPS for the PM pulses was 0.66 PPS, and the average PPS for the whole day was 0.49 PPS. With Ashmont by itself, the average PPS for the AM pulse was 1.86 PPS, the average PPS for the PM pulses was 2.03 PPS, and the average PPS for the whole day was 1.95 PPS.

Figure 7: Brockton Area Transit Authority's Fare Increases

Brockton Area Transit Fares

Effective July 1, 2019

CharlieCard Fare	Existing Fare	Fare 7/1/19
Full Fare - Local	$ 1.15	$1.35
Full Fare - Ashmont - Milton	$ 1.40	$1.60
Full Fare - Ashmont	$ 1.90	$2.10
Reduced Fare - Local	$ 0.55	$0.65
Reduced Fare - Ashmont - Milton	$ 0.70	$0.75
Reduced Fare - Ashmont	$ 0.95	$1.00
Student Card - Local	$ 0.60	$0.75
Student Card - Ashmont - Milton	$ 0.75	$0.85
Student Card - Ashmont	$ 1.00	$1.10
Passes		
Local all day	$ 3.00	$3.50
Local 7 day	$ 10.00	$12.00
System Wide 7 day	$ 20.00	$22.00
Local 31 Day	$ 35.00	$40.00
System Wide 31 Day	$ 60.00	$65.00

Cash Fares - Effective July 1, 2018

Cash Fare	7/1/2018
Full Fare - Local	$1.50
Full Fare - Ashmont - Milton	$1.75
Full Fare - Ashmont	$2.25
Reduced Fare - Local	$0.75
Reduced Fare - Ashmont - Milton	$0.85
Reduced Fare - Ashmont	$1.10
Paratransit Fares	
ADA one way fare - Inside ADA Corridor	$3.00
ADA one way fare - Outside ADA Corridor	$4.00

Table 6: BAT Morning Pulse Data (10/12/2018)

Pulse	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00	6:00	
Route #	1	2	3	4	4A	5	6	8	9	10	11	12	14	
Bus #	1702	1003	1202	1804	1803	1201	1701	1806	1203	1305	1807	1708	1802	
Seats	30	38	38	35	35	38	30	35	38	32	35	37	35	**Totals**
Passengers OB	2	12	36	25	2	9	12	4	12	7	5	87	8	**221**
Passengers IB	21	14	4	29	11	7	11	20	5	4	2	51	2	**181**
Passengers Total	23	26	40	54	13	16	23	24	17	11	7	138	10	**402**

Table 7: BAT Afternoon Pulse Data (10/12/2018)

Time	4:25	4:25	4:25	4:25	4:25	4:25	4:25	4:25	4:25	4:25	4:25	4:25	3:40	3:35	4:15	
Route #	1	2	3	4	4A	5	6	8	9	10	11	12	13	14	Rockland	
Bus #	1305	1812	0703	1705	1009	1707	1802	0701	0706	1801	0702	1302	1803	1703	320	
Seats	32	40	38	37	38	37	35	38	38	35	38	38	35	30	15	**Totals**
Passengers OB	44	36	48	48	35	15	9	44	6	5	9	97	8	7	1	**412**
Passengers IB	39	51	36	54	45	14	23	18	24	4	3	57	0	10	1	**379**
Passengers Total	83	87	84	102	80	29	32	62	30	9	12	154	8	17	2	**791**

Table 8: System Wide Passengers per Seat by Route (10/12/2018)

AM Pulse	1	2	3	4	4A	5	6	8	9	10	11	12	13	14	Rockland	Total
PPS OB	0.07	0.32	0.95	0.71	0.06	0.24	0.40	0.11	0.32	0.22	0.14	2.35	N/A	0.23	N/A	0.47
PPS IB	0.70	0.37	0.11	0.83	0.31	0.18	0.37	0.57	0.13	0.13	0.06	1.38	N/A	0.06	N/A	0.40
PPS Overall	0.38	0.34	0.53	0.77	0.19	0.21	0.38	0.34	0.22	0.17	0.10	1.86	N/A	0.14	N/A	0.43

PM Pulse	1	2	3	4	4A	5	6	8	9	10	11	12	13	14	Rockland	Total
PPS OB	1.38	0.90	1.26	1.30	0.92	0.41	0.26	1.16	0.16	0.14	0.24	2.55	N/A	0.23	0.07	0.78
PPS IB	1.22	1.28	0.95	1.46	1.18	0.38	0.66	0.47	0.63	0.11	0.08	1.50	N/A	0.33	0.07	0.74
PPS Overall	1.30	1.09	1.11	1.38	1.05	0.39	0.46	0.82	0.39	0.13	0.16	2.03	0.23	0.28	0.07	0.76

Total	1	2	3	4	4A	5	6	8	9	10	11	12	13	14	Rockland	Total
PPS OB	0.72	0.61	1.11	1.01	0.49	0.32	0.33	0.64	0.24	0.18	0.19	2.45	N/A	0.35	0.07	0.62
PPS IB	0.96	0.82	0.53	1.14	0.75	0.28	0.51	0.52	0.38	0.12	0.07	1.44	N/A	0.36	0.07	0.57
PPS Overall	0.84	0.71	0.82	1.07	0.62	0.30	0.42	0.58	0.31	0.15	0.13	1.95	0.23	0.36	0.07	0.59

Table 9: System Wide Passengers per Seat by Route (Without Ashmont) (10/12/2018)

AM Pulse	1	2	3	4	4A	5	6	8	9	10	11	13	14	Rockland	Total
PPS OB	0.07	0.32	0.95	0.71	0.06	0.24	0.40	0.11	0.32	0.22	0.14	N/A	0.23	N/A	0.31
PPS IB	0.70	0.37	0.11	0.83	0.31	0.18	0.37	0.57	0.13	0.13	0.06	N/A	0.06	N/A	0.32
PPS Overall	0.38	0.34	0.53	0.77	0.19	0.21	0.38	0.34	0.22	0.17	0.10	N/A	0.14	N/A	0.32

PM Pulse	1	2	3	4	4A	5	6	8	9	10	11	13	14	Rockland	Total
PPS OB	1.38	0.90	1.26	1.30	0.92	0.41	0.26	1.16	0.16	0.14	0.24	N/A	0.23	0.07	0.65
PPS IB	1.22	1.28	0.95	1.46	1.18	0.38	0.66	0.47	0.63	0.11	0.08	N/A	0.33	0.07	0.68
PPS Overall	1.30	1.09	1.11	1.38	1.05	0.39	0.46	0.82	0.39	0.13	0.16	0.23	0.28	0.07	0.66

Total	1	2	3	4	4A	5	6	8	9	10	11	13	14	Rockland	Total
PPS OB	0.72	0.61	1.11	1.01	0.49	0.32	0.33	0.64	0.24	0.18	0.19	N/A	0.27	0.07	0.47
PPS IB	0.96	0.82	0.53	1.14	0.75	0.28	0.51	0.52	0.38	0.12	0.07	N/A	0.33	0.07	0.50
PPS Overall	0.84	0.71	0.82	1.07	0.62	0.30	0.42	0.58	0.31	0.15	0.13	0.23	0.30	0.07	0.49

Table 10: Ashmont Passengers per Seat (10/12/2018)

AM	12
PPS Outbound	2.35
PPS Inbound	1.38
PPS Overall	1.86

PM	12
PPS Outbound	2.55
PPS Inbound	1.50
PPS Overall	2.03

Total	12
PPS Outbound	2.45
PPS Inbound	1.44
PPS Overall	1.95

Table 11: BAT Ridership and System Performance FY 2019

bat

Performance Dashboard FY19

Fixed Route	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb	Mar	Apr	May	June	Average	Standard	Goal	FY18
Total Passengers	203,675	219,193	233,865	263,031	233,379	208,634	197,655	208,464	216,594	240,095	218,684	193,457	219,727			226,610
Pass/Rev Hour	24.52	24.59	25.82	26.93	24.74	23.30	23.01	23.15	23.36	24.49	23.74	23.71	24.28	22.00	26.00	25.04
Pass/Rev Mile	2.01	2.02	2.20	2.21	2.03	1.94	1.86	2.10	1.93	2.10	1.95	1.93	2.02	2.00	2.20	2.02
On-Time	96.93%	98.18%	96.69%	95.99%	97.02%	97.62%	98.91%	98.86%	98.96%	98.41%	98.63%	97.56%	97.81%	95%	98%	97.57%
Demand Response	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Average**	**Standard**	**Goal**	**FY18**
Total Passengers	14,389	15,423	13,341	15,338	14,374	14,017	14,623	13,120	14,719	14,785	15684	14067	14,490			14,424
Pass/Rev Hour	2.64	2.65	2.69	2.60	2.23	2.31	2.43	2.38	2.60	2.41	2.56	2.59	2.51	2.25	2.75	2.56
On-Time	89.83%	88.92%	87.11%	88.28%	88.29%	85.94%	88.91%	88.94%	89.08%	87.59%	86.68%	87.66%	88.10%	85%	90%	87.90%
Safety	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Average**	**Standard**	**Goal**	**FY18**
Preventable FR Accidents/ 100K miles	0.00	1.79	1.81	0.81	1.81	3.56	3.56	1.04	0.00	0.91	0.00	0.00	1.27	3	2	1.26
Preventable DR Accidents/10K miles	0	1.92	0	0	0	0.4	0	0	3.91	1.83	0.00	0.00	0.67	3	2	0.39
Maintenance	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Average**	**Standard**	**Goal**	**FY18**
Fixed Route Miles Between Breakdowns w/ passenger interruption	20,705.60	55,781.50	49,505.00	37,083.00	35,213.00	38,929.67	56,150.00	31,899.00	27,592.00	36,614.00	55,284.00	104,574.00	45,778	20,000	25,000	27,761
Demand Response Miles Between Breakdowns w/ passenger interruption	15,817.33	17,321.00	55,463.00	26,758.50	49,682.00	12,039.00	46,628.00	46,628.00	51,086.00	26,602.50	54,704.00	48,739.00	37,622	25,000	30,000	33,325
Customer Service	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Average**	**Standard**	**Goal**	**FY18**
Valid Complaints /100,000 pax FR	2.45	1.82	1.93	2.59	2.50	1.57	3.15	4.03	3.66	2.48	1.45	2.58	2.52	8	5	2.25
Valid Complaints /10,000 pax DR	0.87	0.80	1.86	0.82	1.74	0.91	0.00	0.00	0.86	0.00	2.39	0.00	0.85	4	2	1.25

Source: Brockton Area Transit Authority

Commuter Rail and Park & Ride

Commuter Rail Facilities

The Old Colony Congestion Management Process data collection component includes two visits per year to the MBTA Commuter Rail lots to count the number of parked vehicles and bicycles to determine the availability of peak parking. This data collection effort takes place in the Spring (April) and Fall (October) of each year, during the mid-week period, and between the hours of 10:00 AM and 2:00 PM. In 2009, OCPC extended the data collection program area to include the Canton Junction and Canton Center Stations on the Providence/Stoughton Line. This was done to provide a complete assessment of parking lot utilization for the entire Stoughton Branch of the Providence/Stoughton Line.

As part of a comprehensive, system-wide process, the CMP includes a focus on vehicles per parking space at the peak parking time for commuter rail and park & ride lots, and transit passengers per seat (at the peak load point) for commuter rail and bus.

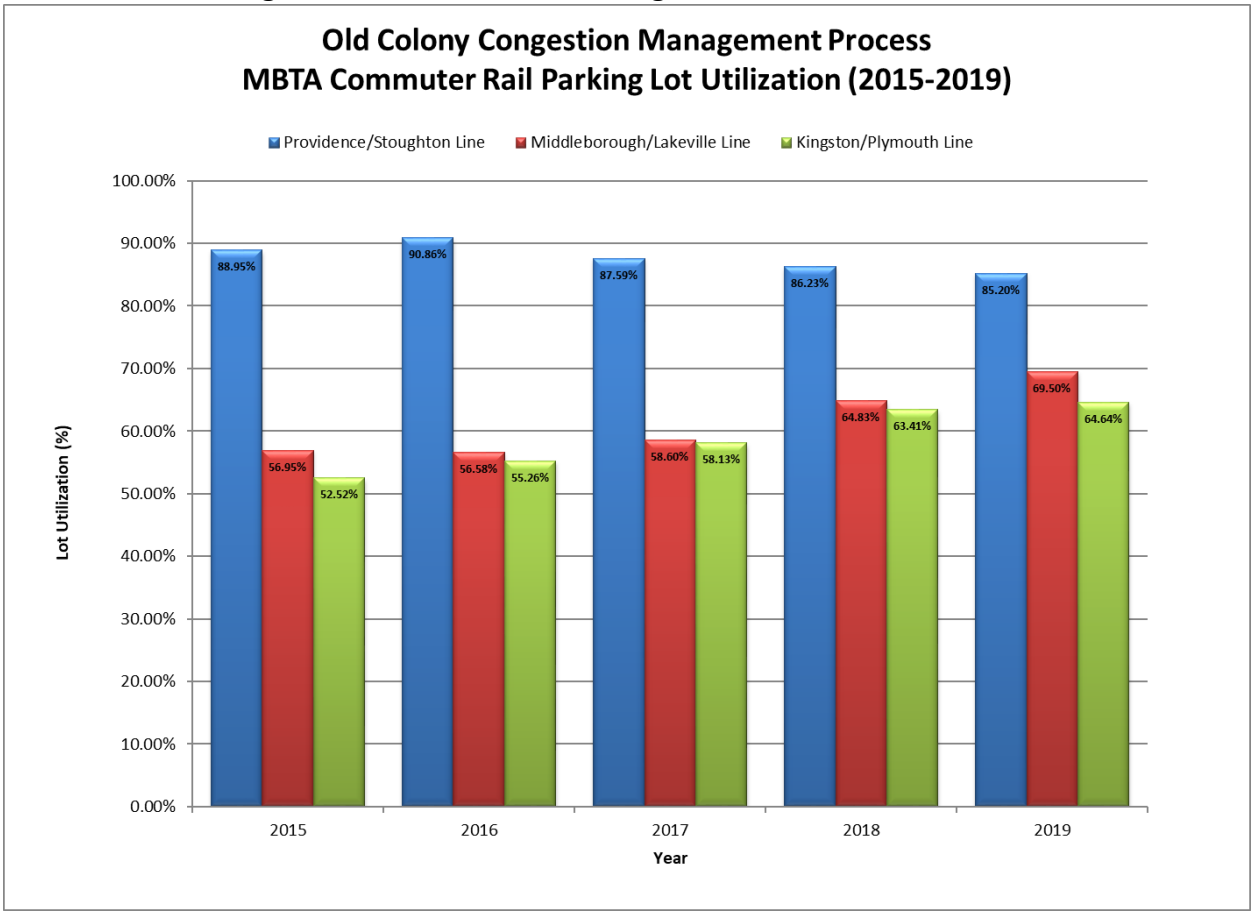
The Old Colony CMP uses the guidance provided in the ITE publication, *Transportation Planning Handbook*, which describes the effective supply of a lot as the level of occupancy for optimum operating efficiency. The ITE handbook states that a parking facility can be perceived as full at a level that is less than its actual capacity (number of spaces), which is at a range of 85 to 95 percent. The use of 85 percent as the threshold for capacity allows for unusual peaks in activity and loss of spaces due to snow cover and/or other special circumstances.

Table 7 summarizes the results of the 2019 Commuter Rail parking lot surveys, listing utilization rates for parked vehicles and bicycles at each station surveyed, while Figure 8 shows the 5-year trend in utilization for each commuter rail line in the region. Although utilization varied from station to station in 2019, the stations in Stoughton, Canton (Stoughton/Providence Line) and Abington (Kingston/Plymouth Line) were observed to be at or near capacity while there remained a sufficient supply of available parking at majority of the remaining stations on the Middleboro/Lakeville and Kingston/Plymouth lines. Except for 2016, utilization has slightly decreased on the Stoughton/Providence Line over the five-year period from 2015 through 2019, while the Middleborough/Lakeville Line and Kingston/Plymouth Line have each increased over recent years.

Table 12: 2019 Commuter Rail Parking Lot Utilization

Location	Total Spaces	Spaces	Bicycle Spaces	April 2019 Total Utilization	April 2019 Utilization	April 2019 Bicycle Utilization	October 2019 Total Utilization	October 2019 Utilization	October 2019 Bicycle Utilization	2019 Average Total Utilization	2019 Average Utilization	2019 Average Bicycle Utilization
Providence/Stoughton Line												
Canton Junction	762	12	48	71.13%	0.00%	0.00%	90.29%	16.67%	8.33%	80.71%	8.33%	4.17%
Canton Center	215	4	10	89.77%	0.00%	0.00%	97.67%	25.00%	90.00%	93.72%	12.50%	45.00%
Stoughton	361	10	13	90.30%	0.00%	0.00%	88.92%	30.00%	30.77%	89.61%	15.00%	15.38%
Middleborough/Lakeville Line												
Holbrook/Randolph	362	14	24	85.36%	0.00%	0.00%	82.32%	21.43%	8.33%	83.84%	10.71%	4.17%
Montello (Brockton)	351	12	36	57.83%	0.00%	0.00%	72.93%	33.33%	0.00%	65.38%	16.67%	0.00%
Downtown (Brockton)	323	11	32	55.11%	36.36%	0.00%	44.27%	0.00%	9.62%	49.69%	18.18%	4.81%
Campello (Brockton)	552	11	12	50.91%	0.00%	0.00%	62.32%	9.09%	0.00%	56.61%	4.55%	0.00%
Bridgewater	499	10	28	59.32%	0.00%	0.00%	71.74%	0.00%	7.14%	65.53%	0.00%	3.57%
Middleborough/Lakeville	769	13	8	83.09%	0.00%	0.00%	86.48%	53.85%	25.00%	84.79%	26.92%	12.50%
Kingston/Plymouth Line												
South Weymouth	636	13	28	73.43%	0.00%	0.00%	95.44%	23.08%	28.57%	84.43%	11.54%	14.29%
Abington	404	9	12	92.82%	0.00%	0.00%	101.98%	11.11%	8.33%	97.40%	5.56%	4.17%
Whitman	199	7	12	55.78%	0.00%	0.00%	73.87%	14.29%	33.33%	64.82%	7.14%	16.67%
Hanson	428	8	14	60.51%	0.00%	0.00%	68.69%	25.00%	14.29%	64.60%	12.50%	7.14%
Halifax	412	10	19	61.89%	0.00%	0.00%	66.99%	10.00%	15.79%	64.44%	5.00%	7.89%
Kingston	1,030	22	32	42.82%	0.00%	0.00%	48.25%	9.09%	0.00%	45.53%	4.55%	0.00%
Plymouth	92	4	4	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Providence/Stoughton Line	***1,338***	***26***	***71***	***79.30%***	***0.00%***	***0.00%***	***91.11%***	***23.08%***	***23.94%***	***85.20%***	***11.54%***	***11.97%***
Total Middleborough/Lakeville Line	***2,856***	***71***	***140***	***66.74%***	***5.63%***	***0.00%***	***72.27%***	***21.13%***	***6.32%***	***69.50%***	***13.38%***	***3.16%***
Total Kingston/Plymouth Line	***3,201***	***73***	***121***	***59.61%***	***0.00%***	***0.00%***	***69.67%***	***13.70%***	***14.88%***	***64.64%***	***6.85%***	***7.44%***
Total All Stations	***7,395***	***170***	***332***	***65.92%***	***2.35%***	***0.00%***	***74.55%***	***18.24%***	***12.57%***	***70.24%***	***10.29%***	***6.28%***

Figure 8: Commuter Rail Parking Lot Utilization, 2015-2019



Park & Ride Facilites

The Old Colony Congestion Management Process data collection component includes two visits per year to Park & Ride facilities along the AmVets Memorial Highway (Route 24) and Pilgrims Highway (Route 3) Corridors to count the number of parked vehicles and bicycles and to determine the availability of peak parking. In previous years, the CMP included analysis of one Park-and-Ride facility on the Route 44 Corridor (Commerce Way in Plymouth) that was closed in 2015. This data collection effort takes place in concert with the MBTA Commuter Rail counts in the Spring (April) and the Fall (October) of each year, during the mid-week period, and between the hours of 10:00 AM and 2:00 PM.

The Old Colony CMP uses the guidance provided in the ITE publication, *Transportation Planning Handbook*, which describes the effective supply of a lot as the level of occupancy for optimum operating efficiency. The ITE handbook states that a parking facility can be perceived as full at a level that is less than its actual capacity (number of spaces), which is at a range of 85 to 95 percent. The use of 85 percent as the threshold for capacity allows for unusual peaks in activity and loss of spaces due to snow cover and/or other special circumstances.

As part of a comprehensive, system-wide process, the Old Colony CMP includes a focus on vehicles per parking space at the peak parking time for commuter rail and park & ride lots, and transit passengers per seat (at the peak load point) for commuter rail and bus.

Figure 9 shows the 5-year trend in utilization for each Park & Ride corridor in the region, while Table 8 summarizes the results of the 2019 Park-and-Ride parking lot surveys, listing utilization rates for parked vehicles and bicycles at each facility surveyed. The Park-and-Ride system in the Old Colony region has been observed to be extremely popular, with most of the facilities surveyed at or near capacity. Overall, utilization has been stable on the Park-and-Ride system over the five-year period from 2015 through 2019. The only Park & Ride that was surveyed that did not achieve the 85% utilized threshold for being considered as congested was the Bridgewater Route 104 lot, which is the only surveyed lot that does not have any type of bus service.

Figure 9: Park-and-Ride Parking Lot Utilization, 2015-2019

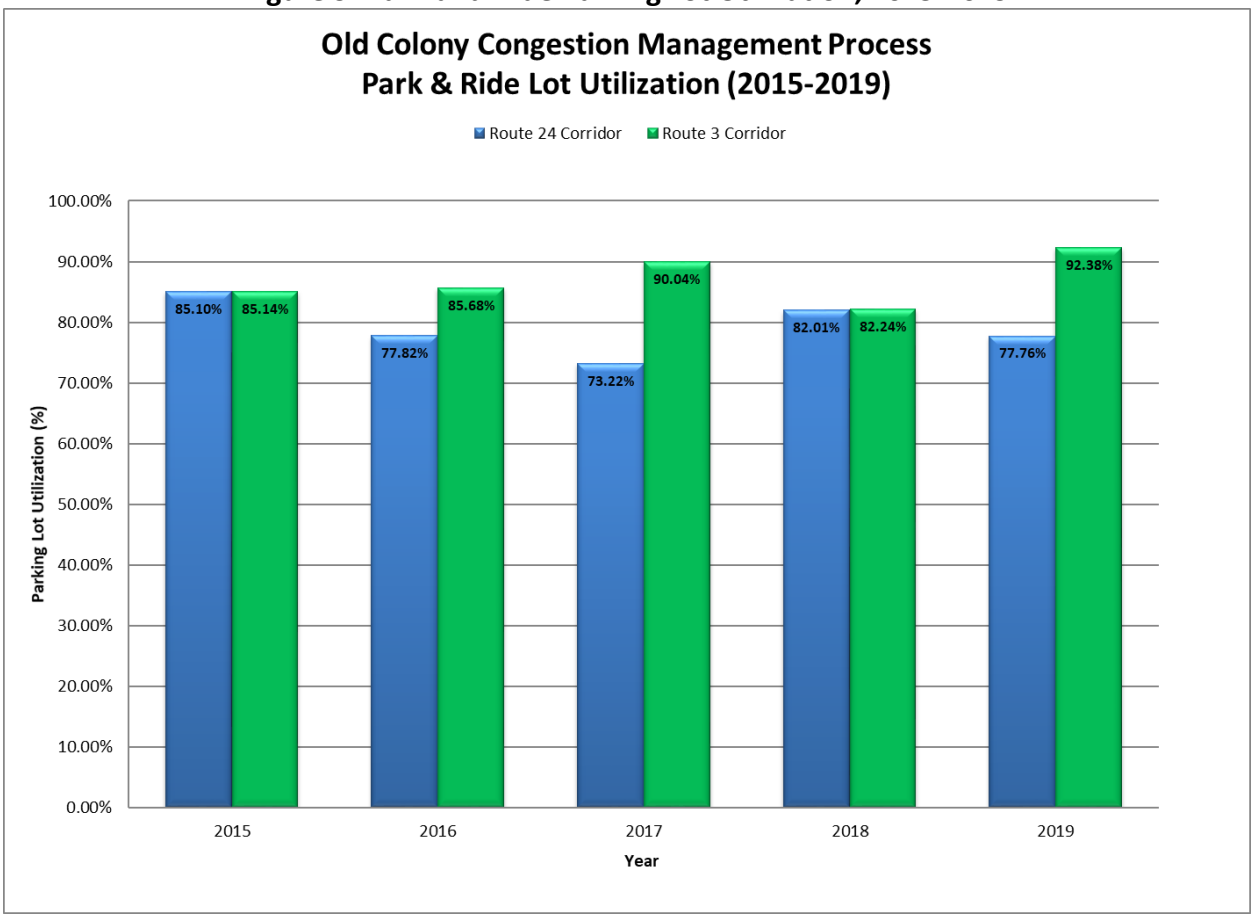


Table 13: 2019 Park & Ride Parking Lot Utilization

Location	Total Spaces	♿ Spaces	Bicycle Spaces	April 2019 Total Utilization	April 2019 ♿ Utilization	April 2019 Bicycles Utilization	October 2019 Total Utilization	October 2019 ♿ Utilization	October 2019 Bicycles Utilization	2019 Average Regular Utilization	2019 Average ♿ Utilization	2019 Average Bicycles Utilization
Route 3 Corridor												
Rockland - Route 3, Exit 14 (Route 228)	440	8	0	92.95%	25.00%	0.00%	83.41%	62.50%	0.00%	88.18%	43.75%	0.00%
Kingston - Route 3, Exit 10 (Route 3A & 53)	72	0	0	95.83%	0.00%	0.00%	97.22%	0.00%	0.00%	96.53%	0.00%	0.00%
Plymouth - Route 3, Exit 5 (Long Pond Road)	200	8	0	86.50%	25.00%	0.00%	96.00%	50.00%	0.00%	91.25%	37.50%	0.00%
Bourne - Route 3, Exit 1B (Route 6) (Sagamore)	377	7	10	94.16%	57.14%	0.00%	100.00%	100.00%	0.00%	97.08%	78.57%	0.00%
Route 24 Corridor												
West Bridgewater - Route 24, Exit 16 (Route 106)	185	8	11	92.43%	12.50%	0.00%	85.95%	62.50%	0.00%	89.19%	37.50%	0.00%
Bridgewater - Route 24, Exit 15 (Route 104)	60	0	0	51.67%	0.00%	0.00%	33.33%	0.00%	0.00%	42.50%	0.00%	0.00%
Total Route 3 Corridor	***1,089***	***23***	***10***	***92.38%***	***34.78%***	***0.00%***	***92.38%***	***69.57%***	***0.00%***	***92.38%***	***52.17%***	***0.00%***
Total Route 24 Corridor	***245***	***8***	***11***	***82.45%***	***12.50%***	***0.00%***	***73.06%***	***62.50%***	***0.00%***	***77.76%***	***37.50%***	***0.00%***
Total All Lots	***1,334***	***31***	***21***	***90.55%***	***29.03%***	***0.00%***	***88.83%***	***67.74%***	***23.81%***	***89.69%***	***48.39%***	***11.90%***

Analysis of Congestion Problems and Needs

The Old Colony Congestion Management Process has identified congested facilities across the transportation system in the Old Colony region where improvements may be targeted.

Roadways

Table 14 identifies roadway facilities that have been identified as congested through the Congestion Management Process and Unified Planning Work Program.

Table 14: Identified Congested Roadway Facilities in the Old Colony Region

Bottleneck Facility	Bottleneck Type (Cause)
Limited Access Highways & Interchanges	
AmVets Memorial Highway (Route 24) & Interstate 495 - Exit 14	Demand Surge / Merges / Weaves / Narrow Lanes
AmVets Memorial Highway (Route 24) & Pleasant Street (Route 104) - Exit 15	Demand Surge / Merges
AmVets Memorial Highway (Route 24) & West Center Street (Route 106) - Exit 16	Demand Surge / Merges
AmVets Memorial Highway (Route 24) & Belmont Street (Route 123) - Exit 17	Demand Surge / Merges
AmVets Memorial Highway (Route 24) & Reynolds Memorial Highway (Route 27) - Exit 18	Demand Surge / Merges
AmVets Memorial Highway (Route 24) & Harrison Boulevard/Central Street - Exit 19	Demand Surge / Merges
AmVets Memorial Highway (Route 24) & Lindelof Avenue (Route 139) - Exit 20	Demand Surge / Merges
Pilgrim Highway (Route 3) & Long Pond Road - Exit 5	Demand Surge
Pilgrim Highway (Route 3) & Samoset Street (Route 44) SB - Exit 6A	Demand Surge
Pilgrim Highway (Route 3) & Samoset Street SB - Exit 6B	Demand Surge / Lane Drop
Pilgrim Highway (Route 3) & Smiths Lane - Exit 8	Demand Surge
Pilgrim Highway (Route 3) & Main Street (Route 3A) - Exit 9	Demand Surge
Pilgrim Highway (Route 3) & Church Street (Route 139) - Exit 12	Demand Surge
Arterials	
Route 3A - Kingston - Railroad Tracks to Route 3	Demand Surge
Route 3A - Plymouth - Cherry Street to South Street	Demand Surge
Route 18 - Abington - Weymouth Town Line to Whitman Town Line	Lane Drop
Route 27 - Brockton - West Street to Route 14	Demand Surge
Route 27 - Stoughton - Stoughton Square to Brockton City Line	Demand Surge
Route 44 / Samoset Street - Plymouth - Pilgrim Hill Road to Court Street (Route 3A)	Demand Surge / Lane Drop
Route 104 - Bridgewater - Route 24 to Bridgewater Center	Demand Surge / Lane Drop
Route 106 - Halifax - Indian Pond Road to Route 58	Demand Surge
Route 106 - West Bridgewater - Route 24 to Route 28	Demand Surge
Route 123 - Easton & Brockton - Route 138 to Route 28	Demand Surge / Lane Drop
Route 138 - Stoughton - Canton Town Line to Route 27	Demand Surge
Central Street - Stoughton - Route 27 to Avon Town Line	Demand Surge
Main Street - Brockton - Howard Street to Plain Street	Demand Surge
Town Centers	
Bridgewater Center	Signal / Traffic Control (Systematic)
East Bridgewater Center	Signal / Systematic
Stoughton Square	Signal / Systematic
West Bridgewater Center	Signal
Whitman Center	Intersection

Intersections

The Old Colony Congestion Management Process has identified congested intersections throughout the region. These congested intersections are based on level of service analysis that has been completed through various tasks under the Unified Planning Work Program. Intersections with a calculated level of service grade of "D" or worse has been identified as a congested intersection. Of course, the degree of congestion varies between intersections. The level of service rating is indicative only of peak hour delay. Some locations may only experience congestion for a short period of time during the peak hour, while the congestion is more chronic at other intersections and lasts several hours throughout the day. Appendix D lists the intersections that have been identified as being congested.

Commuter Rail and Park & Ride

Parking lots at intermodal facilities are considered to be at capacity when utilization (parked motor vehicles) is 85 percent or greater of total spaces. Based on the data collected during 2019, the following facilities are at or beyond capacity:

Commuter Rail

- Abington: 97.40% Utilization
- Canton Center: 93.72% Utilization
- Stoughton: 89.61% Utilization

Park-and-Ride

- Bourne – Route 3, Exit 1A (Route 6) (Sagamore): 97.08% Utilization
- Kingston – Route 3, Exit 10 (Routes3A & 53): 96.53% Utilization
- Rockland – Route 3, Exit 14 (Route 228): 88.18% Utilization
- Plymouth – Route 3, Exit 5 (Long Pond Road): 91.25%% Utilization
- West Bridgewater – Route 24, Exit 16 (Route 106): 89.19% Utilization

Non-Recurring Congestion

In addition to being able to identify and analyze recurring congestion, the need to identify and analyze non-recurring congestion is also necessary. Non-recurring congestion varies from motor vehicle crashes, road construction, debris in the road interrupting traffic flow, special events (e.g. Fourth of July events, marathons, etc.), and weather-related incidents such as snow or flooding. With the assistance of the Regional Integrated Transportation Information System (RITIS) tool, non-recurring congestion can now be easily tracked and researched. RITIS is "a situational awareness, data archiving, and analytics platform that fuses data from many agencies, many systems, and even the private sector—enabling effective decision making for incident response and planning". Ultimately, RITIS enables a wide range of capabilities and insights, reduces the cost of planning activities and conducting research, and breaks down the barriers within and between agencies for information sharing, collaboration, and coordination" (RITIS).

All the forms of non-recurring congestion that occurred in the OCPC region in 2019 are listed separately in Table 15. The average delays of the various types are as follows:

- 1.09 hours for flooding
- 40.25 minutes for fire incidents
- 3.57 hours for overgrown plants
- 7.16 hours for bridge maintenance operations
- 13.19 days for planned road construction
- 14.19 days for incidents (planned roadways)
- 12.94 days for road maintenance operations
- 6.3 hours for collisions
- 1.3 hours for hazardous material spills
- 2.33 hours for incidents (roadway traffic)
- 4.48 hours for water main work.

Unfortunately, it is difficult to prepare for non-recurring congestion compared to recurring congestion. The best way to handle non-recurring congestion is to create policies that can be exercised after any event of non-recurring congestion to lessen the incident clearance time, such as an enhanced incident response to clear crashes and reduce the time to return to normal conditions. Another policy is geographic placement of message signs that exist on highways to alert drivers of any necessary information and creation of one or more detours in areas with the highest AADT so that traffic can be safely rerouted (multiple detours can spread out the rerouted traffic). There were no reported events of other any weather delays that RITIS reports such as hail, hurricane, sleet, snow, or strong winds. If any of these events occur in future years, they will be documented in future reports.

Special Events

One of the forms of non-recurring congestion that had no reported cases on RITIS for the OCPC region in 2019 was special events. Special events include sporting events, concerts, and season/regional events such as Fourth of July fireworks and road races. Staff members at OCPC have all contributed their local background and knowledge of special events in OCPC communities, such as Fourth of July fireworks in Abington, Brockton, Plymouth, and Stoughton; road races such as the Jeff Coombs Memorial Road Race in Abington, the Duxbury Triathlon, and the Run to the Rock race in Plymouth; holiday events such as the Christmas at Island Grove event in Abington, the Downtown Brockton Holiday Parade, and the Christmas on the Commons event in Bridgewater; and various other events like Memorial Day and Veteran's Day parades in multiple communities. Although OCPC may not have a chance to document any of these events in 2020 due to COVID-19, these events will be documented with ATRs and/or TMCs so they can be analyzed and solutions can be proposed to those communities to decrease the congestion associated with those events.

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Flood	Acts of Nature	7/12/2019 8:44	7/12/2019 9:25	RT-3A north	41 Minutes	2
Flood	Acts of Nature	12/2/2019 16:06	12/2/2019 17:36	RT-3A north	90 Minutes	
					Average Delay - 1.09 Hours	
Incident	Fire	1/10/2019 12:46	1/10/2019 13:36	RT-24 north	50 minutes	2
Incident	Fire	6/28/2019 15:03	6/28/2019 15:44	RT-3 north	41 minutes	2
Incident	Fire	7/2/2019 18:52	7/2/2019 19:29	RT-24 south	37 minutes	2
Incident	Fire	11/12/2019 10:35	11/12/2019 11:08	RT-3 north	33 minutes	1
					Average Delay - 40.25 Minutes	
Overgrown Plants	Roadway/Traffic	1/24/2019 14:31	1/24/2019 15:31	RT-3A south	1 hour	
Overgrown Plants	Roadway/Traffic	2/8/2019 20:08	2/8/2019 20:53	RT-3A north	45 minutes	
Overgrown Plants	Roadway/Traffic	2/25/2019 14:06	2/25/2019 22:59	RT-3A south	8 hours 53 minutes	
					Average Delay - 3.54 Hours	
Bridge Maintenance Operations	Planned Roadway	1/10/2019 21:00	1/11/2019 1:37	RT-3 north	4 hours 37 minutes	2
Bridge Maintenance Operations	Planned Roadway	1/15/2019 21:00	1/16/2019 5:39	RT-3 north	8 hours 39 minutes	2
Bridge Maintenance Operations	Planned Roadway	1/28/2019 21:00	1/29/2019 5:14	RT-37 south	8 hours 14 minutes	2
Bridge Maintenance Operations	Planned Roadway	2/4/2019 10:00	2/4/2019 14:10	RT-53 north	4 hours 10 minutes	
Bridge Maintenance Operations	Planned Roadway	2/19/2019 21:00	2/20/2019 5:37	RT-24 north	8 hours 37 minutes	2
Bridge Maintenance Operations	Planned Roadway	3/18/2019 9:00	3/18/2019 15:52	RT-14 east	6 hours 52 minutes	2
Bridge Maintenance Operations	Planned Roadway	5/16/2019 21:00	5/17/2019 5:57	RT-3 north	8 hours 57 minutes	2
Bridge Maintenance Operations	Planned Roadway	5/29/2019 21:00	5/30/2019 5:32	RT-24 north	8 hours 32 minutes	4
Bridge Maintenance Operations	Planned Roadway	6/10/2019 20:00	6/10/2019 23:55	RT-3 north	3 hours 55 minutes	
Bridge Maintenance Operations	Planned Roadway	7/27/2019 7:00	7/27/2019 14:41	US-44 east	7 hours 41 minutes	1
Bridge Maintenance Operations	Planned Roadway	8/23/2019 9:00	8/23/2019 15:35	US-44 east	6 hours 35 minutes	4
Bridge Maintenance Operations	Planned Roadway	9/10/2019 21:00	9/11/2019 2:15	RT-24 north	5 hours 15 minutes	4
Bridge Maintenance Operations	Planned Roadway	9/12/2019 21:00	9/13/2019 5:41	RT-24 north	8 hours 41 minutes	4
Bridge Maintenance Operations	Planned Roadway	9/18/2019 21:00	9/19/2019 5:53	RT-24 north	8 hours 53 minutes	4
Bridge Maintenance Operations	Planned Roadway	9/24/2019 21:00	9/25/2019 1:07	RT-3 north	4 hours 7 minutes	3
Bridge Maintenance Operations	Planned Roadway	9/24/2019 21:00	9/25/2019 5:04	RT-24 north	8 hours 4 minutes	4
Bridge Maintenance Operations	Planned Roadway	9/25/2019 21:00	9/26/2019 5:17	RT-3 north	8 hours 17 minutes	3

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region (Continued)

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Bridge Maintenance Operations	Planned Roadway	9/26/2019 21:00	9/27/2019 1:27	RT-24 north	4 hours 27 minutes	4
Bridge Maintenance Operations	Planned Roadway	10/3/2019 21:00	10/4/2019 5:53	RT-3 north	8 hours 53 minutes	4
Bridge Maintenance Operations	Planned Roadway	10/23/2019 21:00	10/24/2019 5:52	RT-3 north	8 hours 52 minutes	3
Bridge Maintenance Operations	Planned Roadway	11/9/2019 7:00	11/9/2019 15:09	RT-3 north	8 hours 9 minutes	3
Bridge Maintenance Operations	Planned Roadway	11/18/2019 21:00	11/19/2019 5:04	RT-3 north	8 hours 4 minutes	3
Bridge Maintenance Operations	Planned Roadway	11/21/2019 21:00	11/22/2019 1:24	RT-3 north	4 hours 24 minutes	2
Bridge Maintenance Operations	Planned Roadway	12/19/2019 21:00	12/20/2019 5:57	RT-3 north	8 hours 57 minutes	3
					Average Delay - 7.16 Hours	
Construction Work	Planned Roadway	1/2/2019 7:00	1/4/2019 16:21	RT-3 north	2 days 9 hours 21 minutes	2
Construction Work	Planned Roadway	1/7/2019 7:00	1/11/2019 15:44	RT-3 north	4 days 8 hours 44 minutes	2
Construction Work	Planned Roadway	1/7/2019 20:00	2/8/2019 5:13	RT-3 north	31 days 9 hours 13 minutes	
Construction Work	Planned Roadway	1/14/2019 7:00	1/17/2019 10:54	RT-3 north	3 days 3 hours 54 minutes	2
Construction Work	Planned Roadway	2/1/2019 10:00	2/1/2019 15:55	RT-3 north	5 hours 55 minutes	2
Construction Work	Planned Roadway	3/11/2019 7:00	3/15/2019 9:11	RT-3 north	4 days 2 hours 11 minutes	1
Construction Work	Planned Roadway	4/1/2019 8:00	4/17/2019 6:59	US-44 east	15 days 22 hours 59 minutes	
Construction Work	Planned Roadway	4/3/2019 7:00	4/5/2019 15:28	RT-3 north	2 days 8 hours 28 minutes	
Construction Work	Planned Roadway	4/8/2019 6:30	4/12/2019 15:49	RT-3 south	4 days 9 hours 19 minutes	1
Construction Work	Planned Roadway	4/16/2019 6:00	4/19/2019 20:24	RT-3 north	3 days 14 hours 24 minutes	1
Construction Work	Planned Roadway	4/16/2019 20:00	6/8/2019 5:20	US-44 west	52 days 9 hours 20 minutes	1
Construction Work	Planned Roadway	4/22/2019 7:00	4/25/2019 15:08	RT-3 north	3 days 8 hours 8 minutes	2
Construction Work	Planned Roadway	4/29/2019 6:00	5/3/2019 15:13	RT-3 north	4 days 9 hours 13 minutes	1
Construction Work	Planned Roadway	4/29/2019 7:00	4/30/2019 15:38	RT-3 north	1 days 8 hours 38 minutes	2
Construction Work	Planned Roadway	5/13/2019 6:00	5/20/2019 7:50	RT-3 north	7 days 1 hour 50 minutes	1
Construction Work	Planned Roadway	5/20/2019 6:00	5/22/2019 11:59	RT-3 north	2 days 5 hours 59 minutes	2
Construction Work	Planned Roadway	6/3/2019 6:00	6/7/2019 16:13	RT-3 north	4 days 10 hours 13 minutes	1
Construction Work	Planned Roadway	6/9/2019 20:00	10/2/2019 14:29	US-44 west	114 days 18 hours 29 minutes	1
Construction Work	Planned Roadway	6/9/2019 20:00	12/20/2019 3:24	RT-3 south	193 days 8 hours 24 minutes	1
Construction Work	Planned Roadway	6/24/2019 6:00	6/28/2019 15:39	RT-3 north	4 days 9 hours 39 minutes	2
Construction Work	Planned Roadway	7/1/2019 20:00	9/30/2019 6:05	RT-3 south	90 days 10 hours 5 minutes	

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region (Continued)

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Construction Work	Planned Roadway	7/22/2019 7:00	7/26/2019 16:00	RT-3 north	4 days 9 hours	1
Construction Work	Planned Roadway	7/23/2019 21:10	7/24/2019 5:10	RT-24 north	8 hours	
Construction Work	Planned Roadway	7/24/2019 7:00	7/26/2019 17:00	RT-3 north	2 days 10 hours	
Construction Work	Planned Roadway	7/29/2019 6:00	8/2/2019 16:24	RT-3 north	4 days 10 hours 24 minutes	
Construction Work	Planned Roadway	7/29/2019 6:00	8/2/2019 14:34	RT-3 north	4 days 8 hours 34 minutes	1
Construction Work	Planned Roadway	7/29/2019 20:00	8/3/2019 5:00	RT-3 north	4 days 9 hours	2
Construction Work	Planned Roadway	8/1/2019 22:00	8/2/2019 7:19	RT-3A north	9 hours 19 minutes	
Construction Work	Planned Roadway	8/5/2019 7:00	8/9/2019 16:48	RT-3 north	4 days 9 hours 48 minutes	
Construction Work	Planned Roadway	8/12/2019 6:00	8/16/2019 16:11	RT-3 north	4 days 10 hours 11 minutes	2
Construction Work	Planned Roadway	8/12/2019 7:00	8/20/2019 13:58	RT-3 north	8 days 6 hours 58 minutes	
Construction Work	Planned Roadway	8/12/2019 20:00	8/16/2019 5:06	RT-3 north	3 days 9 hours 6 minutes	1
Construction Work	Planned Roadway	8/19/2019 7:00	8/24/2019 16:47	RT-3 north	5 days 9 hours 47 minutes	
Construction Work	Planned Roadway	8/25/2019 13:06	8/30/2019 4:53	RT-3 north	4 days 15 hours 47 minutes	2
Construction Work	Planned Roadway	8/26/2019 6:00	8/29/2019 15:35	RT-3 north	3 days 9 hours 35 minutes	2
Construction Work	Planned Roadway	8/26/2019 7:00	8/30/2019 14:58	RT-3 north	4 days 7 hours 58 minutes	
Construction Work	Planned Roadway	9/3/2019 7:00	9/6/2019 16:23	RT-3 north	3 days 9 hours 23 minutes	
Construction Work	Planned Roadway	9/9/2019 6:00	9/13/2019 11:44	RT-3 north	4 days 5 hours 44 minutes	2
Construction Work	Planned Roadway	9/9/2019 7:00	9/14/2019 16:59	RT-3 north	5 days 9 hours 59 minutes	
Construction Work	Planned Roadway	9/9/2019 20:00	9/13/2019 21:49	RT-3 north	4 days 1 hour 49 minutes	4
Construction Work	Planned Roadway	9/9/2019 21:00	9/10/2019 6:43	RT-123 west	9 hours 43 minutes	2
Construction Work	Planned Roadway	9/16/2019 6:00	9/28/2019 5:41	RT-3 north	11 days 23 hours 41 minutes	2
Construction Work	Planned Roadway	9/16/2019 7:00	9/21/2019 16:22	RT-3 north	5 days 9 hours 22 minutes	
Construction Work	Planned Roadway	9/16/2019 20:58	11/12/2019 23:49	RT-3 south	57 days 3 hours 51 minutes	1
Construction Work	Planned Roadway	9/23/2019 6:00	9/27/2019 21:37	RT-3 north	4 days 15 hours 37 minutes	2
Construction Work	Planned Roadway	9/23/2019 7:00	9/28/2019 16:46	RT-3 north	5 days 9 hours 46 minutes	
Construction Work	Planned Roadway	10/1/2019 7:00	10/4/2019 16:58	RT-3 north	3 days 9 hours 58 minutes	
Construction Work	Planned Roadway	10/7/2019 6:00	10/9/2019 15:45	RT-3 north	2 days 9 hours 45 minutes	2
Construction Work	Planned Roadway	10/7/2019 7:00	10/12/2019 16:34	RT-3 north	5 days 9 hours 34 minutes	
Construction Work	Planned Roadway	11/3/2019 19:00	11/9/2019 5:04	RT-53 north	5 days 10 hours 4 minutes	

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region (Continued)

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Construction Work	Planned Roadway	11/10/2019 19:00	11/16/2019 5:28	RT-53 north	5 days 10 hours 28 minutes	
Construction Work	Planned Roadway	11/17/2019 19:00	11/23/2019 5:52	RT-53 north	5 days 10 hours 52 minutes	
Construction Work	Planned Roadway	11/18/2019 6:00	11/23/2019 7:53	RT-3 north	5 days 1 hour 53 minutes	2
Construction Work	Planned Roadway	11/19/2019 20:00	11/22/2019 2:49	RT-3 north	2 days 6 hours 49 minutes	4
Construction Work	Planned Roadway	11/24/2019 19:00	12/5/2019 21:05	RT-53 north	11 days 2 hours 5 minutes	
Construction Work	Planned Roadway	12/8/2019 18:00	12/13/2019 14:23	RT-53 north	4 days 20 hours 23 minutes	
Construction Work	Planned Roadway	12/9/2019 6:00	12/13/2019 17:39	RT-3 north	4 days 11 hours 39 minutes	2
Construction Work	Planned Roadway	12/16/2019 6:00	12/20/2019 17:02	RT-3 north	4 days 11 hours 2 minutes	2
Construction Work	Planned Roadway	12/22/2019 19:00	12/28/2019 5:32	RT-53 north	5 days 10 hours 32 minutes	
Construction Work	Planned Roadway	12/30/2019 6:00	1/14/2020 7:50	RT-3 north	15 days 1 hour 50 minutes	2
					Average Delay - 13.19 Days	
Incident	Planned Roadway	2/10/2019 21:00	2/11/2019 5:50	RT-123 west	8 hours 50 minutes	2
Incident	Planned Roadway	2/11/2019 7:00	2/15/2019 9:39	RT-24 north	4 days 2 hours 39 minutes	2
Incident	Planned Roadway	2/14/2019 21:00	2/15/2019 5:39	RT-106 east	8 hours 39 minutes	2
Incident	Planned Roadway	2/18/2019 7:00	2/22/2019 15:28	RT-24 north	4 days 8 hours 28 minutes	2
Incident	Planned Roadway	3/6/2019 21:00	3/7/2019 5:37	RT-24 north	8 hours 37 minutes	4
Incident	Planned Roadway	3/11/2019 9:00	3/15/2019 4:11	RT-24 north	3 days 19 hours 11 minutes	2
Incident	Planned Roadway	3/12/2019 9:00	3/14/2019 15:04	US-44 east	2 days 6 hours 4 minutes	2
Incident	Planned Roadway	5/6/2019 8:00	5/6/2019 16:51	US-6 west	8 hours 51 minutes	2
Incident	Planned Roadway	5/14/2019 9:00	5/14/2019 15:26	RT-53 north	6 hours 26 minutes	2
Incident	Planned Roadway	6/3/2019 9:00	6/3/2019 15:25	RT-18 north	6 hours 25 minutes	1
Incident	Planned Roadway	6/3/2019 9:00	6/3/2019 15:25	RT-27 south	6 hours 25 minutes	1
Incident	Planned Roadway	6/12/2019 21:00	6/15/2019 5:44	RT-139 east	2 days 8 hours 44 minutes	2
Incident	Planned Roadway	6/17/2019 9:00	6/17/2019 15:13	RT-53 north	6 hours 13 minutes	1
Incident	Planned Roadway	6/17/2019 15:48	3/3/2020 15:41	RT-3 north	260 days 53 minutes	2
Incident	Planned Roadway	6/18/2019 9:00	6/20/2019 15:49	RT-53 north	2 days 6 hours 49 minutes	1
Incident	Planned Roadway	6/24/2019 7:00	6/26/2019 15:01	RT-3 north	2 days 8 hours 1 minute	1
Incident	Planned Roadway	7/10/2019 8:00	7/10/2019 15:48	RT-27 north	7 hours 48 minutes	
Incident	Planned Roadway	8/4/2019 7:00	9/1/2019 15:22	RT-24 north	28 days 8 hours 22 minutes	2

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region (Continued)

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Incident	Planned Roadway	8/9/2019 7:00	8/9/2019 15:48	RT-139 east	8 hours 48 minutes	1
Incident	Planned Roadway	8/20/2019 9:00	8/20/2019 17:00	RT-3A north	8 hours	1
Incident	Planned Roadway	9/3/2019 7:00	10/25/2019 11:27	RT-24 north	52 days 4 hours 27 minutes	1
Incident	Planned Roadway	12/11/2019 9:00	12/12/2019 15:26	RT-18 south	1 days 6 hours 26 minutes	1
Incident	Planned Roadway	12/12/2019 21:00	12/14/2019 4:45	RT-3 north	1 days 7 hours 45 minutes	3
Incident	Planned Roadway	12/16/2019 9:00	12/20/2019 15:01	RT-3 south	4 days 6 hours 1 minute	2
Incident	Planned Roadway	12/17/2019 9:00	12/20/2019 15:01	RT-18 north	3 days 6 hours 1 minute	2
					Average Delay - 14.9 Days	
Road Maintenance Operations	Planned Roadway	2/26/2019 9:00	3/1/2019 15:30	RT-3 south	3 days 6 hours 30 minutes	
Road Maintenance Operations	Planned Roadway	4/10/2019 9:00	4/12/2019 15:52	RT-3A north	2 days 6 hours 52 minutes	
Road Maintenance Operations	Planned Roadway	9/8/2019 21:00	9/13/2019 5:41	RT-24 north	4 days 8 hours 41 minutes	2
Road Maintenance Operations	Planned Roadway	9/23/2019 20:22	9/23/2019 21:18	RT-24 north	56 minutes	
Road Maintenance Operations	Planned Roadway	12/8/2019 20:37	2/4/2020 15:32	RT-3 south	57 days 18 hours 55 minutes	1
Road Maintenance Operations	Planned Roadway	12/15/2019 20:27	12/16/2019 1:11	RT-3 south	4 hours 44 minutes	
					Average Delay - 12.94 Days	
Collision	Roadway/Traffic	5/16/2019 15:21	5/16/2019 22:04	RT-3 north	6 hours 43 minutes	2
Collision	Roadway/Traffic	6/5/2019 14:42	6/5/2019 20:38	RT-3 south	5 hours 56 minutes	1
					Average Delay - 6.3 Hours	
Hazardous Material Spill	Roadway/Traffic	10/1/2019 13:33	10/1/2019 14:51	RT-14 west	1 hour 18 minutes	
					Average Delay - 1.3 Hours	
Incident	Roadway/Traffic	1/10/2019 16:32	1/10/2019 16:56	RT-24 south	24 minutes	
Incident	Roadway/Traffic	1/13/2019 11:25	1/14/2019 6:08	RT-3A north	18 hours 43 minutes	
Incident	Roadway/Traffic	1/13/2019 17:39	1/13/2019 18:19	RT-3 north	40 minutes	
Incident	Roadway/Traffic	1/16/2019 12:30	1/16/2019 15:46	RT-58 south	3 hours 16 minutes	
Incident	Roadway/Traffic	1/17/2019 16:28	1/17/2019 17:06	RT-53 north	38 minutes	
Incident	Roadway/Traffic	1/24/2019 7:14	1/24/2019 9:42	RT-24 south	2 hours 28 minutes	
Incident	Roadway/Traffic	1/24/2019 12:11	1/24/2019 19:42	RT-3 north	7 hours 31 minutes	
Incident	Roadway/Traffic	1/26/2019 8:36	1/26/2019 16:54	RT-24 north	8 hours 18 minutes	
Incident	Roadway/Traffic	2/5/2019 8:07	2/5/2019 8:45	RT-3 north	38 minutes	

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region (Continued)

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Incident	Roadway/Traffic	2/5/2019 9:28	2/5/2019 10:36	RT-3 north	1 hour 8 minutes	
Incident	Roadway/Traffic	2/15/2019 8:45	2/15/2019 8:59	RT-3 north	14 minutes	
Incident	Roadway/Traffic	2/25/2019 11:47	2/26/2019 9:58	RT-18 north	22 hours 11 minutes	2
Incident	Roadway/Traffic	3/5/2019 4:50	3/5/2019 6:48	RT-139 east	1 hour 58 minutes	1
Incident	Roadway/Traffic	3/9/2019 21:23	3/9/2019 21:45	RT-24 south	22 minutes	
Incident	Roadway/Traffic	3/13/2019 15:04	3/13/2019 16:21	RT-24 south	1 hour 17 minutes	
Incident	Roadway/Traffic	3/14/2019 14:56	3/14/2019 19:52	RT-3 north	4 hours 56 minutes	
Incident	Roadway/Traffic	3/14/2019 14:56	3/14/2019 16:11	RT-3 north	1 hour 15 minutes	1
Incident	Roadway/Traffic	3/17/2019 3:46	3/17/2019 5:28	RT-3 south	1 hour 42 minutes	1
Incident	Roadway/Traffic	4/2/2019 16:42	4/2/2019 20:03	RT-3 north	3 hours 21 minutes	2
Incident	Roadway/Traffic	4/9/2019 17:37	4/9/2019 17:52	RT-24 north	15 minutes	
Incident	Roadway/Traffic	4/10/2019 10:07	4/10/2019 10:58	RT-3 south	51 minutes	1
Incident	Roadway/Traffic	4/10/2019 15:41	4/10/2019 20:12	RT-3 south	4 hours 31 minutes	1
Incident	Roadway/Traffic	4/11/2019 11:42	4/11/2019 14:09	RT-24 south	2 hours 27 minutes	
Incident	Roadway/Traffic	4/14/2019 19:55	4/14/2019 20:37	RT-3 north	42 minutes	
Incident	Roadway/Traffic	4/18/2019 14:52	4/18/2019 16:01	RT-3 south	1 hour 9 minutes	1
Incident	Roadway/Traffic	4/20/2019 2:41	4/20/2019 4:04	RT-3 south	1 hour 23 minutes	
Incident	Roadway/Traffic	4/24/2019 13:43	4/24/2019 13:52	RT-3 south	9 minutes	2
Incident	Roadway/Traffic	4/25/2019 16:29	4/25/2019 17:28	RT-24 north	59 minutes	2
Incident	Roadway/Traffic	4/29/2019 21:16	4/30/2019 2:21	US-44 west	5 hours 5 minutes	
Incident	Roadway/Traffic	5/5/2019 15:50	5/5/2019 16:44	RT-24 south	54 minutes	2
Incident	Roadway/Traffic	5/10/2019 18:02	5/10/2019 20:38	RT-24 north	2 hours 36 minutes	2
Incident	Roadway/Traffic	5/19/2019 9:22	5/19/2019 9:43	RT-24 south	21 minutes	2
Incident	Roadway/Traffic	5/20/2019 9:10	5/20/2019 10:08	RT-24 north	58 minutes	2
Incident	Roadway/Traffic	5/26/2019 0:37	5/26/2019 1:46	RT-3 north	1 hour 9 minutes	2
Incident	Roadway/Traffic	5/26/2019 13:12	5/26/2019 16:17	RT-28 north	3 hours 5 minutes	2
Incident	Roadway/Traffic	5/29/2019 16:21	5/29/2019 17:23	RT-3 south	1 hour 2 minutes	1
Incident	Roadway/Traffic	5/30/2019 17:36	5/30/2019 17:57	RT-3 south	21 minutes	1
Incident	Roadway/Traffic	6/6/2019 7:44	6/6/2019 8:28	RT-3 south	44 minutes	2

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region (Continued)

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Incident	Roadway/Traffic	6/6/2019 10:23	6/7/2019 4:07	RT-18 north	17 hours 44 minutes	
Incident	Roadway/Traffic	6/13/2019 15:29	6/13/2019 15:47	RT-24 north	18 minutes	1
Incident	Roadway/Traffic	6/19/2019 14:14	6/19/2019 14:54	RT-24 north	40 minutes	1
Incident	Roadway/Traffic	6/21/2019 23:48	6/22/2019 1:08	RT-3 south	1 hour 20 minutes	1
Incident	Roadway/Traffic	6/27/2019 9:39	6/27/2019 10:00	RT-3 north	21 minutes	
Incident	Roadway/Traffic	6/28/2019 14:02	6/28/2019 14:33	RT-3 south	31 minutes	2
Incident	Roadway/Traffic	7/4/2019 4:24	7/4/2019 6:56	RT-3 south	2 hours 32 minutes	1
Incident	Roadway/Traffic	7/4/2019 4:47	7/4/2019 6:14	RT-3 south	1 hour 27 minutes	1
Incident	Roadway/Traffic	7/4/2019 4:47	7/4/2019 5:19	RT-3 south	32 minutes	1
Incident	Roadway/Traffic	7/5/2019 8:15	7/5/2019 9:11	RT-3 north	56 minutes	
Incident	Roadway/Traffic	7/10/2019 11:02	7/10/2019 11:29	RT-3 north	27 minutes	1
Incident	Roadway/Traffic	7/18/2019 16:52	7/18/2019 17:31	RT-3 south	39 minutes	1
Incident	Roadway/Traffic	7/19/2019 21:26	7/19/2019 21:58	RT-3 north	32 minutes	
Incident	Roadway/Traffic	7/22/2019 18:25	7/22/2019 18:52	RT-3 north	27 minutes	1
Incident	Roadway/Traffic	7/24/2019 3:16	7/24/2019 3:33	US-44 west	17 minutes	1
Incident	Roadway/Traffic	7/24/2019 20:59	7/24/2019 21:54	RT-24 south	55 minutes	3
Incident	Roadway/Traffic	7/29/2019 17:53	7/29/2019 18:00	RT-3 south	7 minutes	1
Incident	Roadway/Traffic	8/1/2019 22:46	8/2/2019 4:23	RT-3A north	5 hours 37 minutes	
Incident	Roadway/Traffic	8/2/2019 1:03	8/2/2019 3:19	RT-3 south	2 hours 16 minutes	1
Incident	Roadway/Traffic	8/12/2019 17:37	8/12/2019 18:05	RT-3 south	28 minutes	
Incident	Roadway/Traffic	8/23/2019 15:43	8/23/2019 16:20	RT-24 south	37 minutes	
Incident	Roadway/Traffic	8/28/2019 9:42	8/28/2019 10:39	RT-3 south	57 minutes	
Incident	Roadway/Traffic	8/28/2019 9:42	8/28/2019 11:42	RT-3 south	2 hours	
Incident	Roadway/Traffic	9/2/2019 17:09	9/2/2019 17:27	RT-3 south	18 minutes	2
Incident	Roadway/Traffic	9/10/2019 20:20	9/10/2019 21:21	RT-3 south	1 hour 1 minute	1
Incident	Roadway/Traffic	9/13/2019 0:35	9/13/2019 21:10	RT-24 south	20 hours 35 minutes	1
Incident	Roadway/Traffic	9/13/2019 0:35	9/13/2019 1:53	RT-24 south	1 hour 18 minutes	1
Incident	Roadway/Traffic	9/17/2019 20:16	9/17/2019 22:29	RT-3 south	2 hours 13 minutes	
Incident	Roadway/Traffic	9/19/2019 22:11	9/19/2019 22:54	RT-3 south	43 minutes	

Table 15: 2019 Non-Recurring Congestion by Type in the OCPC Region (Continued)

Standardized Type	Agency-specific Type	Start time	Closed time	Location	Duration (Incident clearance time)	Max Lanes Closed
Incident	Roadway/Traffic	9/22/2019 9:09	9/22/2019 9:38	RT-24 north	29 minutes	
Incident	Roadway/Traffic	9/22/2019 21:09	9/22/2019 21:27	RT-24 north	18 minutes	
Incident	Roadway/Traffic	9/26/2019 7:59	9/26/2019 8:21	RT-3 south	22 minutes	
Incident	Roadway/Traffic	9/30/2019 5:38	9/30/2019 6:59	RT-24 north	1 hour 21 minutes	1
Incident	Roadway/Traffic	10/2/2019 9:10	10/2/2019 9:25	RT-3 north	15 minutes	1
Incident	Roadway/Traffic	10/9/2019 10:45	10/9/2019 14:32	RT-28 south	3 hours 47 minutes	
Incident	Roadway/Traffic	10/9/2019 16:19	10/9/2019 17:18	RT-3 south	59 minutes	2
Incident	Roadway/Traffic	10/9/2019 19:49	10/9/2019 20:35	RT-3 south	46 minutes	
Incident	Roadway/Traffic	10/11/2019 14:51	10/11/2019 15:18	RT-28 north	27 minutes	
Incident	Roadway/Traffic	10/26/2019 3:04	10/26/2019 3:35	RT-24 south	31 minutes	
Incident	Roadway/Traffic	10/29/2019 11:37	10/29/2019 11:59	RT-24 south	22 minutes	2
Incident	Roadway/Traffic	11/6/2019 8:37	11/6/2019 9:06	RT-24 north	29 minutes	2
Incident	Roadway/Traffic	11/13/2019 7:25	11/13/2019 7:50	RT-24 north	25 minutes	1
Incident	Roadway/Traffic	11/15/2019 2:50	11/15/2019 5:37	RT-24 south	2 hours 47 minutes	1
Incident	Roadway/Traffic	11/19/2019 9:25	11/19/2019 10:31	RT-3 north	1 hour 6 minutes	
Incident	Roadway/Traffic	11/19/2019 9:25	11/19/2019 13:53	RT-3 north	4 hours 28 minutes	
Incident	Roadway/Traffic	11/21/2019 6:50	11/21/2019 7:34	RT-3 south	44 minutes	
Incident	Roadway/Traffic	12/3/2019 3:38	12/3/2019 6:18	RT-3A north	2 hours 40 minutes	
Incident	Roadway/Traffic	12/3/2019 8:26	12/3/2019 12:41	US-44 east	4 hours 15 minutes	
Incident	Roadway/Traffic	12/13/2019 13:46	12/13/2019 14:26	RT-3 south	40 minutes	
Incident	Roadway/Traffic	12/13/2019 13:46	12/13/2019 15:21	RT-3 south	1 hour 35 minutes	
Incident	Roadway/Traffic	12/26/2019 8:40	12/26/2019 9:09	RT-3 south	29 minutes	
Incident	Roadway/Traffic	12/29/2019 7:50	12/29/2019 10:58	RT-139 east	3 hours 8 minutes	2
Incident	Roadway/Traffic	12/29/2019 10:16	12/29/2019 12:48	RT-3 south	2 hours 32 minutes	
					Average Delay - 2.33 Hours	
Water Main Work	Roadway/Traffic	5/1/2019 9:52	5/1/2019 14:24	RT-3A south	4 hours 32 minutes	
Water Main Work	Roadway/Traffic	5/1/2019 9:52	5/1/2019 14:25	RT-3A south	4 hours 33 minutes	
Water Main Work	Roadway/Traffic	8/20/2019 10:23	8/20/2019 14:45	RT-27 south	4 hours 22 minutes	
					Average Delay - 4.48 Hours	

Identification and Assessment of Strategies

The Old Colony planning staff recommends the funding of strategies and recommendations for improving congestion through the Old Colony Transportation Improvement Program (TIP) and other sources as appropriate. These strategies and recommendations are prepared through planning activities in the Unified Planning Work Program and identified in consultation with stakeholders.

The following congestion management strategies are recommended for the Old Colony region:

- Travel Demand Management (TDM)
- Access Management
- Promote the Use of Non-motorized Modes of Travel
- Intelligent Transportation Systems (ITS)
- Public Transportation
- Highway Capacity
- Parking Capacity

Travel Demand Management (TDM)

Transportation Demand Management (TDM) techniques serve to reduce the number of single occupancy vehicle trips. Typical examples of TDM techniques include but are not limited to; ridesharing/carpooling; shuttle services; telecommuting options; flexible work schedules; and bicycle and pedestrian accommodations. These techniques help reduce the amount of vehicle trips on the highway network and therefore reduce congestion. OCPC will continue to support enactment of TDM measures throughout the region and in development projects undergoing MEPA review.

> **Pros of Travel Demand Management**: Reduction in single occupant vehicle travel; Public health benefit from increases in walking and bicycling.
>
> **Cons of Travel Demand Management**: Dependent on program, highly localized; May not be highly effective in achieving regional mode shift goals and reducing large scale congestion.

Access Management

Access Management is defined as the planning of the design, location, and operation of driveways, median openings, interchanges, and street connections. Although some access management techniques include limiting the number of curb cuts, adding medians, and reducing turning movements, studies show that well planned access management design and modifications do not negatively impact businesses. Access Management applications result in reduced blocking of driveways by queues, better access between neighborhoods and businesses, and safer overall driving conditions.

Highway planning has traditionally focused on relieving bottlenecks and congestion to maximize traffic flow efficiency; however, commercial and retail activities have become significant within certain highway segments. In addition, a lack of control, placement, spacing, and width of curb cuts that provide access to adjacent properties has become prevalent throughout most of the arterial corridors within the OCPC communities. These conditions have led to situations in which traffic flow and safety have been

compromised. The commercial and retail centers that have proliferated along important arterials and collectors are auto dependent, mainly single use zoned, and extensive in development (spread out over large areas).

> **Pros of Access Management**: Effective in reducing localized congestion, especially along commercial corridors; Reduction/concentration of curb cuts and access points reduces overall number of conflicts and hence can improve safety.
>
> **Cons of Access Management**: Right-of-way obstacles; Often focused only on motorized travel; Not effective in reducing single occupancy vehicle dependency.

Promote the Use of Non-Motorized Modes of Travel

Promotion of the use of non-motorized modes of travel can be achieved by focusing on infrastructure improvements that promote the efficiency of bicycling and walking. Incorporating Complete Streets principles into the transportation planning process is also a critical component of this initiative.

Pedestrian infrastructure improvements may include:

- Installing new sidewalks where none currently exist
- Repairing and/or widening existing sidewalks
- Removing obstacles
- Installing pedestrian signals or improving existing signals
- Installing new and/or improved crosswalks and accompanying appropriate signage
- Creating buffers between sidewalks and vehicular traffic
- Traffic calming
- Providing ADA compliant sidewalks, walkways, and ramps

Bicycle infrastructure improvements may include:

- Adding bicycle lanes
- Creating shared-use paths
- Installing bicycle parking amenities at transit facilities and other key destinations
- Increasing transit bicycle carrying capacity
- Allowing bicycle transport on commuter rail during peak periods

Beyond promoting pedestrian and bicycle improvements system wide, Old Colony staff also seek to promote and encourage all communities in the Old Colony region to adopt official Complete Streets policies.

> **Pros of Promoting Non-Motorized Travel**: Public health benefit from increased physical activity and reduction in GHG emissions; Better facilities improve safety for vulnerable users; Reduction in dependency on motorized vehicles.

Cons of Promoting Non-Motorized Travel: Larger scale improvements may have right-of-way and funding challenges.

Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems (ITS) are applications of advanced technology in the field of transportation, with the goals of increasing operational efficiency and capacity, improving safety, reducing environmental costs, and enhancing personal mobility. Intelligent Transportation Systems are currently used in a wide variety of applications, such as: incident management and emergency response, electronic toll collection on highways, fare collection on transit systems, adaptive traffic signal control, and congestion management. Specifically, ITS increases safety, security, comfort, and convenience for transit passengers; improves transit efficiency and thus helps to reduce operating costs; assists transit operation managers and vehicle operators by automating many of their labor-intensive duties; and promotes an intermodal transportation system that helps motorists transition between their own passenger vehicles and the transit system.

Pros of Intelligent Transportation Systems: Potential to be highly effective on reducing congestion and adjusting traffic flow; Adaptive nature of new technology allows adjustable applications for varying traffic conditions.
Cons of Intelligent Transportation Systems: High cost; Regional traffic management requires coordination across jurisdictions.

Promote Public Transportation

A robust public transportation system is a critical component of the transportation system. A choice of public transportation options creates incentive of convenience for commuters, reducing dependency on motorized travel especially single occupancy vehicles. Consideration of the following improvements and strategies are routinely assessed in promoting public transportation:

- Adjust transit schedules by time of day (allowing increased service frequency during peak demand hours by decreasing frequency during low demand hours)
- Increase the coverage area and hours of service
- Traffic signal priority for transit vehicles
- Provide real-time transit vehicle information (location / arrival time of vehicles) to users
- Provision for bicycles at transit facilities and on vehicles
- Improved bicycle and pedestrian connections to transit facilities
- Modernization of facilities and equipment

Pros of Promoting Public Transportation: Effective in reducing congestion by reducing reliance on personal motorized vehicles; May have Public Health benefit by increasing physical activity (i.e. walking to transit stops); Provides transportation options for vulnerable and mobility-challenged individuals.

Cons of Promoting Public Transportation: New service may be costly to implement; Low-density development in areas of the region creates service challenges.

Increasing Highway Capacity

Although the other congestion management strategies listed here should be and routinely are considered first before highway capacity is considered, in some cases increasing highway capacity must remain an option for meeting the demands of an increasing population and expanding economy. Increasing capacity includes adding lanes to major, chronically congested highways such as Route 3.

Pros of Increasing Highway Capacity: May reduce impacts of congestion and improve air quality.

Cons of increasing Highway Capacity: New construction is often expensive with accompanying right-of-way and environmental impacts; Does not promote reduction in reliance on motorized travel.

Increasing Parking Capacity

The idea of increasing parking capacity at transit facilities is to remove vehicles from the roadways and utilize public transportation as well as reducing factors such as traffic and expensive parking costs. In 2019, eight CMP locations (three commuter rail stations and five Park & Ride lots) were above 85% utilized, which makes them congested. All five of the congested Park & Ride facilities provide bus services. Increasing the amount of available parking requires acquiring adjacent land to add parking spaces and potentially removing/adding or creating new security boundaries.

Pros of Increasing Parking Capacity: May reduce impacts of congestion and improve air quality; Could result in an increased ridership for the MBTA and bus Plymouth & Brockton bus service.

Cons of increasing Parking Capacity: New construction is often expensive with accompanying right-of-way and environmental impacts; Does not guarantee increased ridership; May not be the best use of funds related to public transportation.

Programming and Implementing Strategies

Table 16 describes which congestion management strategies are intended to be applied to the identified congested facilities.

Table 16: Applied Congestion Management Strategies for Identified Facilities

Congested Facility	Travel Demand Management	Access Management	Promote Non-Motorized Travel	ITS	Promote Public Transportation	Increase Highway Capacity	Increase Parking Capacity
Limited Access Highways & Interchanges							
AmVets Memorial Highway (Route 24) & Interstate 495 - Exit 14	X				X	X	
AmVets Memorial Highway (Route 24) & Pleasant Street (Route 104) - Exit 15	X				X	X	
AmVets Memorial Highway (Route 24) & West Center Street (Route 106) - Exit 16	X				X	X	
AmVets Memorial Highway (Route 24) & Belmont Street (Route 123) - Exit 17	X				X	X	
AmVets Memorial Highway (Route 24) & Reynolds Memorial Highway (Route 27) - Ex	X				X	X	
AmVets Memorial Highway (Route 24) & Harrison Boulevard/Central Street - Exit 19	X				X	X	
AmVets Memorial Highway (Route 24) & Lindelof Avenue (Route 139) - Exit 20	X				X	X	
Pilgrim Highway (Route 3) & Long Pond Road - Exit 5	X				X	X	
Pilgrim Highway (Route 3) & Samoset Street (Route 44) SB - Exit 6A	X				X	X	
Pilgrim Highway (Route 3) & Samoset Street SB - Exit 6B	X				X	X	
Pilgrim Highway (Route 3) & Smiths Lane - Exit 8	X				X	X	
Pilgrim Highway (Route 3) & Main Street (Route 3A) - Exit 9	X				X	X	
Pilgrim Highway (Route 3) & Church Street (Route 139) - Exit 12	X				X	X	
Arterials							
Route 3A - Kingston - Railroad Tracks to Route 3			X	X			
Route 3A - Plymouth - Cherry Street to South Street			X	X	X		
Route 18 - Abington - Weymouth Town Line to Whitman Town Line		X	X	X	X		
Route 27 - Brockton - West Street to Route 14			X	X			
Route 27 - Stoughton - Stoughton Square to Brockton City Line			X	X			
Route 44 / Samoset Street - Plymouth - Pilgrim Hill Road to Court Street (Route 3A)			X	X			
Route 104 - Bridgewater - Route 24 to Bridgewater Center			X	X			
Route 106 - Halifax - Indian Pond Road to Route 58		X	X				
Route 106 - West Bridgewater - Route 24 to Route 28		X	X			X	
Route 123 - Easton & Brockton - Route 138 to Route 28		X	X	X	X		
Route 138 - Stoughton - Canton Town Line to Route 27		X	X	X			
Central Street - Stoughton - Route 27 to Avon Town Line			X				
Main Street - Brockton - Howard Street to Plain Street			X				
Town Centers							
Bridgewater Center	X	X	X				
East Bridgewater Center	X	X	X				
Stoughton Square	X	X	X	X			
West Bridgewater Center	X	X	X	X			
Whitman Center	X	X	X				
Intersections							
Intersections with D and F LOS (see List)	X	X	X	X	X	X	
Commuter Rail and Park-and-Ride Parking Lots at Capacity							
Canton Junction Commuter Rail			X		X		
Stoughton Commuter Rail			X		X		X
Rockland Park and Ride			X		X		X
Plymouth Park-and-Ride			X		X		X
Bourne Park-and-Ride			X		X		X
West Bridgewater Park-and-Ride			X		X		X

Evaluation of Strategy Effectiveness

The effectiveness of the strategies presented in this Congestion Management Process report are routinely evaluated continuously as part of the Old Colony MPO's congestion management activities as well as across all transportation planning activities. The following metrics are currently applied in evaluating the strategies outlined in this CMP Report.

Table 17: Metrics for Evaluating Strategy Effectiveness

Strategy	Metrics
Travel Demand Management	Mode Share (% of people walking, bicycling, using transit, ridesharing)
Access Management	Travel speeds; Intersection and Corridor Delay; Hours of Congestion; Volume to Capacity Ratios
Promote Non-Motorized Travel	# of Communities with adopted Complete Streets policies; Mode Share; # of Bicycles Parked
Intelligent Transportation Systems	Travel speeds; Intersection and Corridor Delay; Hours of Congestion
Promote Public Transportation	Ridership; Parking Lot Utilization (Commuter Rail and Park-and-Ride); On-Time Records
Increased Highway Capacity	Travel speeds; Intersection and Corridor Delay; Hours of Congestion; Volume to Capacity Ratios
Increased Parking Capacity	Parking demand; Frequent 85% or higher utilization (Congested facilities)

The effectiveness of congestion management strategies is also measured against the performance targets identified in this CMP and the Regional Transportation Plan:

Congestion Management Target and Performance Measure: Monitor congestion levels on federal-aid eligible highway network annually, and highlight corridors with volume to capacity (V/C) ratios of 0.8 or greater for targeted study and/or improvements

- **2019 Status**: Although this is an ongoing process, Old Colony planning staff have identified congested corridors based on existing traffic data and volume to capacity ratios. Those corridors are listed in Table 3 of this report.

Congestion Management Target and Performance Measure: Record utilization data twice annually and report data to MassDOT

- **2019 Status**: Old Colony planning staff successfully recorded utilization data in April and October of 2019 and reported the data to MassDOT and the MBTA.

Congestion Management Target and Performance Measure: 50% of available Transportation Improvement Program funding allocated to projects that significantly improve bicycle and pedestrian mobility.

- **2019 Status**: 67% of the TIP projects in 2019 involved improving bicycle and/or pedestrian mobility.

Congestion Management Target and Performance Measure: 50% of TIP projects reduce GHGs while also reducing negative impacts on the natural environment (such as improved storm water management or the addition of green space).

- **2019 Status**: 100% of the TIP road projects and 100% of the 2019 bus replacement projects in 2019 had measurable reductions in GHGs.

Congestion Management Target and Performance Measure: Achieve a Level of Travel Time Reliability (LOTTR) of 68% on Interstate roads and 80% on non-Interstate roads by 2022.

- **2018 Status:** 100% LOTTR on Interstate Roads and 89.30% on non-Interstate Roads in the OCPC Region. (This Target and Performance Measure will be updated in 2022.)

Congestion Management Target and Performance Measure: Achieve a Truck Travel Time Reliability (TTTR) Index of 1.85 on Interstate NHS roads by 2022.

- **2018 Status:** Interstate NHS Roads saw a TTTR Index of 1.675 in the OCPC Region. (This Target and Performance Measure will be updated in 2022.)

Congestion Management Target and Performance Measure: Achieve 34.82% Non-SOV travel by 2020 and 35.46% by 2022.

- **2018 Status:** The percentage of commuters using a mode of transportation other than a single-occupancy vehicle was 33.9% (done by Boston UZA level). (This Target and Performance Measure will be updated in 2022.)

Congestion Management Target and Performance Measure: Achieve a Peak Hour Excessive Delay (PHED) of 18.31 annual hours per capita or lower by 2022.

- **2018 Status:** NHS Roadways saw a PHED of 18.31 per capita (This Target and Performance Measure will be updated in 2022.)

Congestion Management Target and Performance Measure: Reduce the total reduction of on-road mobile source emissions from projects funded under the Congestion Mitigation & Air Quality (CMAQ) program to 1,622 CO_2 by 2020.

- **2018 Status:** Unavailable. (This Target and Performance Measure will be updated in 2022.)

Congestion Management Target and Performance Measure: Reduce the average commute time for commuters who drive to work.

- **2019 Status:** The average commute time in FY 19 was 29.3 minutes, which was 0.3 minutes higher than FY 18. This calculation was based on the 5-year ACS estimate.

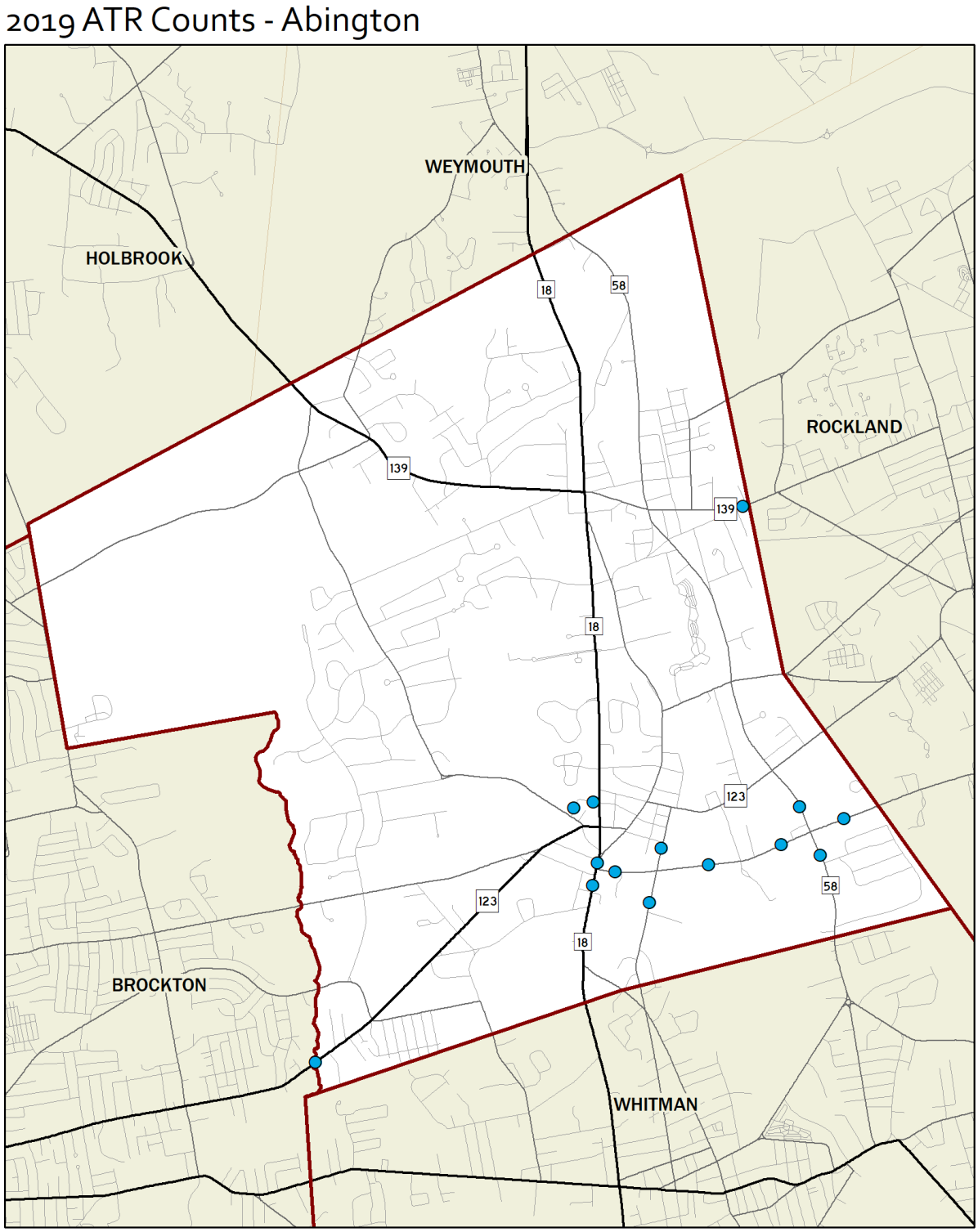
Congestion Management Target and Performance Measure: Achieve 250 registered municipalities by 2020 and 275 registered municipalities by 2022 for Complete Streets policies.

- **2019 Status:** There were 230 registered municipalities in 2019 for Complete Streets policies, which were 23 more than 2018. Fourteen (14) of OCPC's 17 communities are registered municipalities.

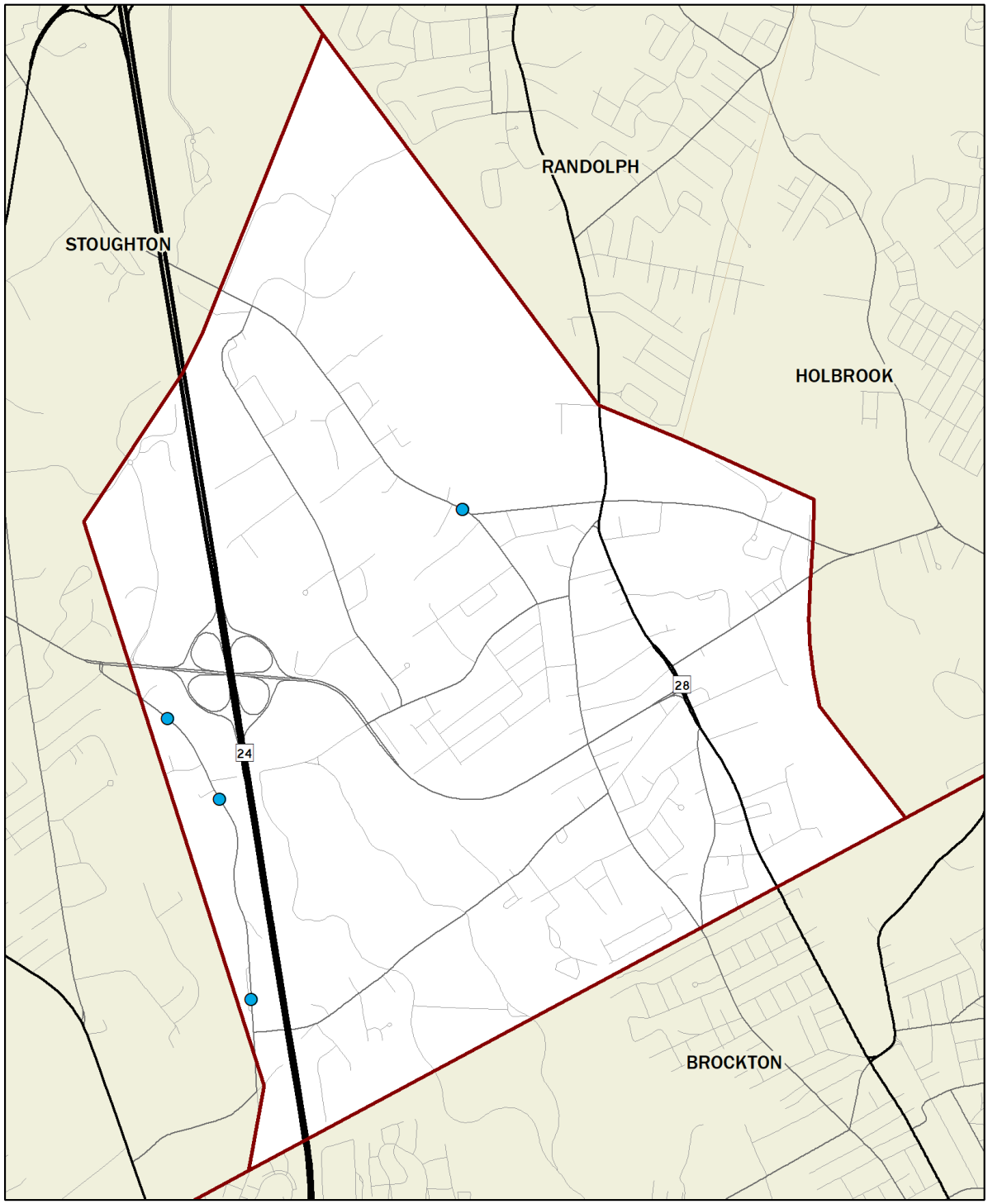
Congestion Management Target and Performance Measure: Achieve 200 approved Complete Streets policies by 2020 and 250 approved Complete Streets policies by 2022.

- **2019 Status:** There were 200 approved Complete Streets policies in 2019, which was 38 more than 2018. Twelve (12) of OCPC's 14 registered municipalities have approved Complete Streets policies.

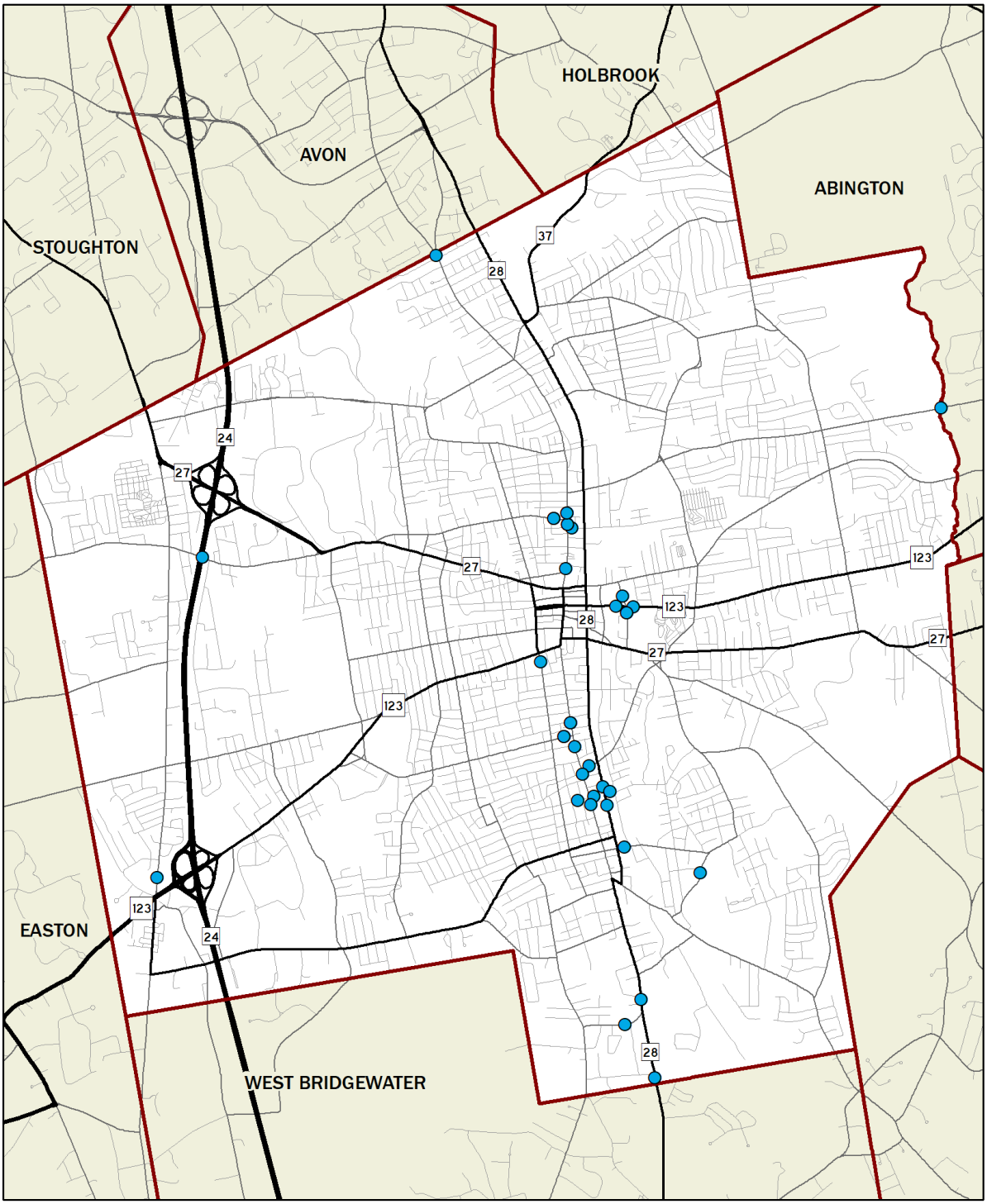
Appendix A: 2019 ATR Count Locations by Municipality



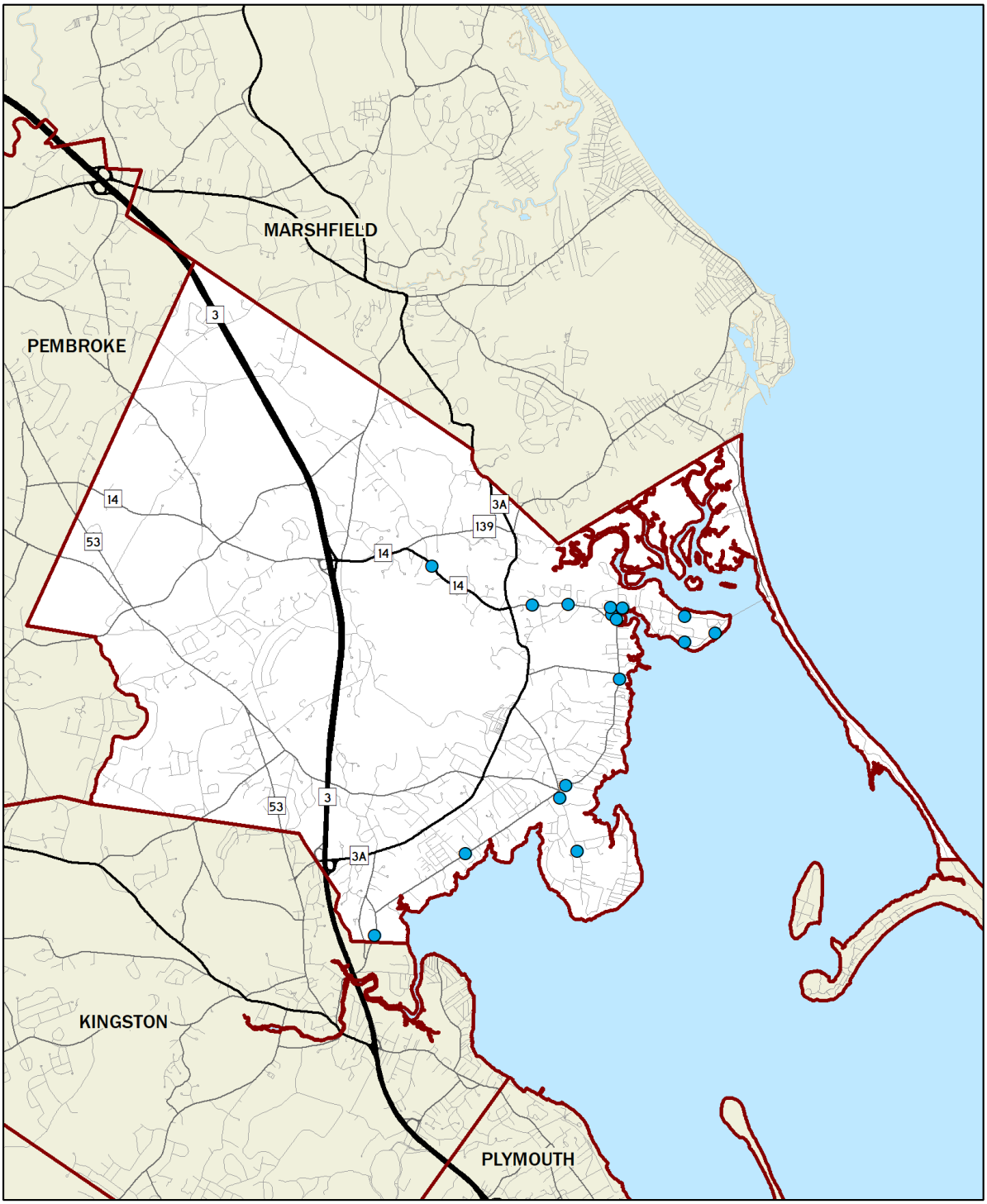
2019 ATR Counts - Avon



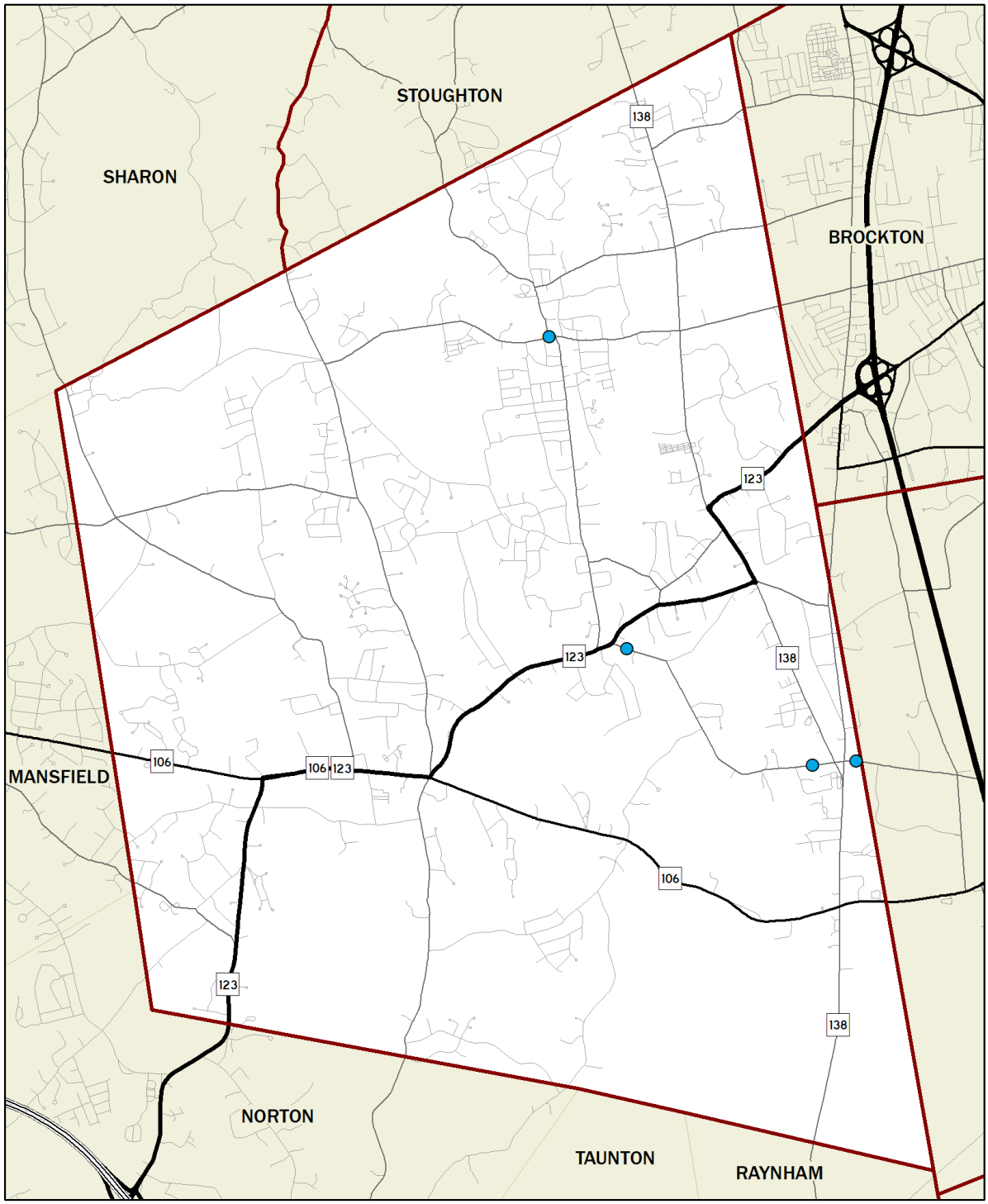
2019 ATR Counts - Brockton



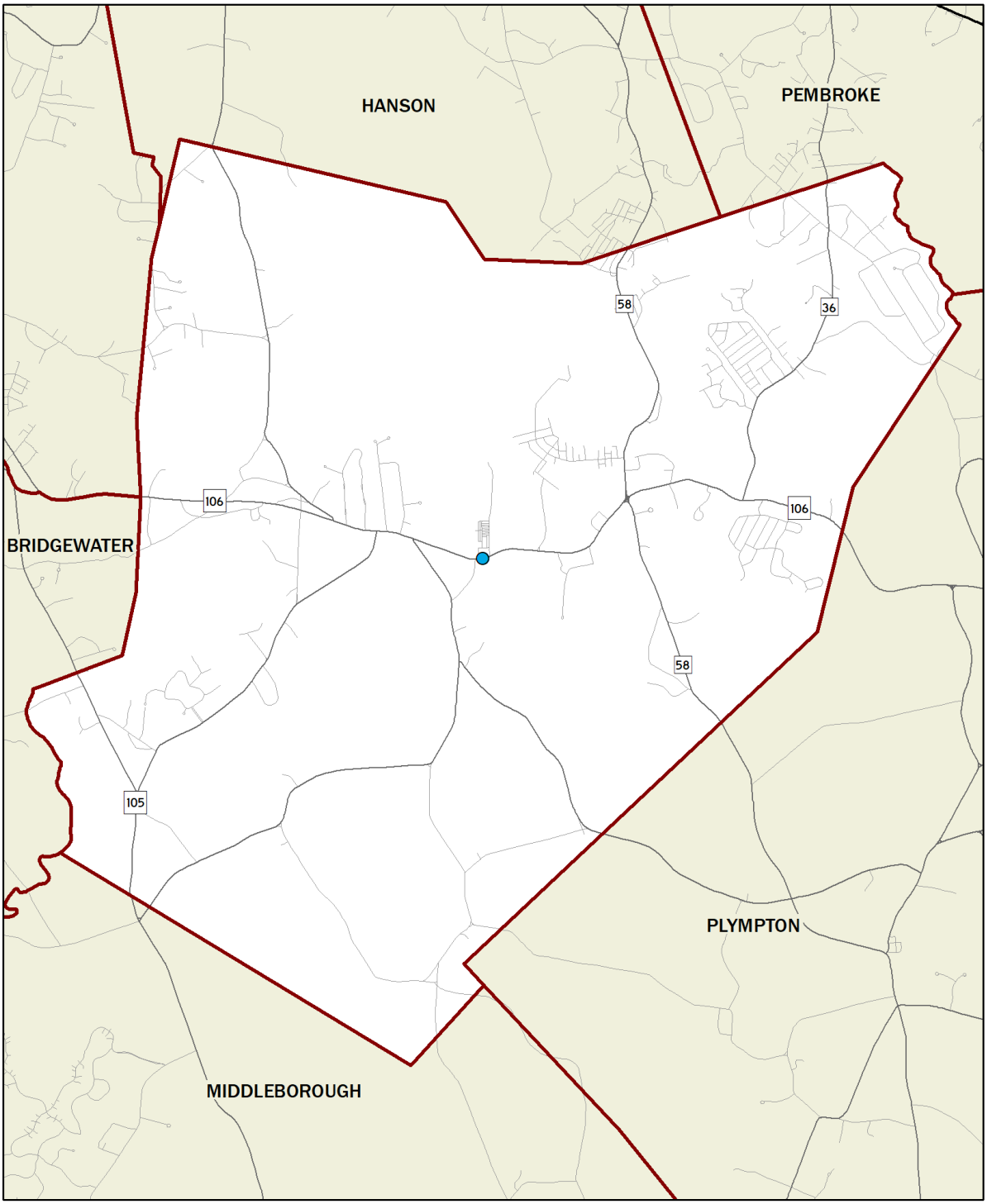
2019 ATR Counts - Duxbury



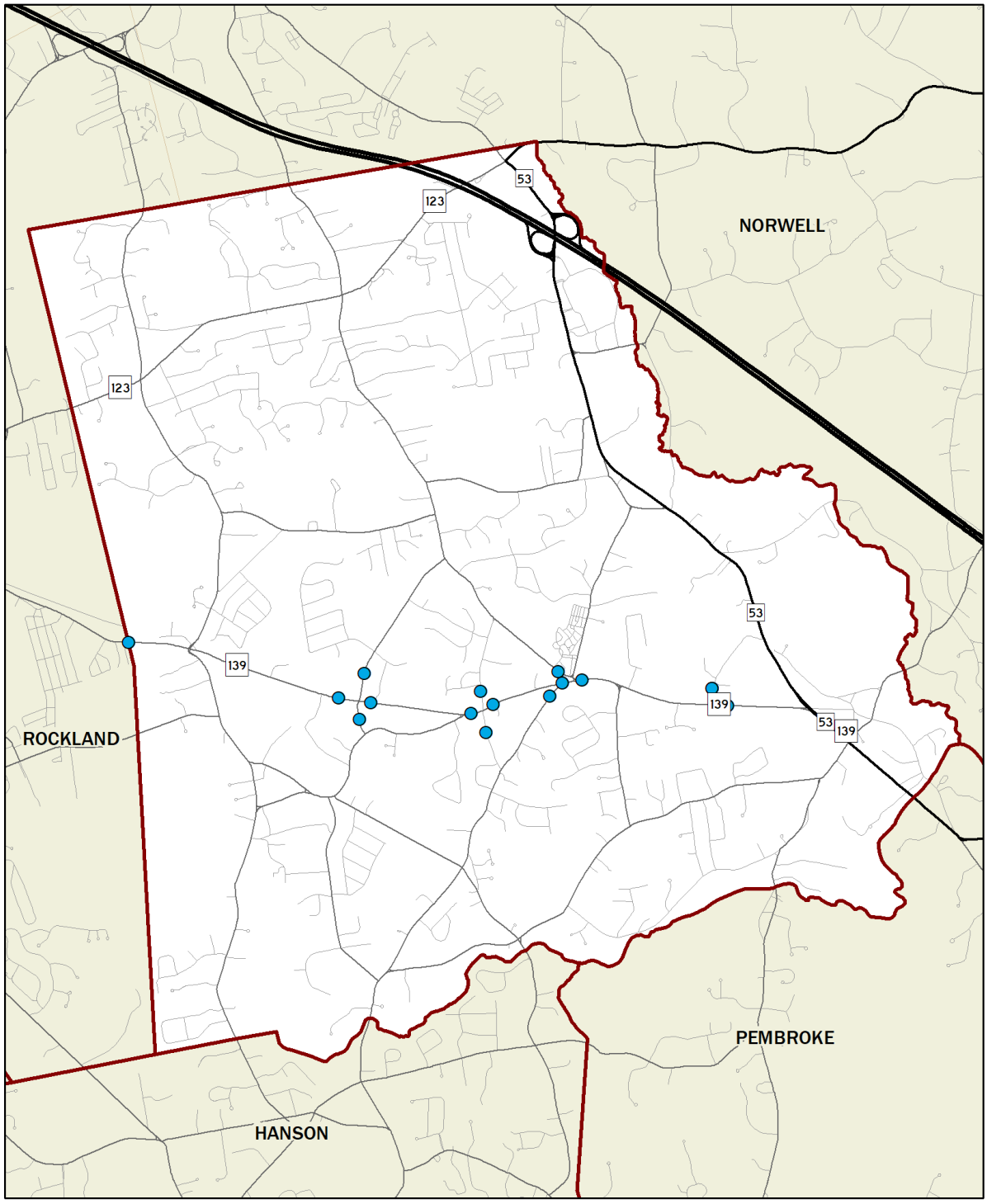
2019 ATR Counts - Easton



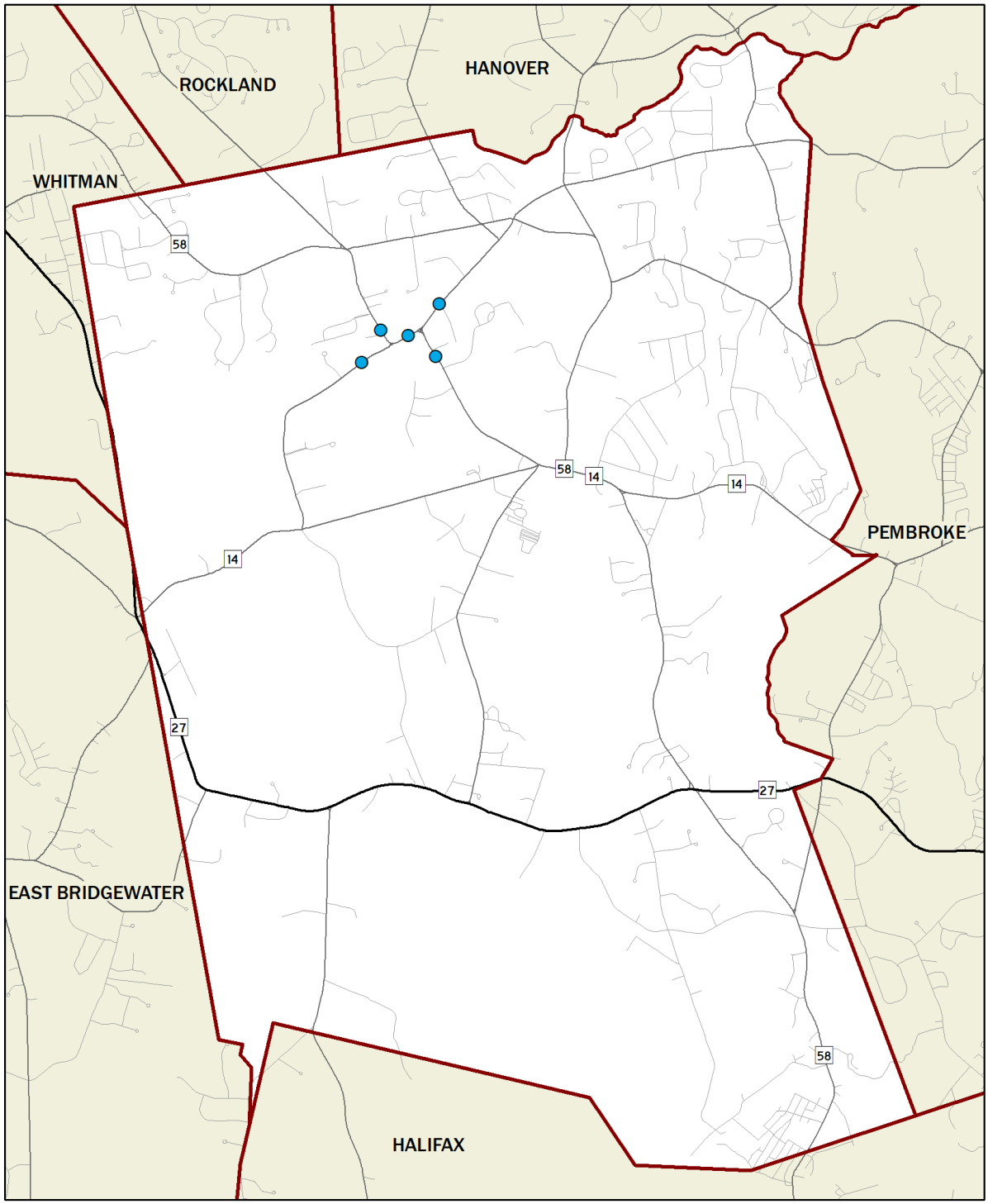
2019 ATR Counts - Halifax



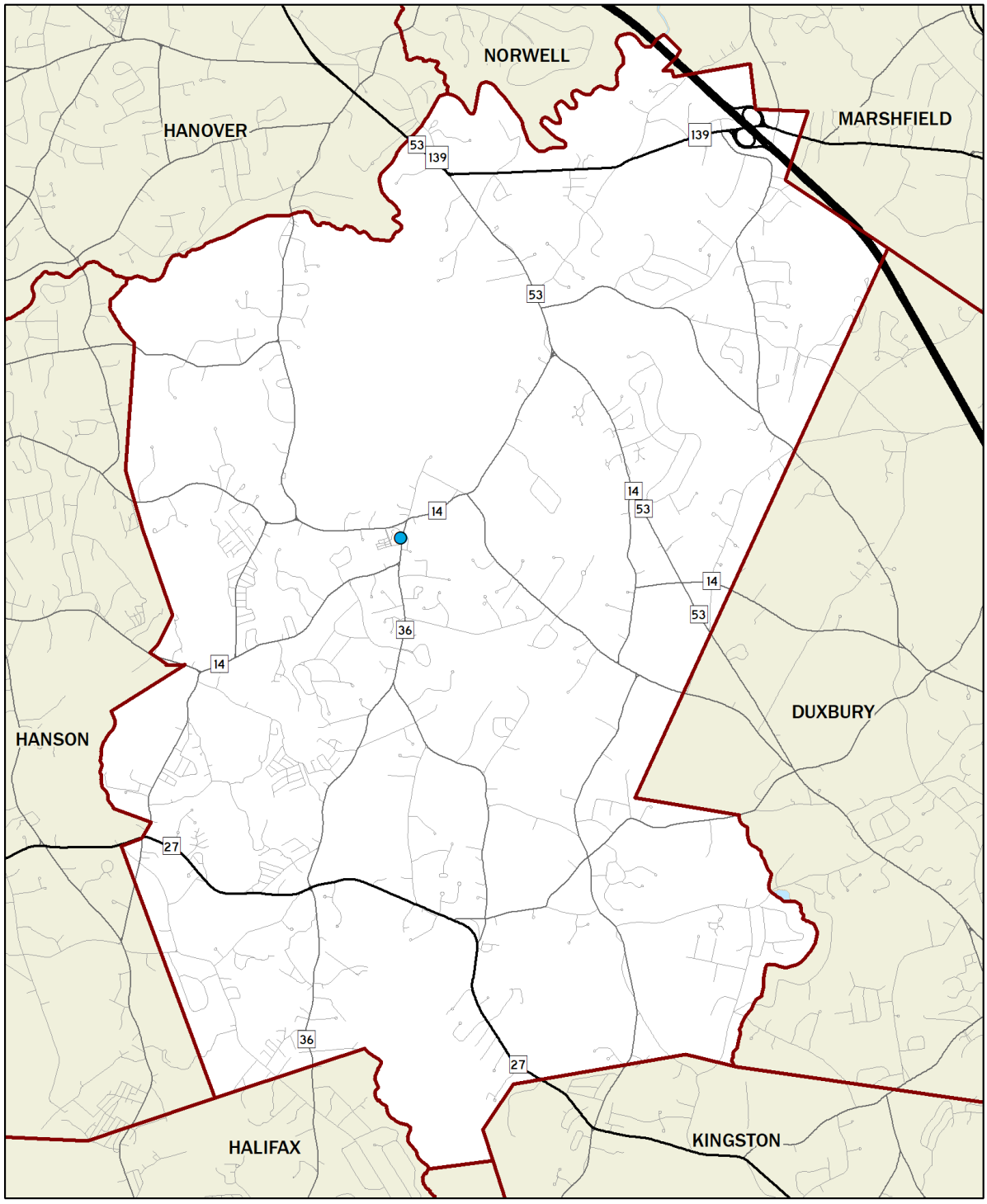
2019 ATR Counts - Hanover



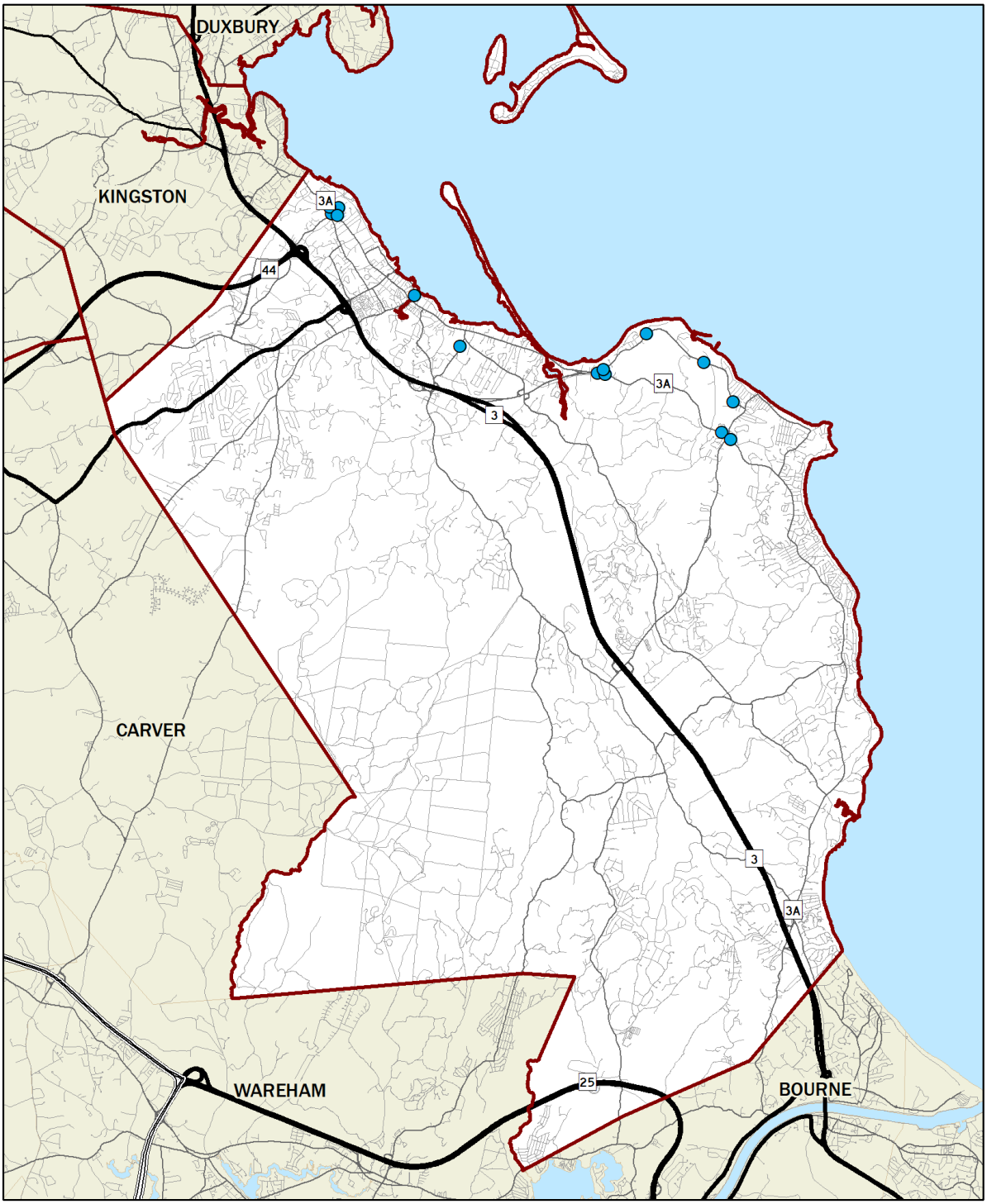
2019 ATR Counts - Hanson



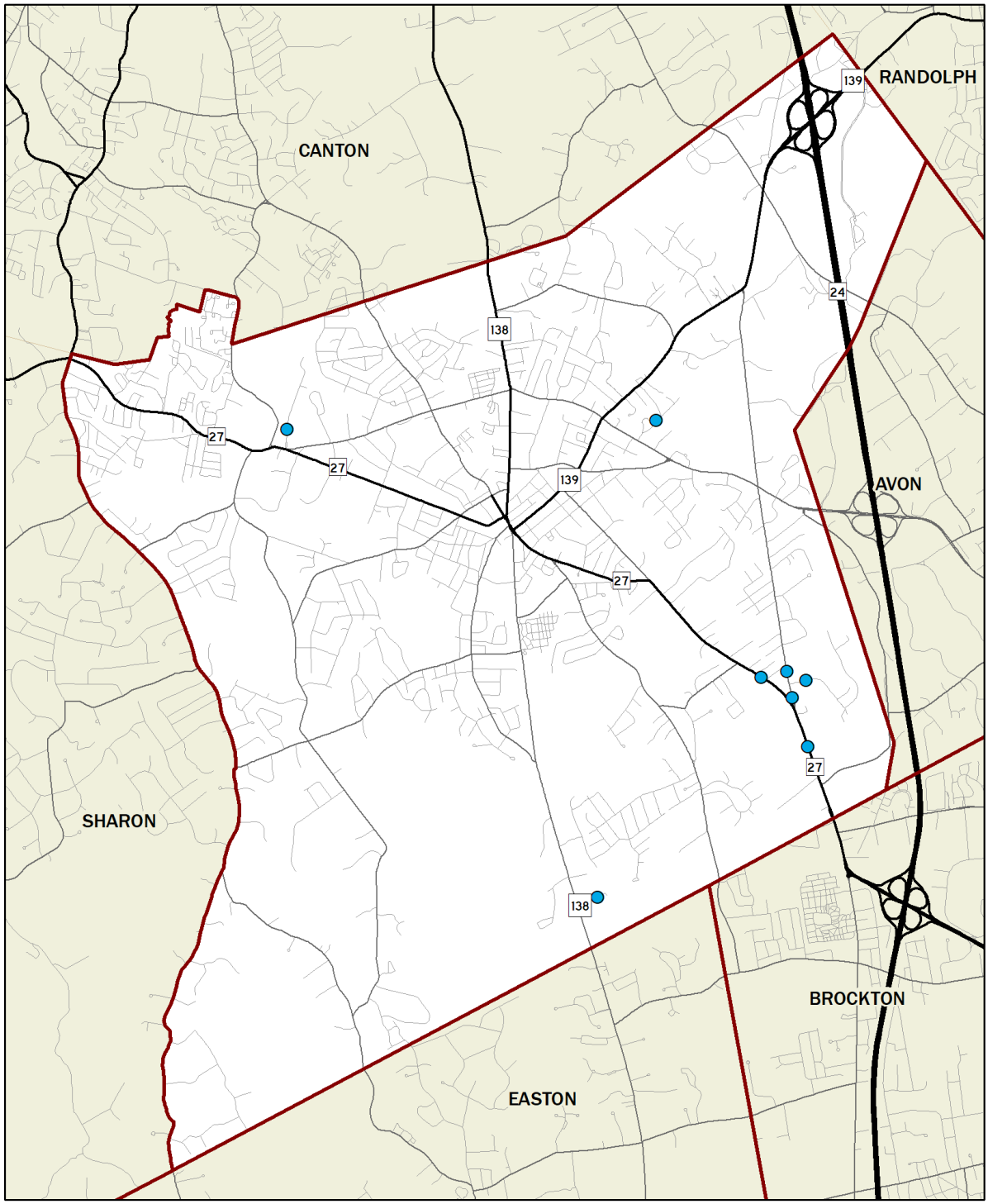
2019 ATR Counts - Pembroke



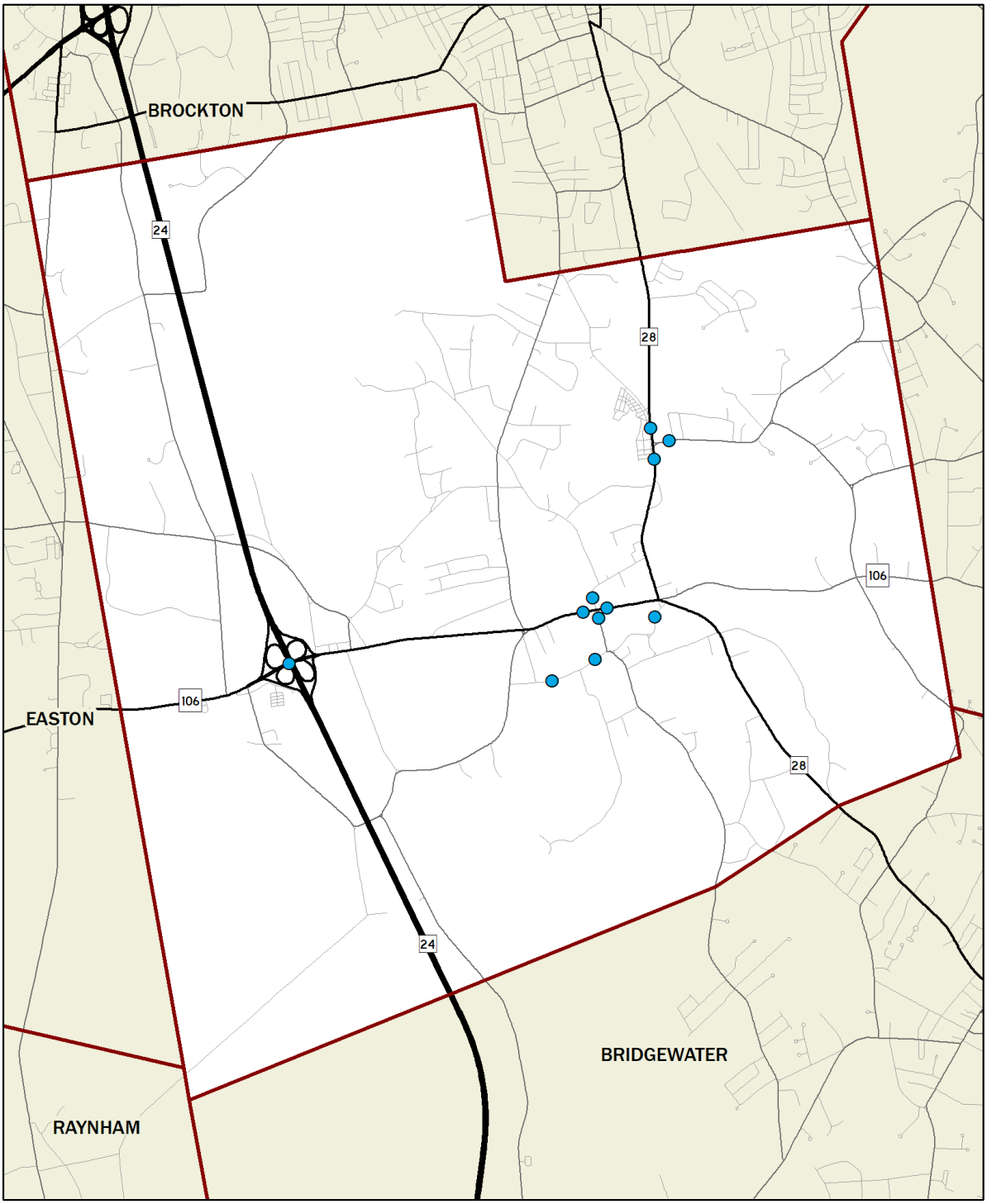
2019 ATR Counts - Plymouth



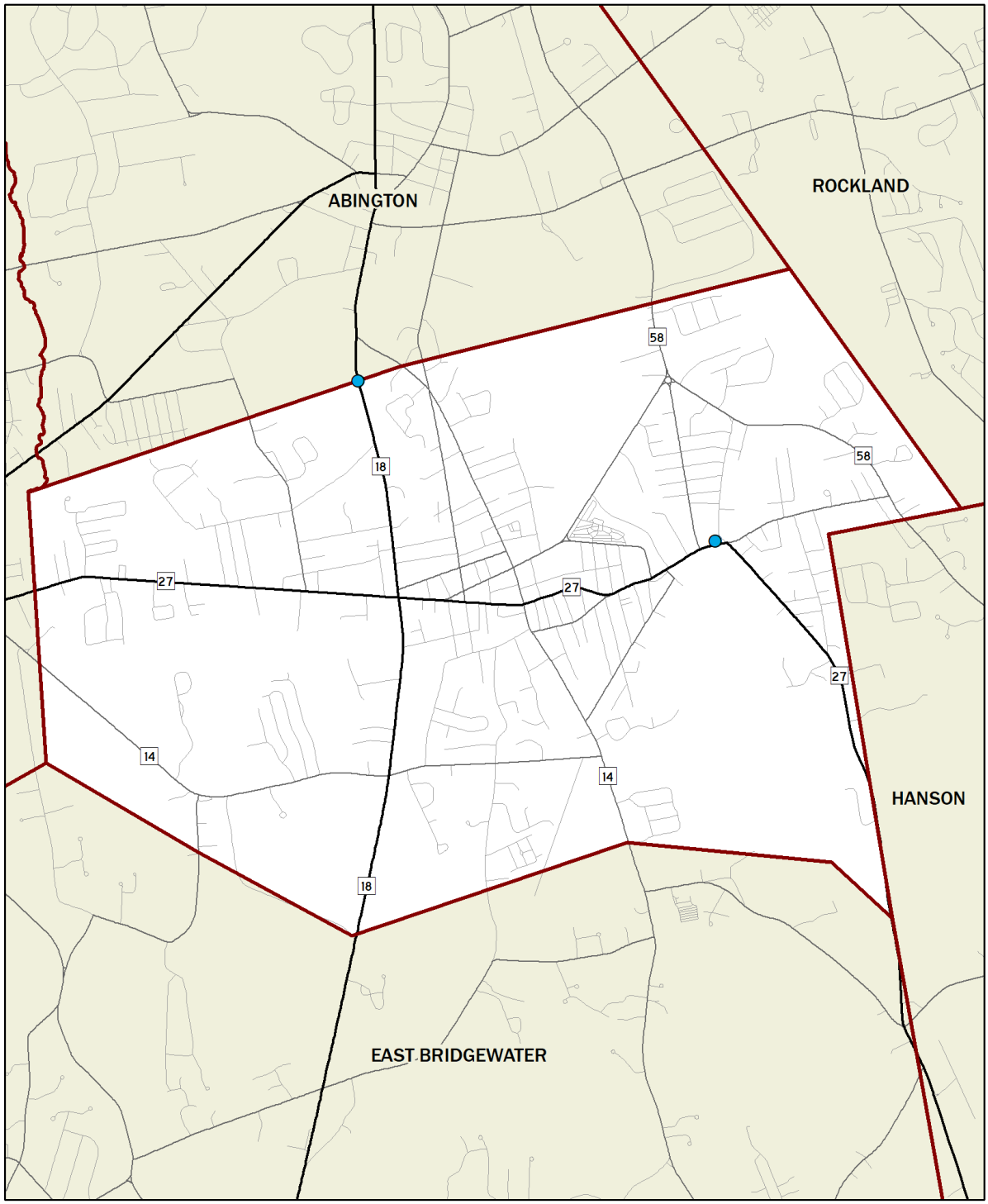
2019 ATR Counts - Stoughton



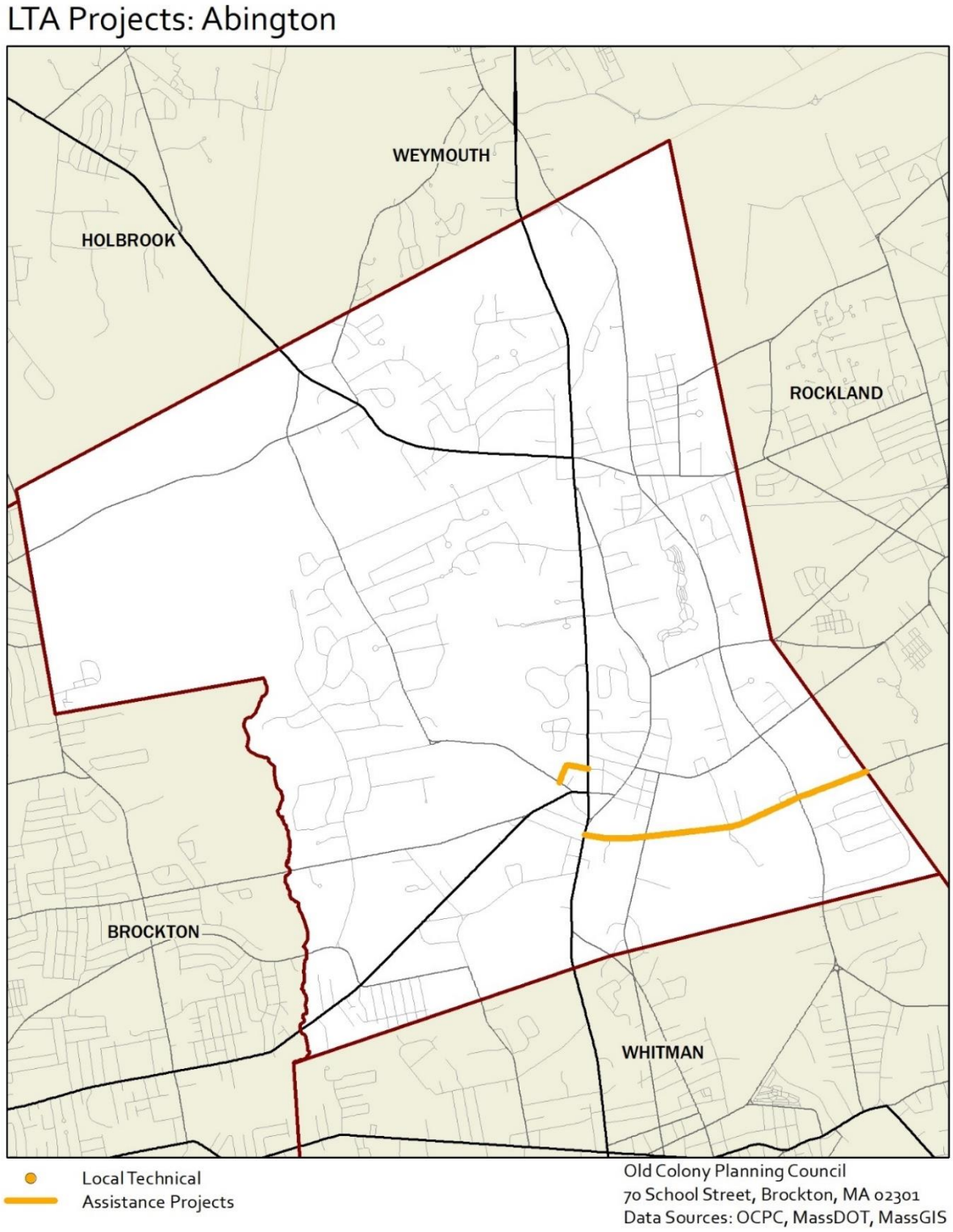
2019 ATR Counts - West Bridgewater



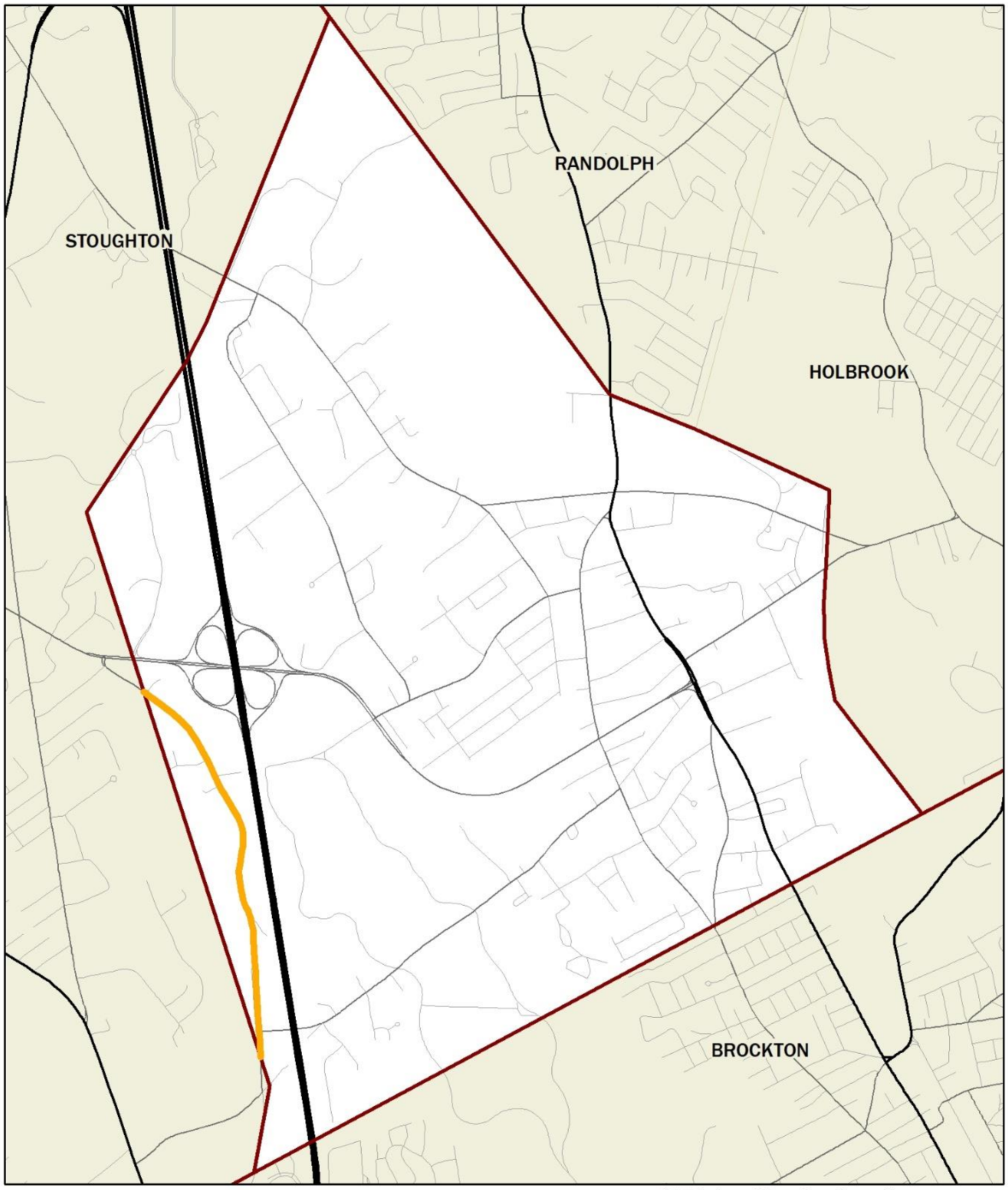
2019 ATR Counts - Whitman



Appendix B: 2019 LTA Projects by Municipality



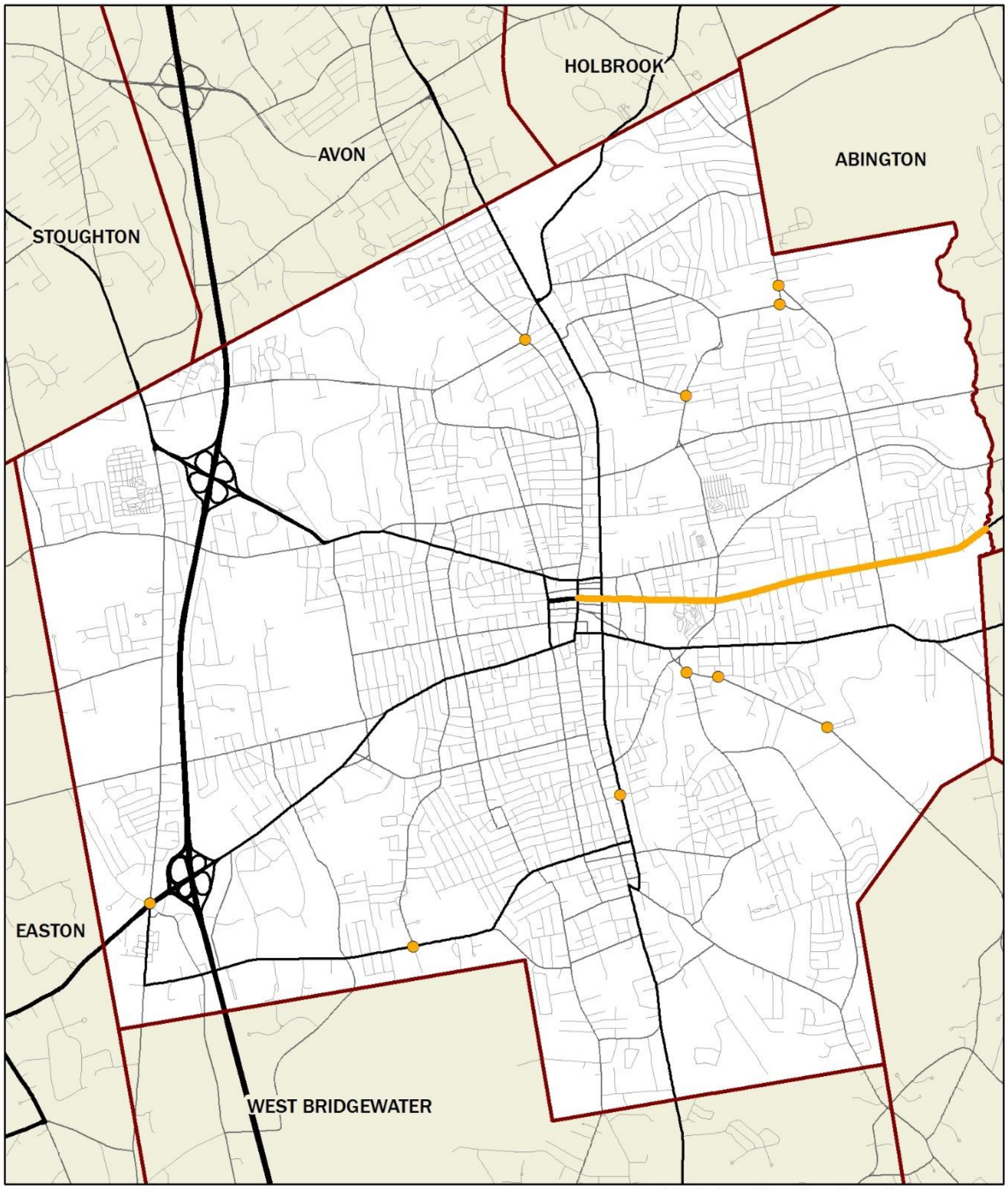
LTA Projects: Avon



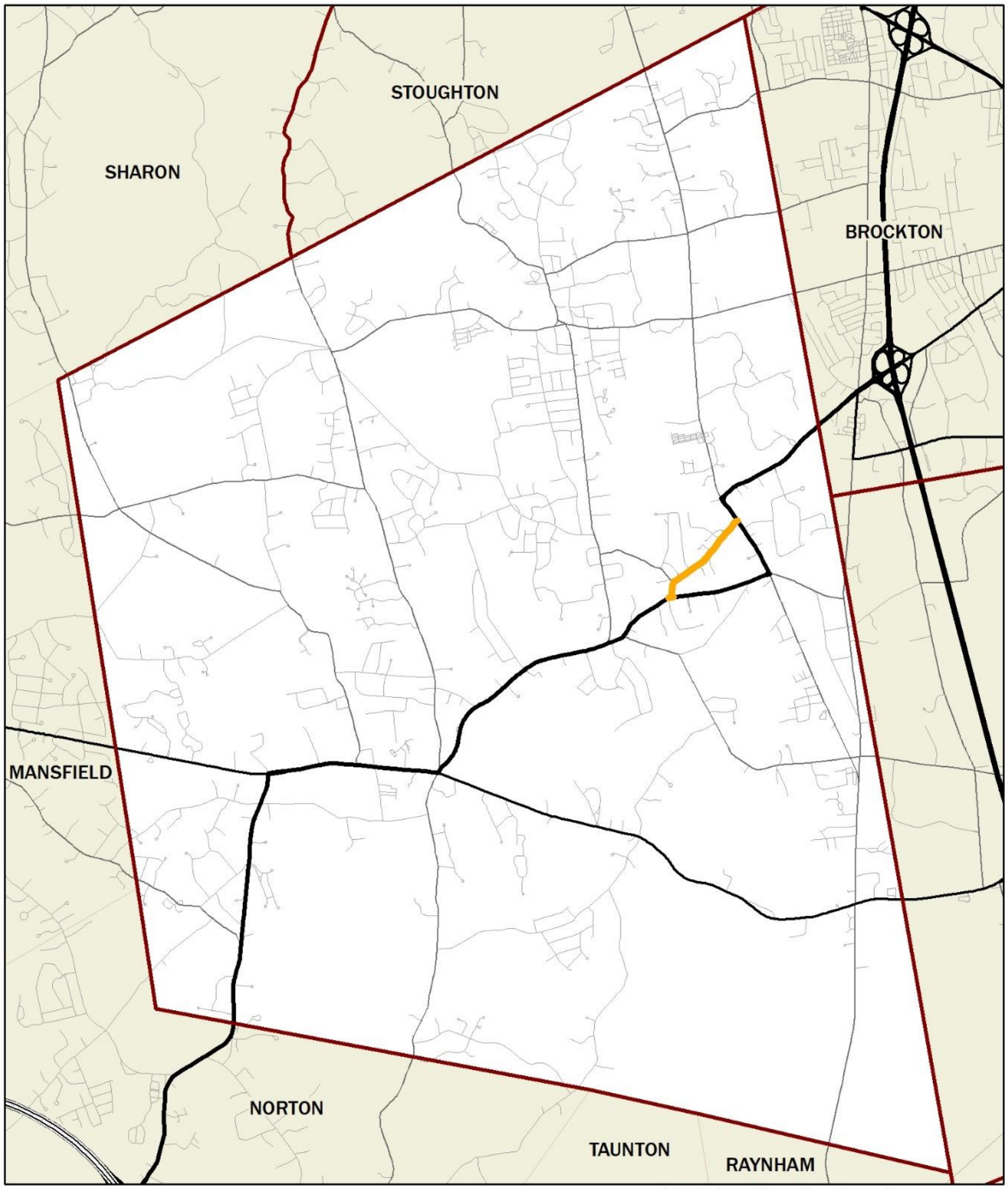
Local Technical Assistance Projects

Old Colony Planning Council
70 School Street, Brockton, MA 02301
Data Sources: OCPC, MassDOT, MassGIS

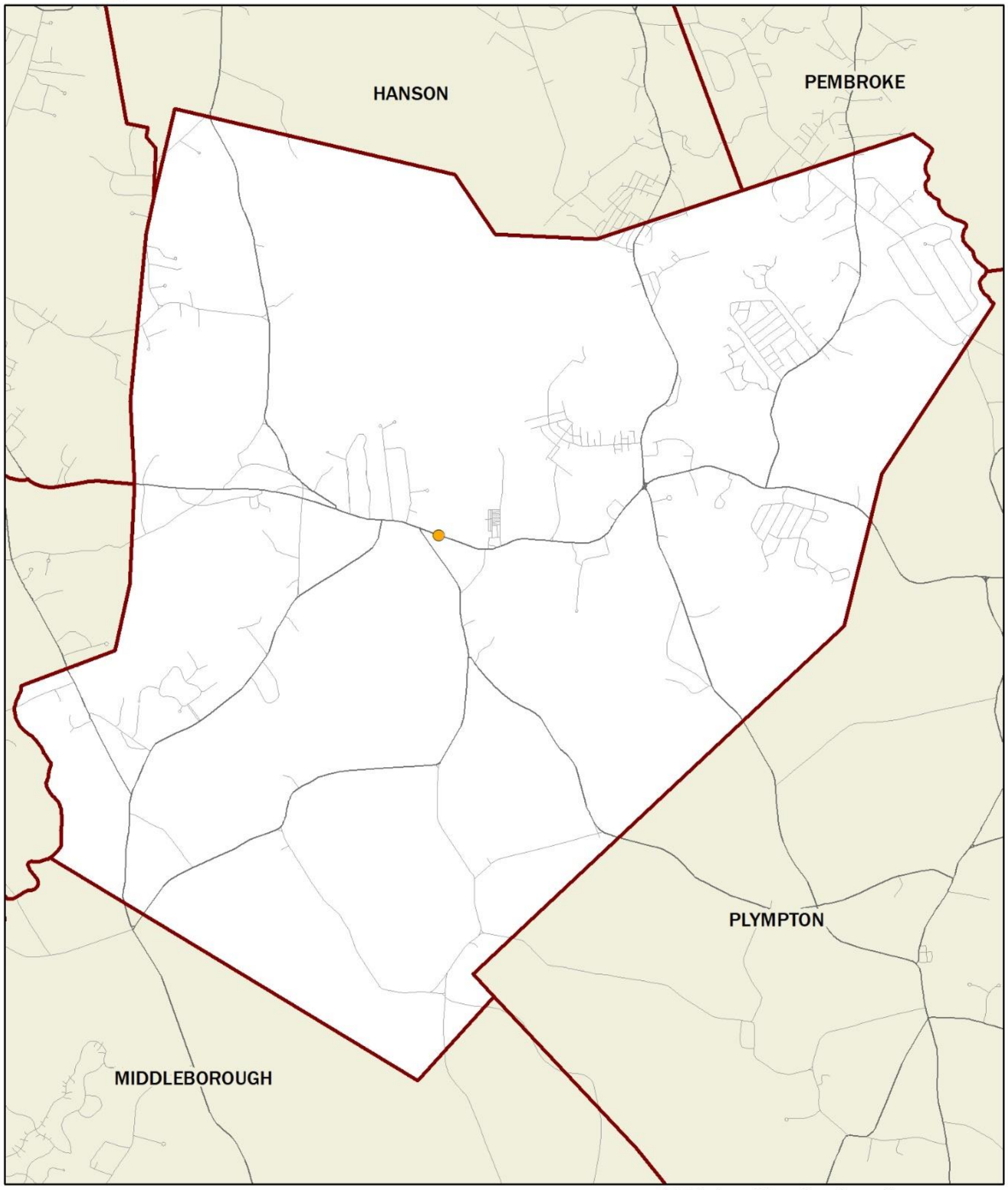
LTA Projects: Brockton



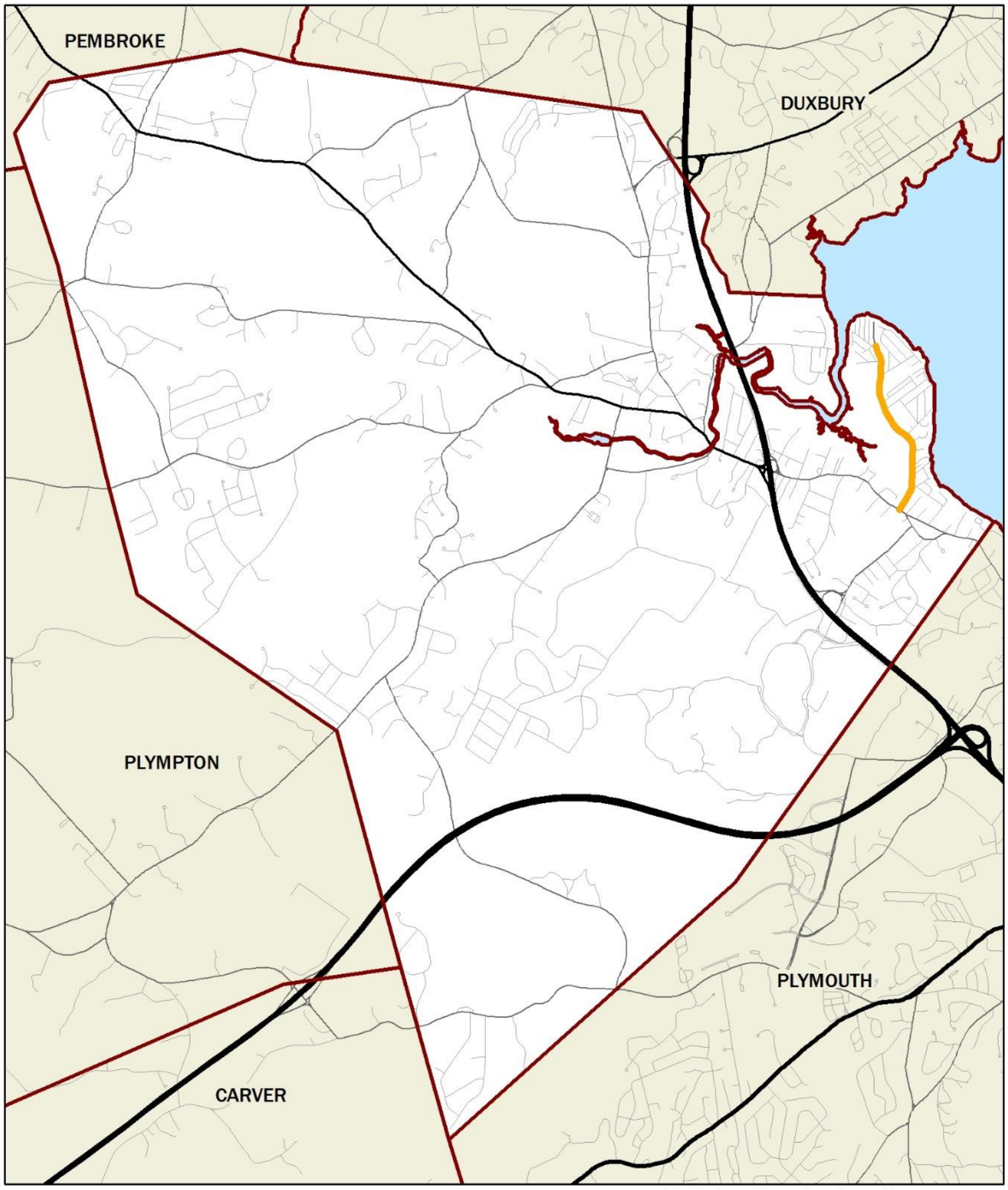
LTA Projects: Easton



LTA Projects: Halifax



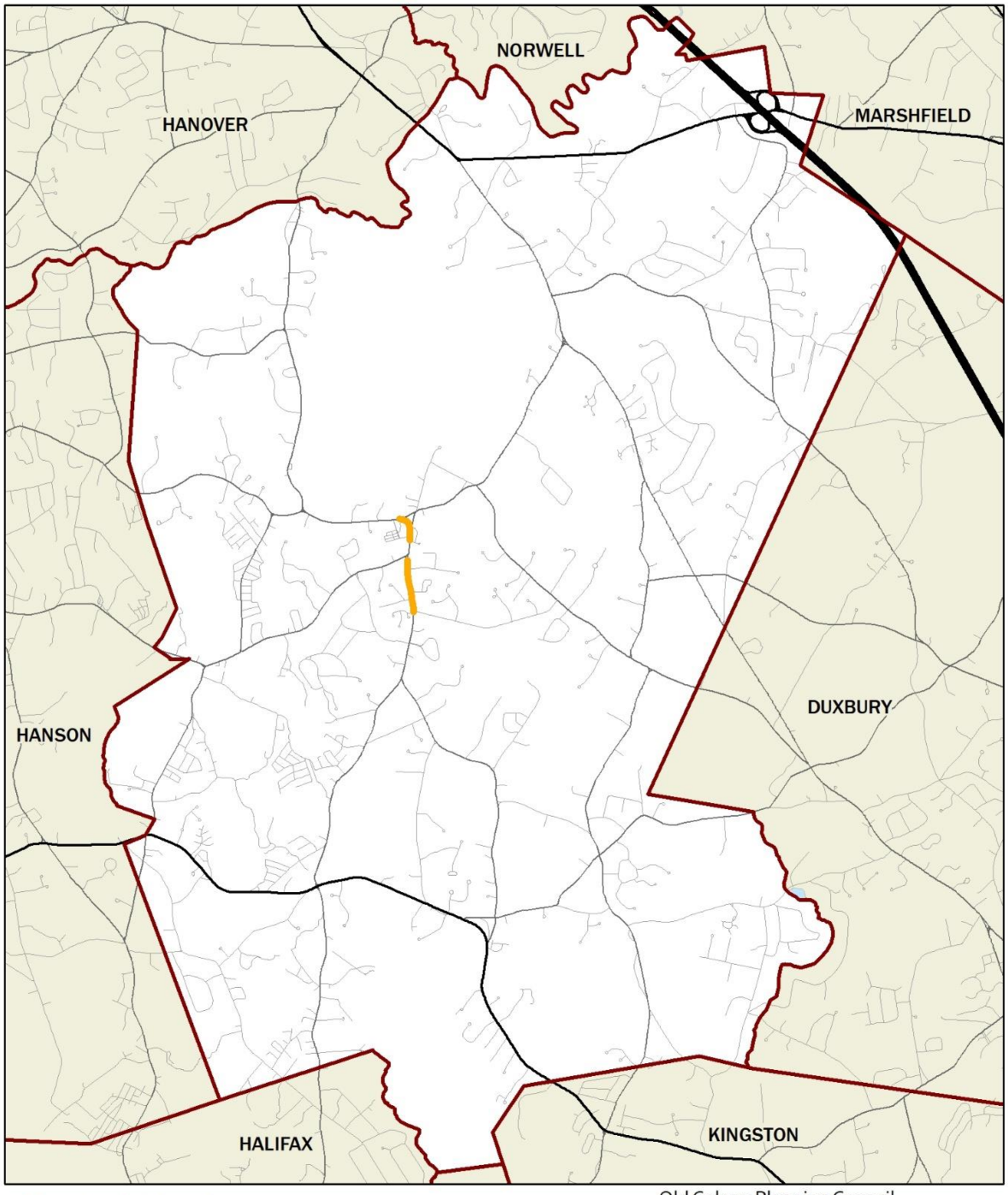
LTA Projects: Kingston



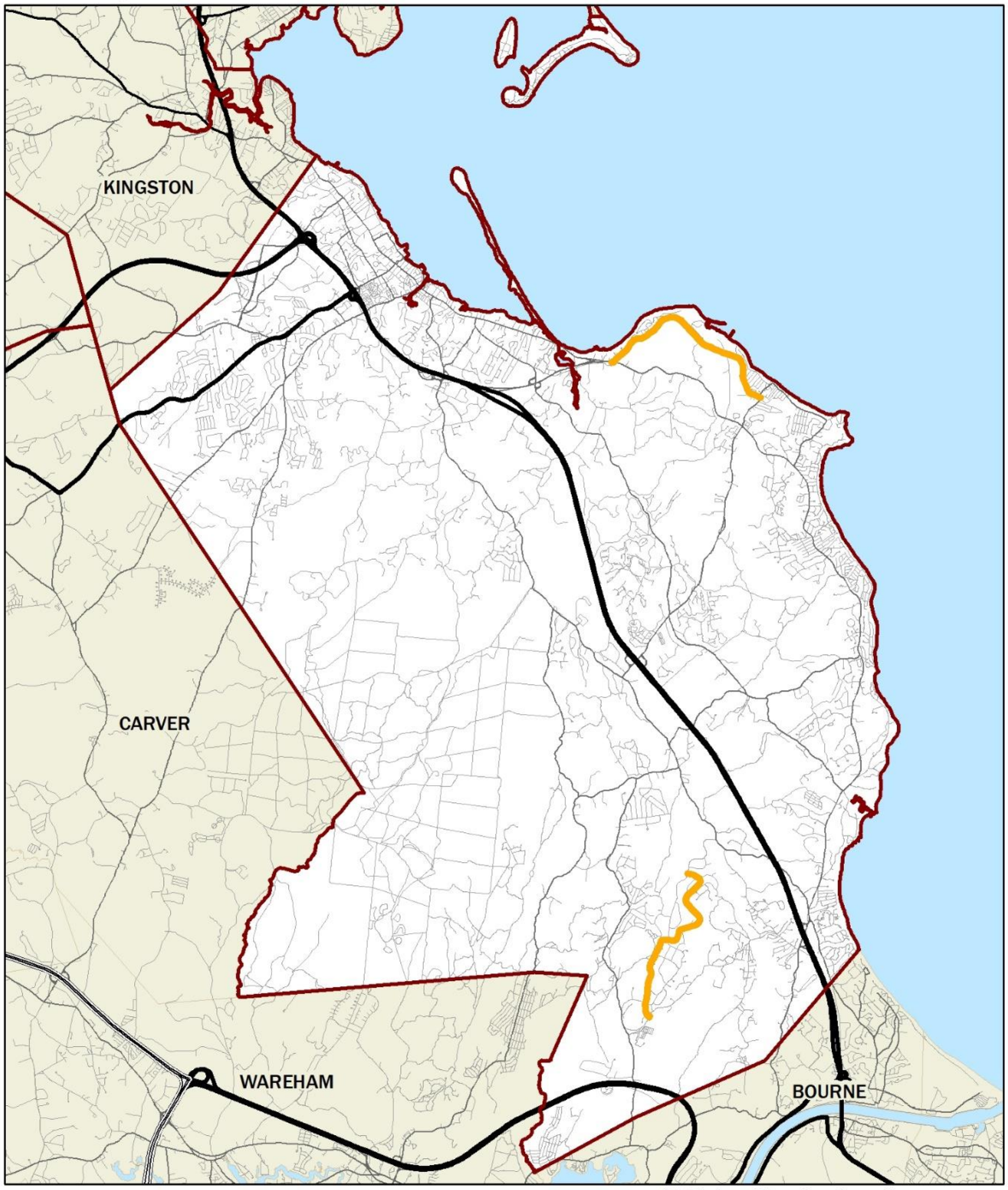
Local Technical Assistance Projects

Old Colony Planning Council
70 School Street, Brockton, MA 02301
Data Sources: OCPC, MassDOT, MassGIS

LTA Projects: Pembroke



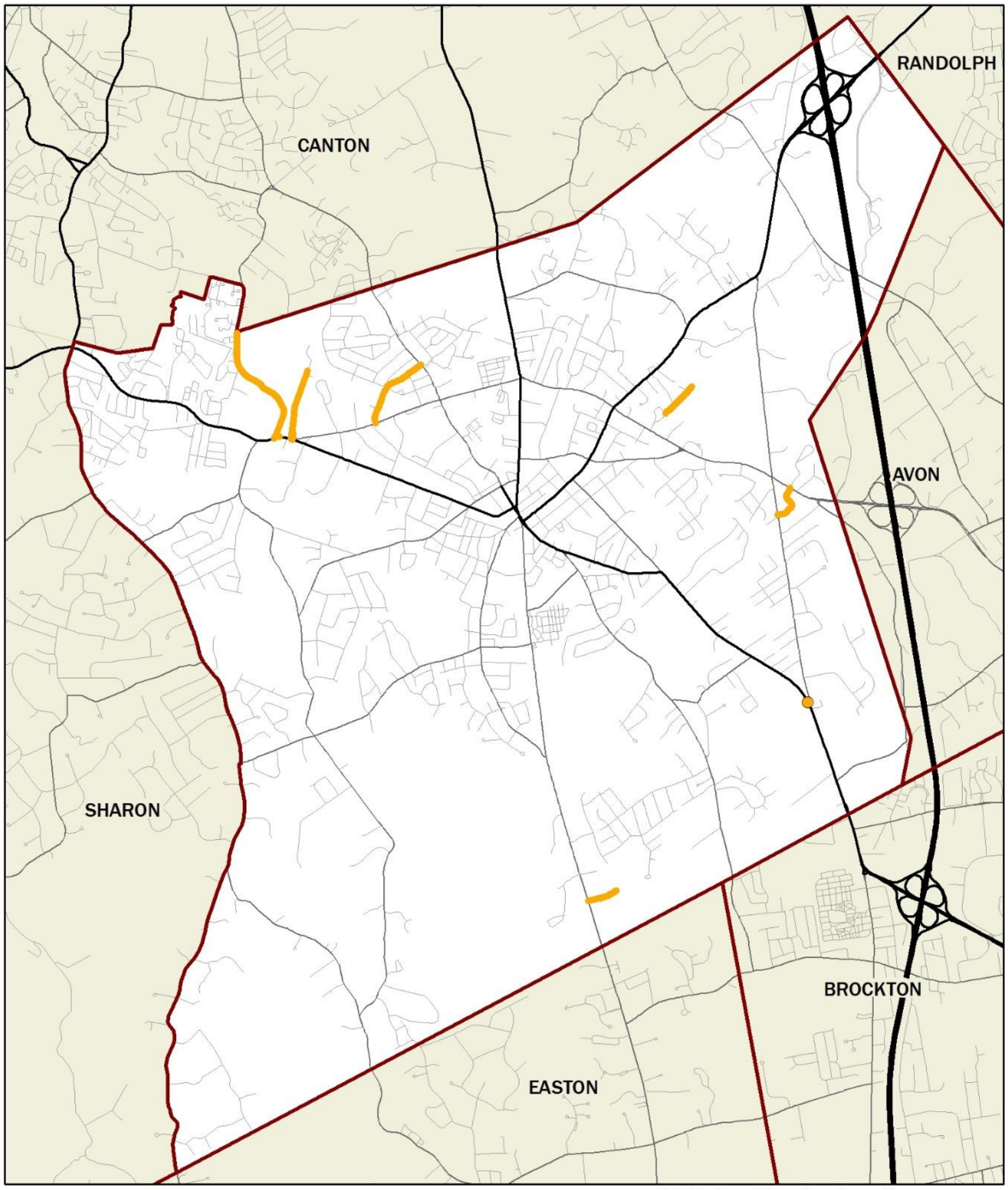
LTA Projects: Plymouth



Local Technical Assistance Projects

Old Colony Planning Council
70 School Street, Brockton, MA 02301
Data Sources: OCPC, MassDOT, MassGIS

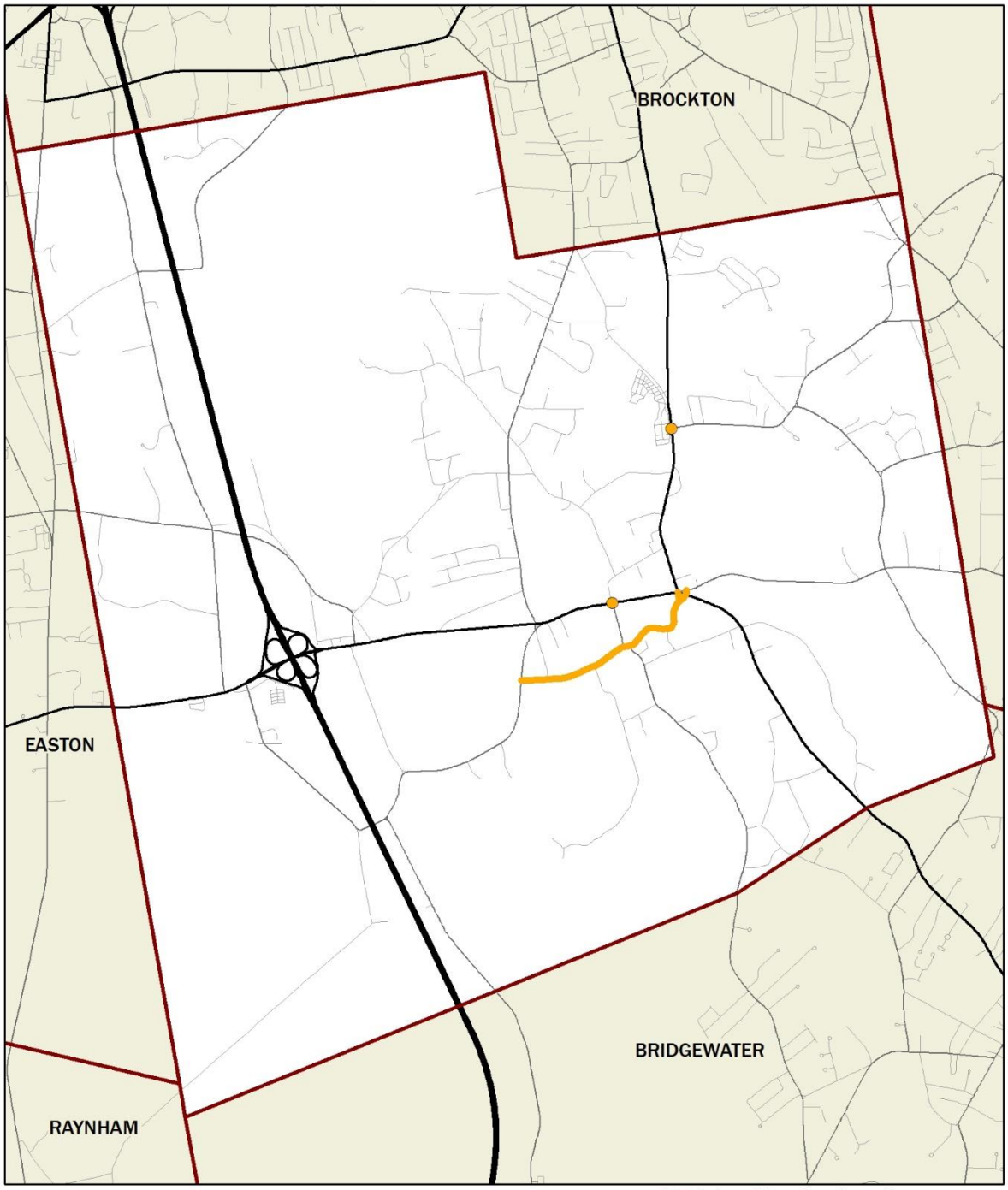
LTA Projects: Stoughton



Local Technical Assistance Projects

Old Colony Planning Council
70 School Street, Brockton, MA 02301
Data Sources: OCPC, MassDOT, MassGIS

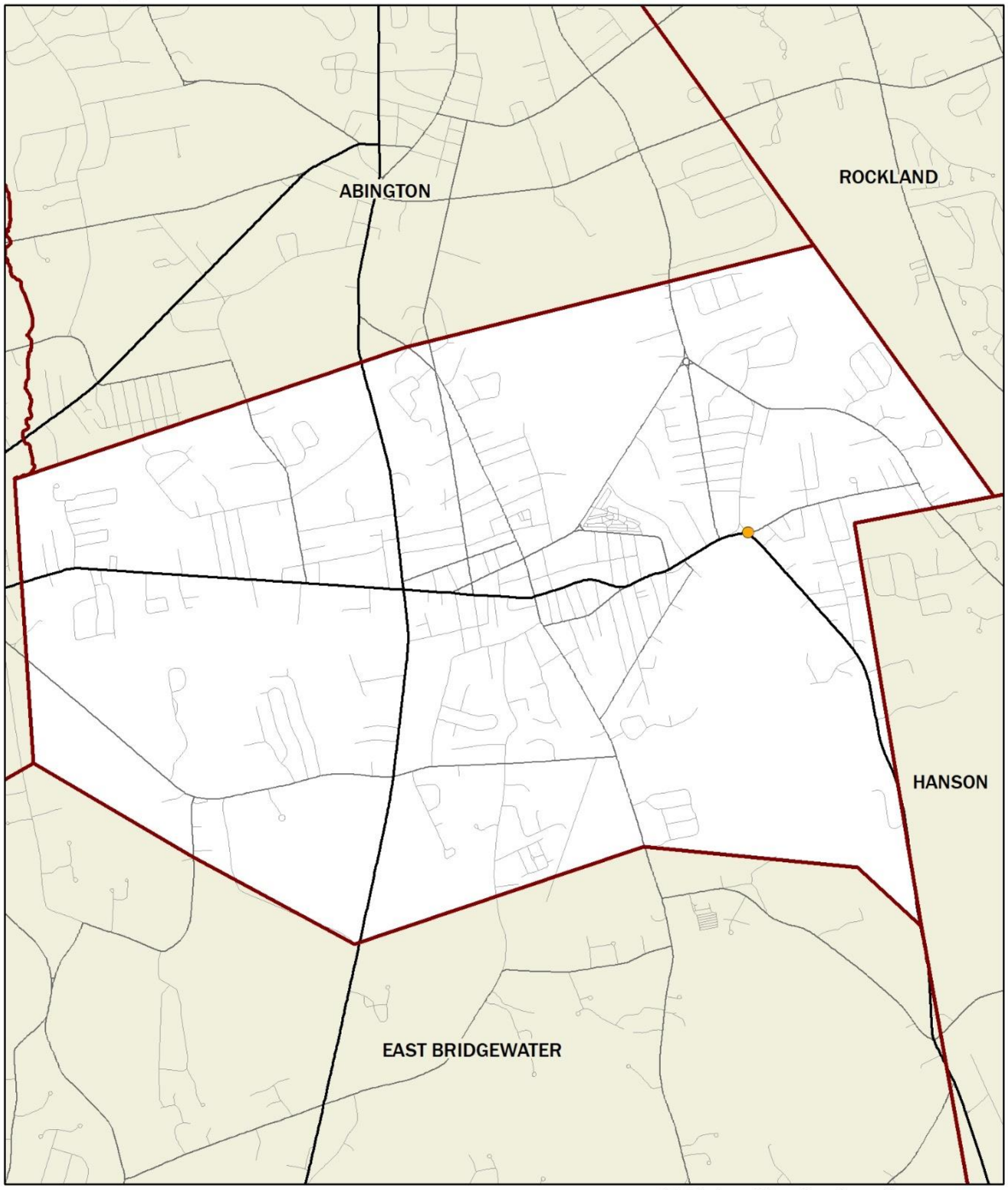
LTA Projects: West Bridgewater



Local Technical Assistance Projects

Old Colony Planning Council
70 School Street, Brockton, MA 02301
Data Sources: OCPC, MassDOT, MassGIS

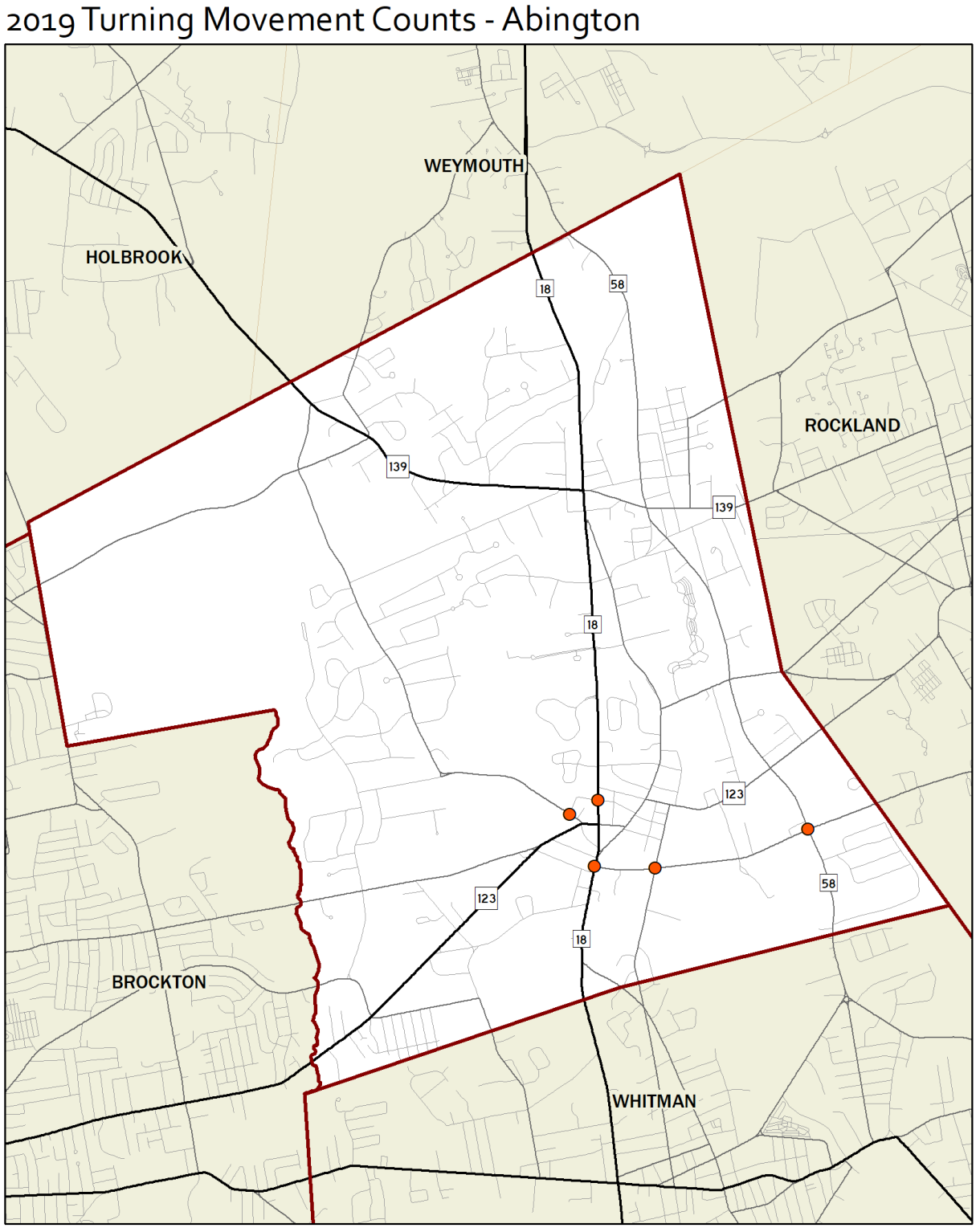
LTA Projects: Whitman



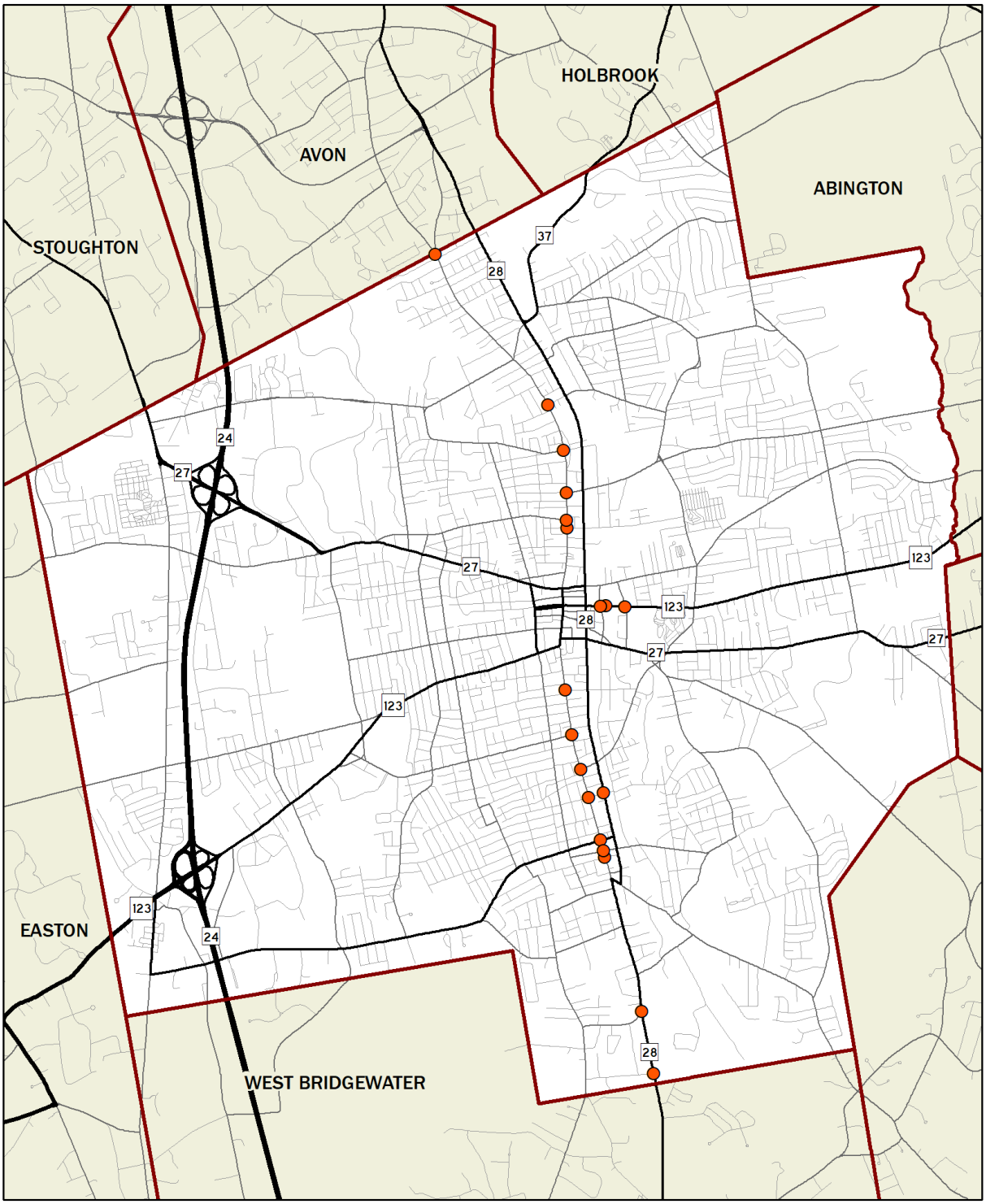
Local Technical Assistance Projects

Old Colony Planning Council
70 School Street, Brockton, MA 02301
Data Sources: OCPC, MassDOT, MassGIS

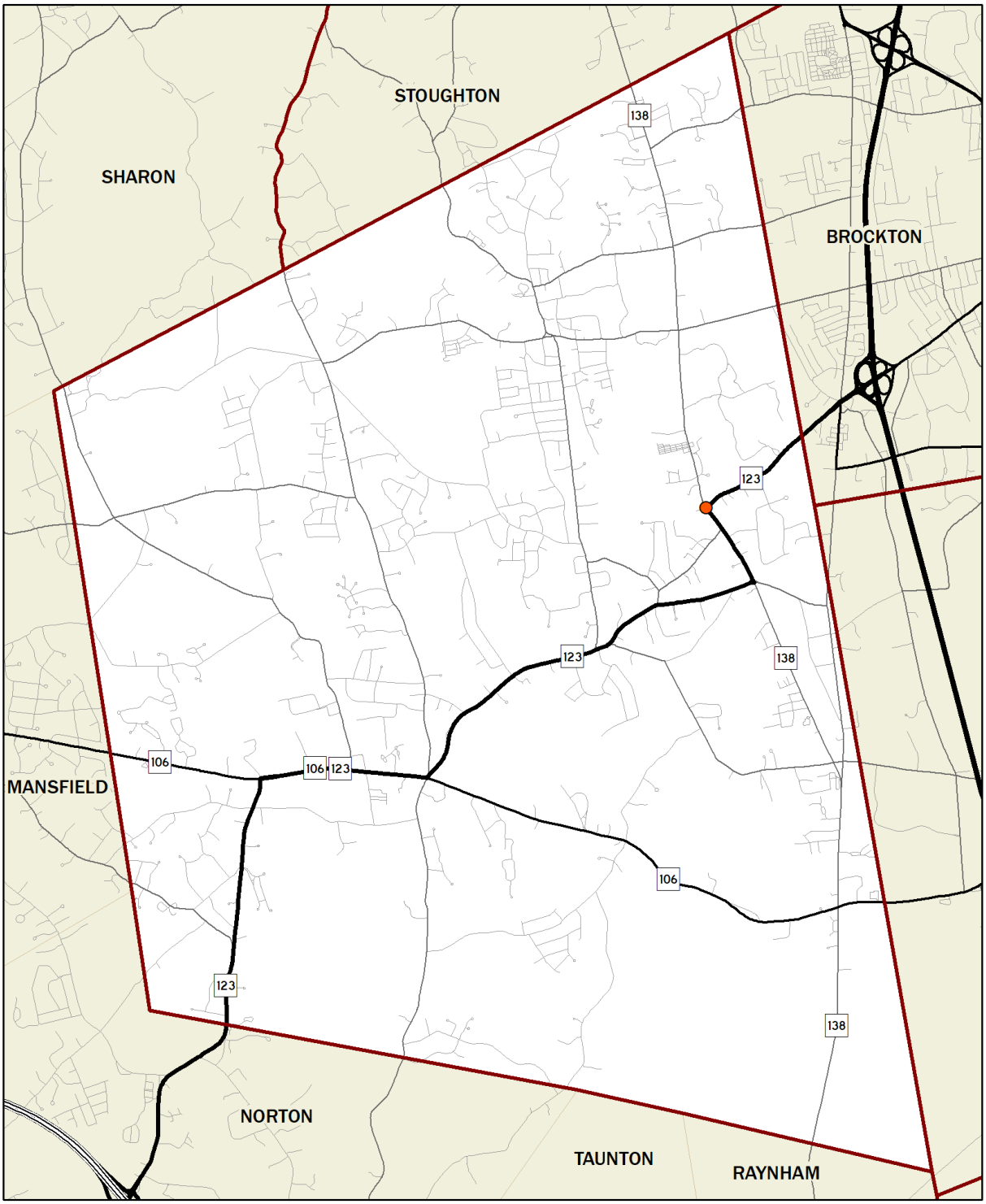
Appendix C: 2019 TMC Count Locations by Municipality



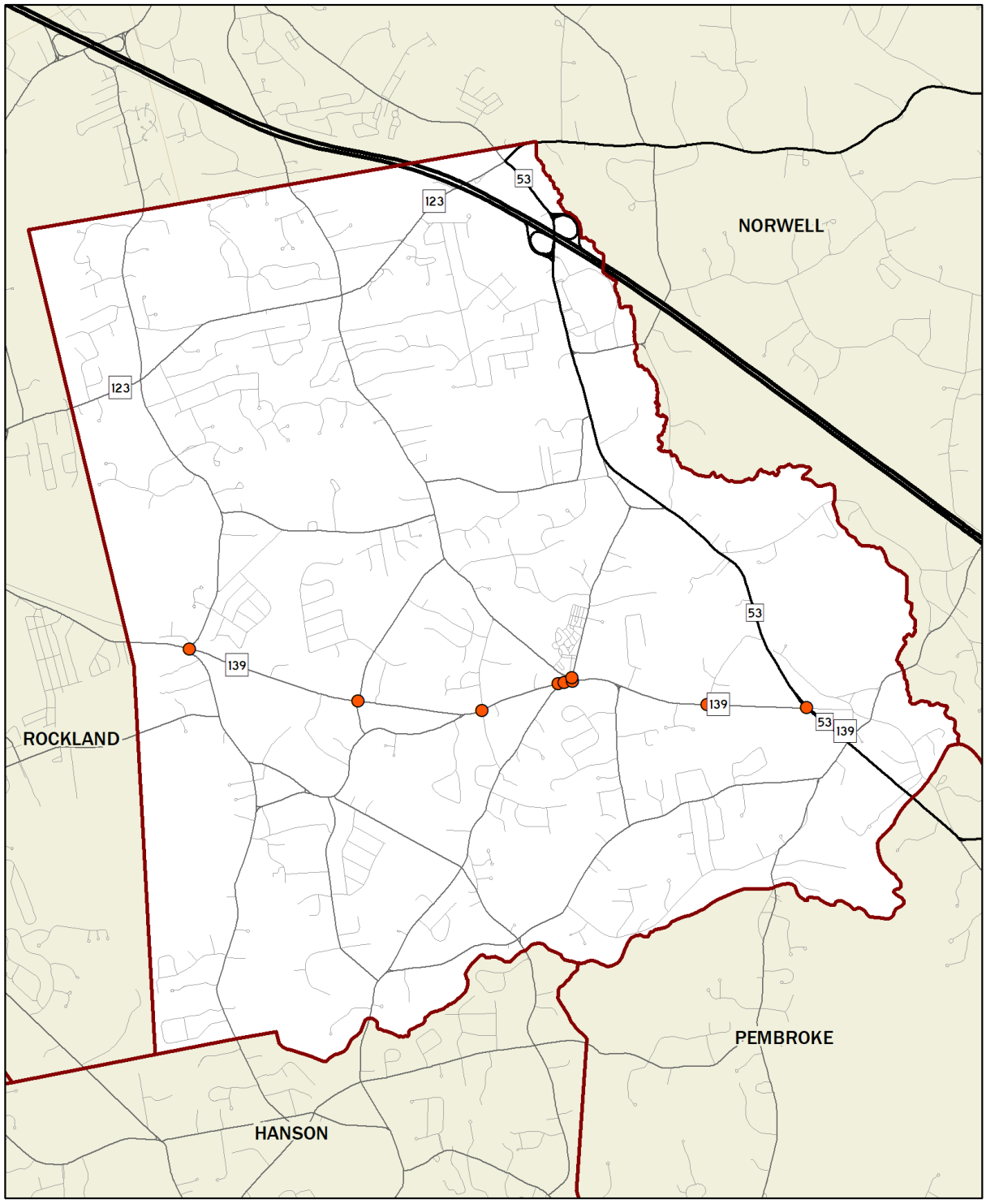
2019 Turning Movement Counts - Brockton



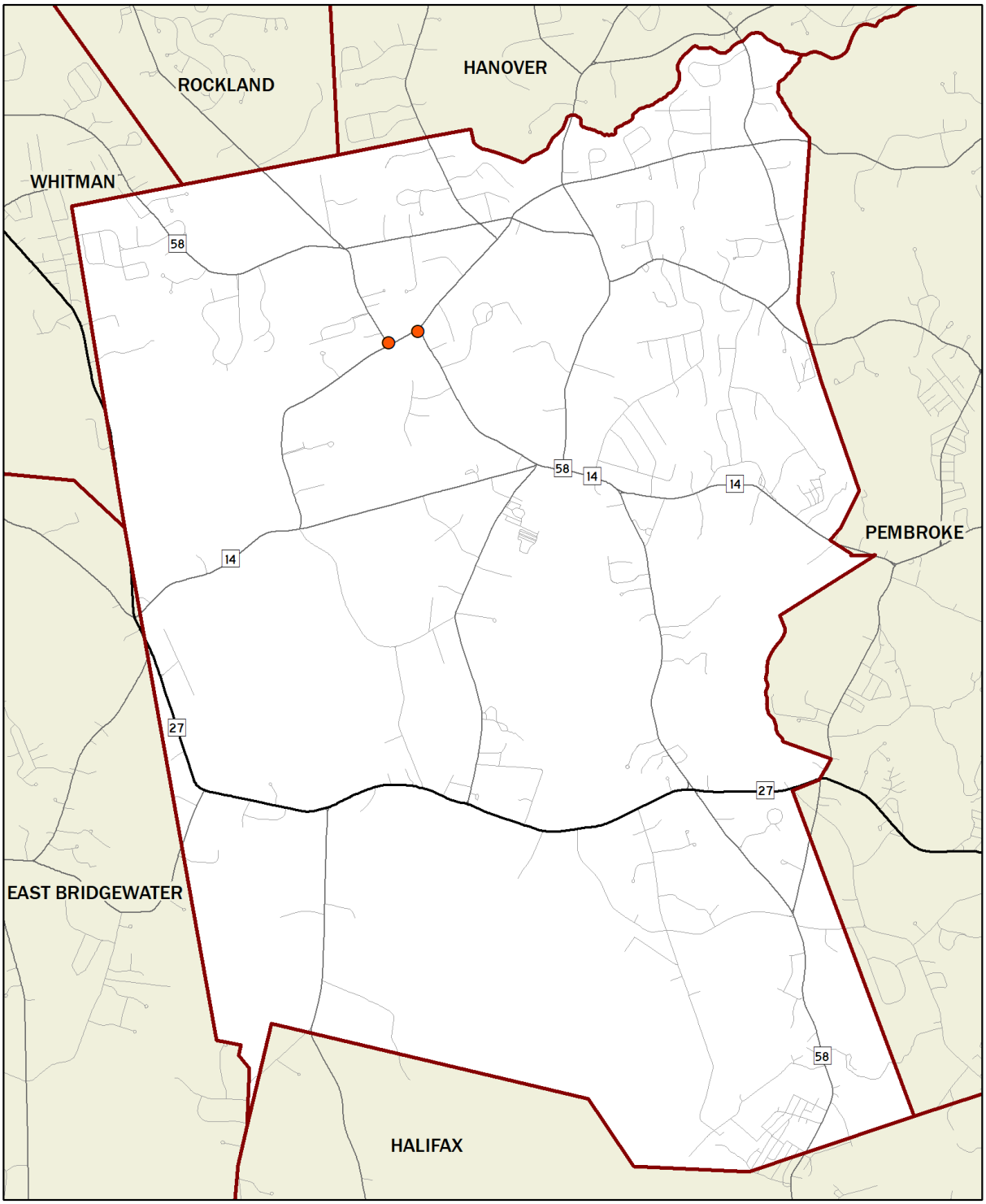
2019 Turning Movement Counts - Easton



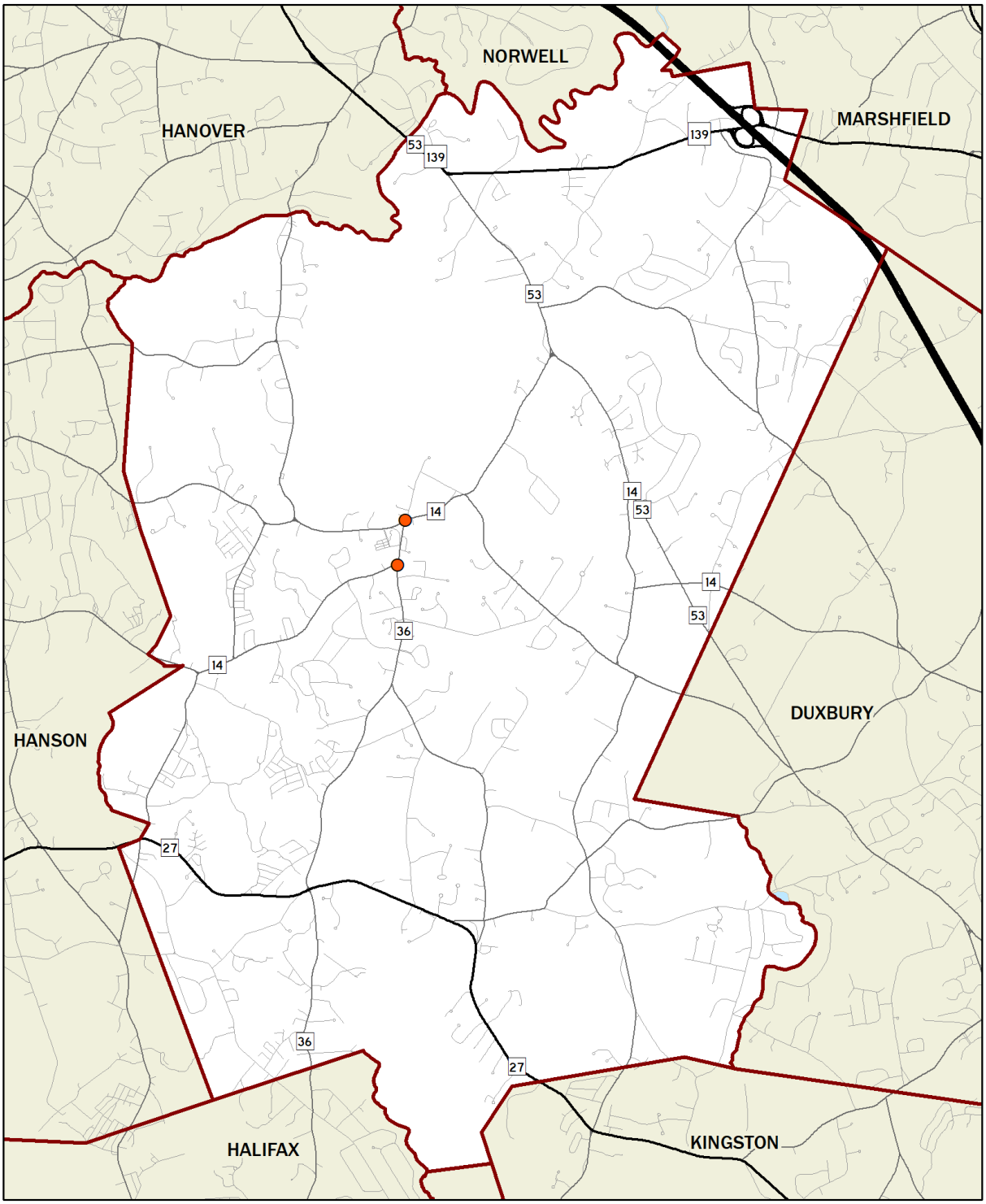
2019 Turning Movement Counts - Hanover



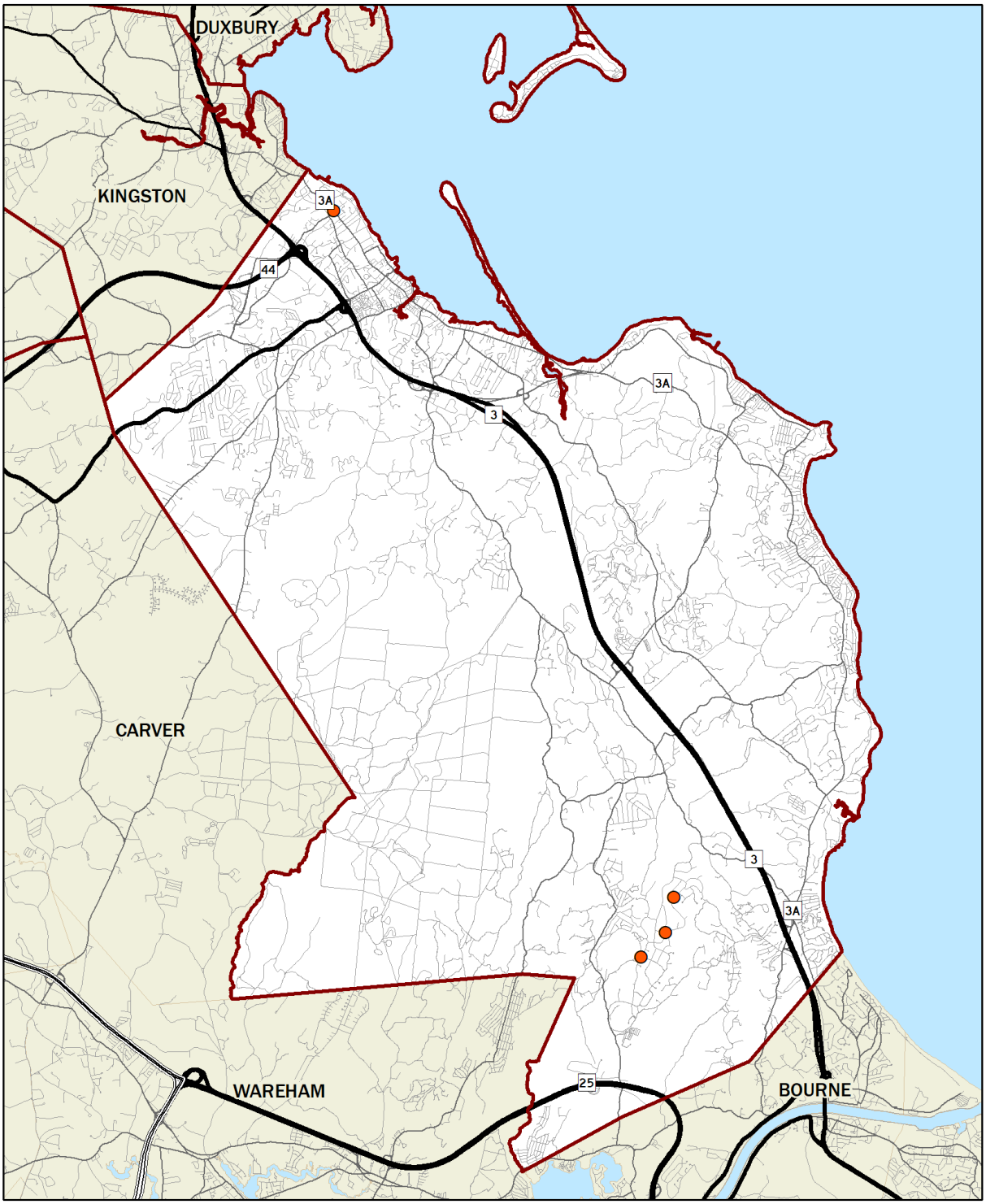
2019 Turning Movement Counts - Hanson



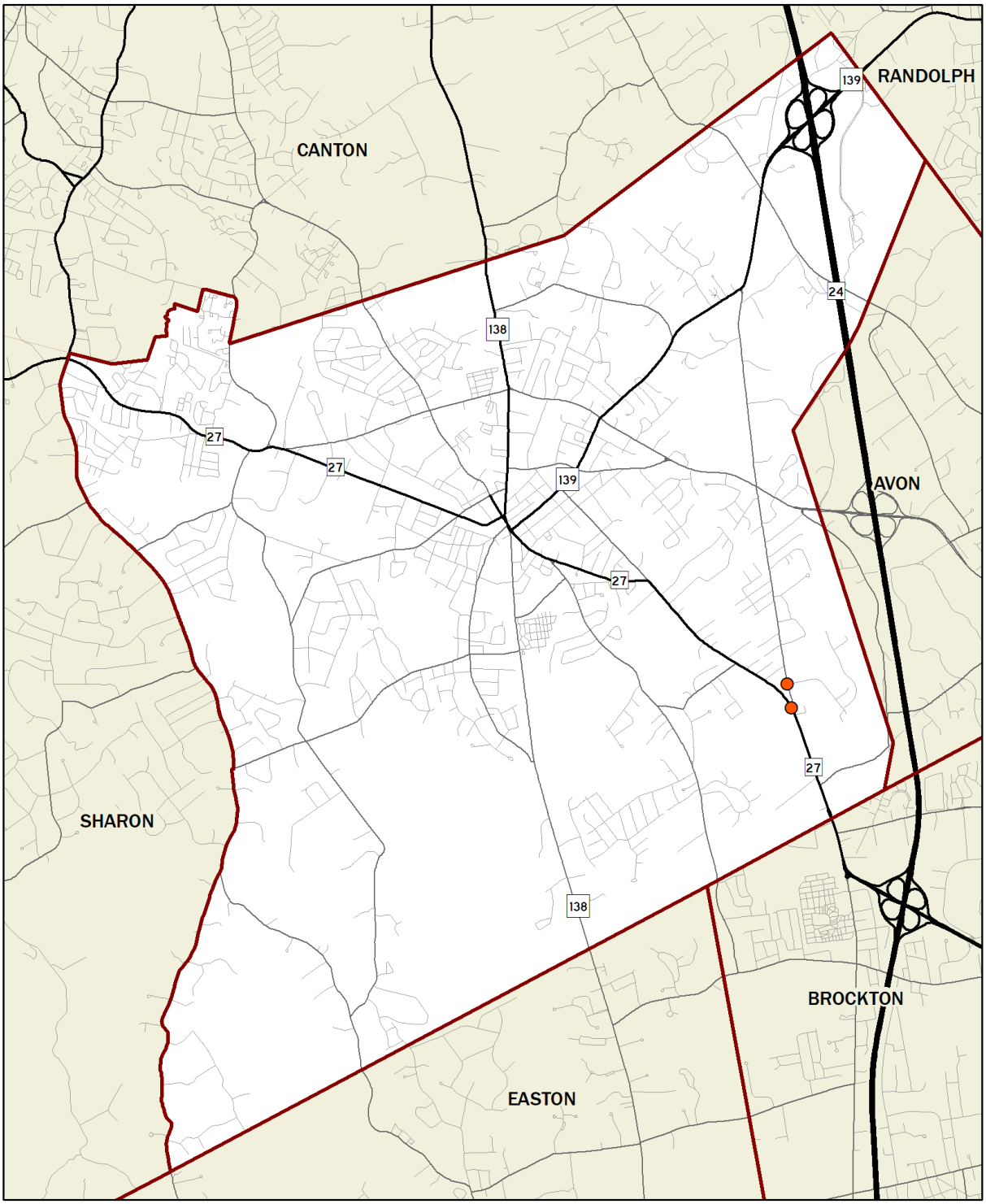
2019 Turning Movement Counts - Pembroke



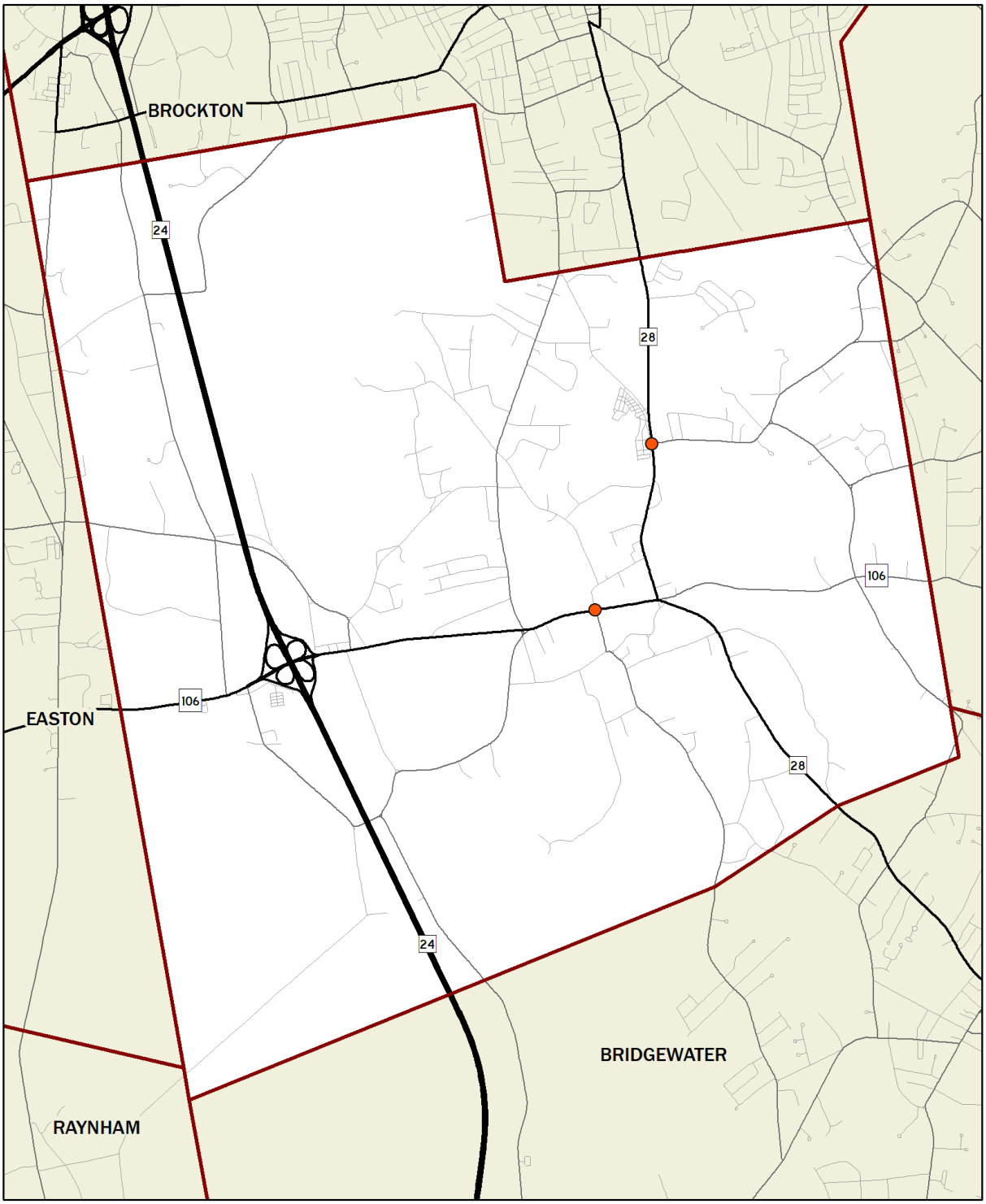
2019 Turning Movement Counts - Plymouth



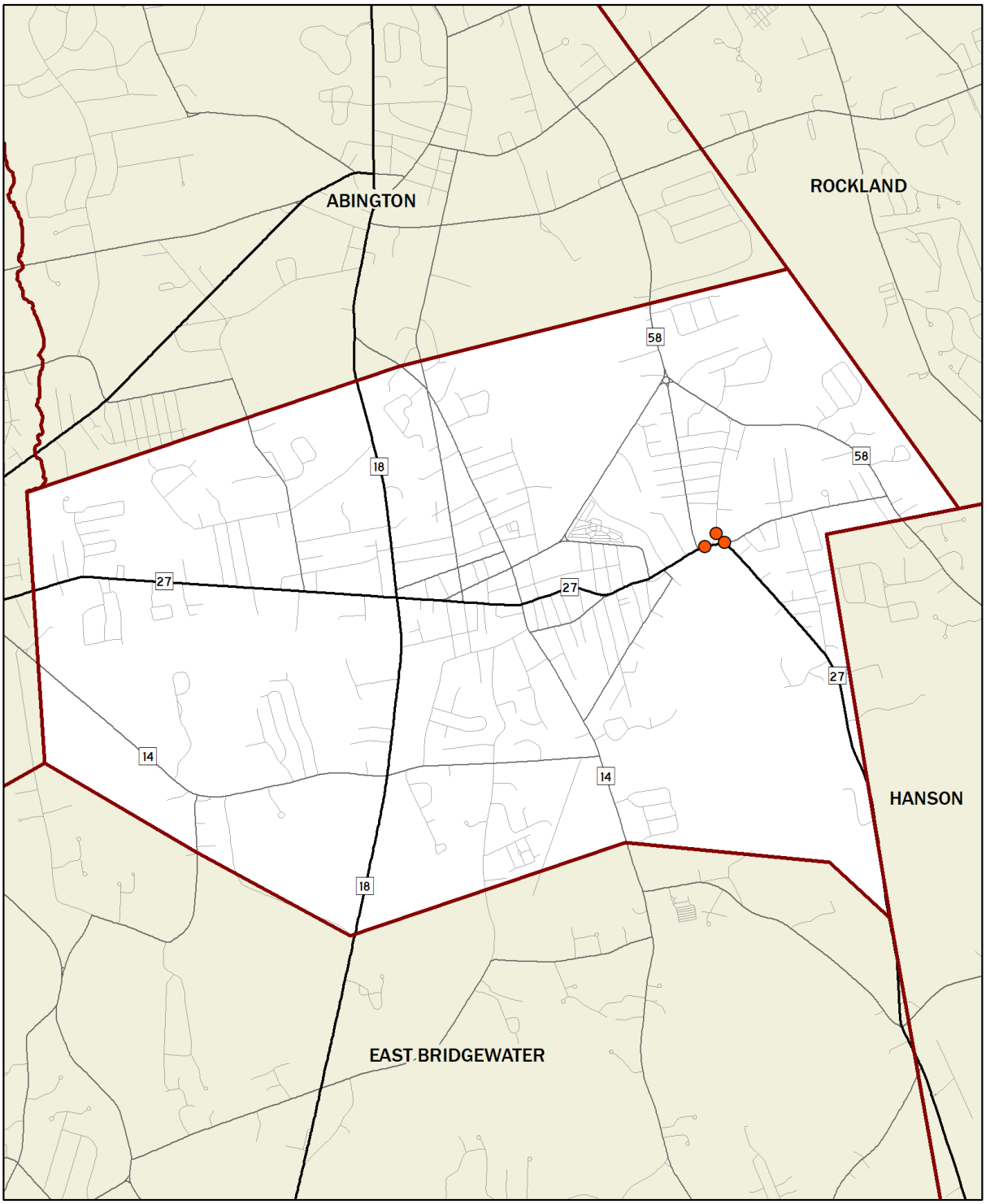
2019 Turning Movement Counts - Stoughton



2019 Turning Movement Counts - West Bridgewater



2019 Turning Movement Counts - Whitman



Appendix D: Identified Congested Intersections (LOS of "D" or Worse)

Community	Intersection	Traffic Control	AM LOS	PM LOS	Notes
Abington	Bedford Street (Route 18) & North Avenue (Route 139)/Randolph Street (Route 139)	Signal	D	E	
Abington	Bedford Street (Route 18) & Shaw Avenue	Stop Sign	F	F	
Abington	Bedford Street (Route 18) & Washington Street/Elm Street	Stop Sign	F	F	
Abington	Bedford Street (Route 18) & Washington Street/Trucchi's	Stop Sign	F	F	
Abington	Brockton Avenue (Route 123) & Ashland Street	Stop Sign	E	D	
Abington	Brockton Avenue (Route 123) & Bedford Street (Route 18)	Signal	D	D	
Abington	Brockton Avenue (Route 123) & High Street	Stop Sign	F	F	
Abington	Brockton Avenue (Route 123) & Mill Street/Garden Street/Martin Street	Stop Sign	E	F	
Abington	Brockton Avenue (Route 123) & Rockland Street/Elm Street	Stop Sign	F	F	
Abington	Brockton Avenue (Route 123) & Vernon Street/Groveland Street	Signal	D	B	
Abington	Centre Avenue (Route 123) & Walnut Street	Stop Sign	D	C	
Abington	Hancock Street & Chestnut Street	Flashing Beacon	F	F	
Abington	North Avenue (Route 139) & Spruce Street	Stop Sign	C	F	
Abington	Plymouth Street (Route 58) & Summer Street	Signal	C	D	
Abington	Plymouth Street (Route 58) & Adams Street	Stop Sign	C	E	
Abington	Plymouth Street (Route 58) & Birch Street/Brighton Street	Stop Sign	E	F	
Abington	Plymouth Street (Route 58) & Central Street	Signal	D	C	
Abington	Plymouth Street (Route 58) & Centre Avenue (Route 123)	Signal	E	E	
Abington	Randolph Street (Route 139) & Chestnut Street / Old Randolph Street	Stop Sign	F	F	
Abington	Randolph Street (Route 139) & Hancock Street / Old Randolph Street	Stop Sign	F	F	
Abington	Randolph Street (Route 139) & Lincoln Street	Stop Sign	C	F	
Abington	Washington Street (Route 18) & Summer Street	Stop Sign	F	F	
Abington	Washington Street (Route 18) & Washington Street	Stop Sign	F	E	
Avon	East Main Street (Route 28) & Harrison Boulevard	Signal	C	D	
Avon	East Main Street (Route 28) & East Spring Street/West Spring Street	Flashing Beacon	F	F	TIP Programmed
Avon	Harrison Boulevard & West Main Street	Signal	D	F	
Avon	Memorial Drive (Route 28) & East Main Street	Stop Sign	E	D	
Bridgewater	Bedford Street (Route 18) & Worcester Street	Stop Sign	C	F	
Bridgewater	Bedford Street (Route 18/28) & Central Square/School Street	Yield	E	F	
Bridgewater	Bedford Street (Route 18/28) & Cottage Street	Stop Sign	C	D	
Bridgewater	Bedford Street (Route 18/28) & Flagg Street	Stop Sign	D	F	
Bridgewater	Bedford Street (Route 18/28) & Grove Street	Stop Sign	D	F	
Bridgewater	Bedford Street (Route 18/28) & Maple Avenue	Stop Sign	D	D	
Bridgewater	Broad Street (Route 104) & Main Street (Route 28)/Summer Street (Route 104)	Signal	D	E	
Bridgewater	Broad Street (Route 18) & Campus Plaza	Stop Sign	E	F	
Bridgewater	Broad Street (Route 18) & Dunkin Donuts	Stop Sign	F	E	
Bridgewater	Broad Street (Route 18) & High Street	Stop Sign	F	F	Reconstructed
Bridgewater	Broad Street (Route 18) & Main Street (Route 28)/Summer Street (Route 104)	Signal	D	E	

Appendix D: Identified Congested Intersections (LOS "D" or Worse), Continued

Community	Intersection	Traffic Control	AM LOS	PM LOS	Notes
Bridgewater	Broad Street (Route 18) & McDonalds	Stop Sign	C	D	
Bridgewater	Broad Street (Route 18) & Stetson Street	Stop Sign	F	F	
Bridgewater	Pleasant Street (Route 104) & AmVets Memorial Highway (Route 24) NB Ramps	Signal	D	A	
Bridgewater	Pleasant Street (Route 104) & Birch Street	Stop Sign	F	F	
Bridgewater	Pleasant Street (Route 104) & Elm Street East	Stop Sign	D	F	
Bridgewater	Pleasant Street (Route 104) & Grove Street/Mt. Prospect Street	Stop Sign	F	F	
Bridgewater	Pleasant Street (Route 104) & North Street	Stop Sign	D	C	
Bridgewater	Pleasant Street (Route 104) & Prospect Street/Cumberland Farms	Signal	D	C	
Bridgewater	Pleasant Street (Route 104) & Scotland Boulevard	Stop Sign	F	F	
Bridgewater	Pleasant Street (Route 104) & South Street/Maple Avenue	Stop Sign	F	F	
Bridgewater	Pleasant Street (Route 104) & Vernon Street	Stop Sign	F	E	
Bridgewater	Plymouth Street (Route 104) & Burrill Avenue/BSU Spring Street Parking Lot	Stop Sign	F	F	
Bridgewater	Plymouth Street (Route 104) & Great Hill Drive/Hayward Street	Stop Sign	F	F	
Bridgewater	Plymouth Street (Route 104) & Hale Street	Stop Sign	F	F	
Bridgewater	Plymouth Street (Route 104) & Hooper Street/Morris Avenue	Stop Sign	F	F	
Bridgewater	Plymouth Street (Route 104) & Meadow Lane/BSU Sports Complex Facility	Stop Sign	F	F	
Bridgewater	South Street (Route 104) & Central Square/Church Street	Yield	D	E	
Brockton	Belmont Street (Route 123) & Linwood Street/Loraine Avenue	Stop Sign	F	F	Reconstructed
Brockton	Centre Street (Route 123) & Cary Street/Lyman Street	Signal	D	E	
Brockton	Centre Street (Route 123) & Libby Street/Crosby Street	Stop Sign	F	F	
Brockton	Centre Street (Route 123) & Plymouth Street	Stop Sign	F	F	
Brockton	Crescent Street (Route 27) & Alger Street (Route 14)	Signal	D	B	
Brockton	Crescent Street (Route 27) & Lyman Street	Signal	C	F	
Brockton	Crescent Street (Route 27) & Plymouth Street	Stop Sign	F	F	
Brockton	Crescent Street (Route 27) & Quincy Street/Massasoit Community College	Signal	F	F	TIP Programmed
Brockton	Main Street (Route 28) & Hayward Avenue	Stop Sign	F	F	
Brockton	Main Street & East Chestnut Street/West Chestnut Street	Stop Sign	D	F	
Brockton	Main Street & Forest Avenue/Martin Place	Stop Sign	F	F	
Brockton	Main Street & Grove Street	Stop Sign	F	F	
Brockton	Main Street & Lawrence Street	Stop Sign	E	F	
Brockton	Main Street & Nilsson Street/East Nilsson Street	Stop Sign	D	F	
Brockton	Montello Street (Route 28) & Centre Street (Route 123)	Signal	D	F	
Brockton	Montello Street (Route 28) & East Nilsson Street	Stop Sign	C	F	
Brockton	Montello Street (Route 28) & Plain Street	Stop Sign	D	F	
Brockton	North Main Street & Elliot Street/Waverly Street	Stop Sign	D	F	
Brockton	North Main Street & Oak Street/Howard Street	Signal	C	E	
Brockton	North Main Street & Prospect Street	Stop Sign	E	F	
Brockton	North Main Street/West Main Street & East Main Street	Stop Sign	C	E	

Appendix D: Identified Congested Intersections (LOS of "D" or Worse), Continued

Community	Intersection	Traffic Control	AM LOS	PM LOS	Notes
Brockton	North Montello Street (Route 28) & East Battles Street	Stop Sign	F	F	
Brockton	North Montello Street (Route 28) & Field Street/Livingston Road	Stop Sign	D	E	
Brockton	North Montello Street (Route 28) & Howard Street (Route 37)/Albion Street	Signal	D	E	
Brockton	North Montello Street (Route 28) & Wilmington Street	Stop Sign	D	F	
Brockton	North Pearl Street (Route 27) & Reynolds Memorial Highway (Route 27)	Signal	C	D	
Brockton	North Quincy Street & Boundary Avenue/Chestnut Street	Stop Sign	F	F	
Brockton	North Quincy Street & North Cary Street	Signal	F	F	
Brockton	Pleasant Street (Route 27) & Ash Street	Signal	F	F	Reconstructed
Brockton	Pleasant Street (Route 27) & Belmont Avenue/Augusta Avenue	Signal	F	F	Reconstructed
Brockton	Pleasant Street (Route 27) & Prospect Street	Stop Sign	F	F	Reconstructed
Brockton	Pleasant Street (Route 27) & Spring Street	Stop Sign	C	F	Reconstructed
Brockton	Reynolds Memorial Highway (Route 27) & Westgate Drive/Christy's Drive	Signal	C	D	
Duxbury	Enterprise Street/Tremont Street (Route 3A) & Church Street/Tremont Street (Route 139)	Stop Sign	D	D	
Duxbury	Tremont Street (Route 3A) & Alden Street	Stop Sign	C	D	
Duxbury	Tremont Street (Route 3A) & Oak Street/Parks Street	Stop Sign	F	F	
Duxbury	Tremont Street (Route 3A) & Route 3 NB Ramps	Stop Sign	F	F	
Duxbury	Tremont Street (Route 3A) & Route 3 SB Ramps	Stop Sign	F	F	
Duxbury	Tremont Street (Route 3A) & Tobey Garden Street/Chestnut Street	Stop Sign	F	F	
East Bridgewater	Bedford Street (Route 18) & Central Street/Spring Street/Maple Avenue	Signal	F	F	
East Bridgewater	Bedford Street (Route 18) & Highland Street/Harvard Street	Signal	B	E	
East Bridgewater	Bedford Street (Route 18) & Union Street	Stop Sign	F	F	
East Bridgewater	Bedford Street (Route 18) & Water Street	Stop Sign	C	F	
East Bridgewater	Bedford Street (Route 18) & West Street (Route 106)/East Street	Signal	B	D	
East Bridgewater	Plymouth Street (Route 106) & Bridge Street	Stop Sign	C	E	
East Bridgewater	Plymouth Street (Route 106) & Washington Street	Stop Sign	C	D	
East Bridgewater	West Street (Route 106) & Spring Street	Stop Sign	B	D	
East Bridgewater	Whitman Street (Route 106) & Plymouth Street (Route 106)	Stop Sign	D	D	
Easton	Belmont Street (Route 123) & Bristol Drive	Stop Sign	D	E	
Easton	Depot Street (Route 123) & Center Street	Stop Sign	F	F	
Easton	Depot Street (Route 123) & Cross Street	Stop Sign	D	E	
Easton	Depot Street (Route 123) & Purchase Street	Stop Sign	F	F	
Easton	Foundry Street (Route 106) & Poquanticut Avenue	Stop Sign	E	D	
Easton	Foundry Street (Route 123) & Highland Street	Stop Sign	E	F	
Easton	Foundry Street (Route 123) & Old Foundry Street	Stop Sign	D	F	
Easton	Lincoln Street & Barrows Street	Stop Sign	C	E	
Easton	Main Street & Center Street/Lincoln Street	Stop Sign	F	F	
Easton	Main Street & Pond Street	Stop Sign	C	D	
Easton	Main Street & Sullivan Street	Stop Sign	C	D	

Appendix D: Identified Congested Intersections (LOS of "D" or Worse), Continued

Community	Intersection	Traffic Control	AM LOS	PM LOS	Notes
Easton	Turnpike Street & West Street/Purchase Street	Stop Sign	D	D	
Easton	Washington Street (Route 138) & Elm Street	Stop Sign	F	F	Under Design
Easton	Washington Street (Route 138) & Plymouth Drive	Stop Sign	E	F	
Easton	Washington Street (Route 138) & Purchase Street	Stop Sign	C	F	
Easton	Washington Street (Route 138) & Turnpike Street	Stop Sign	E	F	
Easton	Washington Street (Route 138) & Union Street	Stop Sign	F	F	TIP Programmed
Halifax	Plymouth Street (Route 106) & Carver Street	Stop Sign	D	D	
Halifax	Plymouth Street (Route 106) & Pine Street	Stop Sign	D	E	
Halifax	Thompson Street (Route 105) & Plymouth Street (Route 106)	Stop Sign	C	D	
Hanover	Columbia Road (Route 53/139) & Broadway	Signal	E	D	
Hanover	Columbia Road (Route 53/139) & Rockland Street (Route 139)	Signal	D	E	
Hanover	Hanover Street (Route 139) & Center Street	Stop Sign	F	D	
Hanover	Hanover Street (Route 139) & Center Street/Town Hall Drive	Stop Sign	F	F	
Hanover	Hanover Street (Route 139) & Grove Street	Stop Sign	F	F	
Hanover	Hanover Street (Route 139) & Main Street	Stop Sign	F	F	
Hanover	Hanover Street (Route 139) & Plain Street	Stop Sign	F	F	
Hanover	Hanover Street/Market Street (Route 139) & Pleasant Street/Circuit Street	Signal	F	F	
Hanover	Hanover Street (Route 139) & Spring Street	Stop Sign	D	D	
Hanover	Washington Street (Route 53) & East Street	Stop Sign	D	F	
Hanover	Washington Street (Route 53) & Hanover Mall Drive (AT&T/Trader Joe's)	Stop Sign	E	F	
Hanover	Washington Street (Route 53) & Hanover Street	Stop Sign	F	F	
Hanover	Washington Street (Route 53) & Route 3 SB Ramps/Hanover Mall	Signal	B	F	
Hanover	Washington Street (Route 53) & Woodland Drive	Stop Sign	C	F	
Hanson	Liberty Street (Route 58) & Maquan Street (Route 14)/Indian Head Street (Route 58)	Stop Sign	C	E	
Hanson	Monponsett Street (Route 58) & Union Street	Stop Sign	C	F	
Hanson	Spring Street (Route 58) & West Washington Street	Stop Sign	F	F	
Hanson	West Washington Street (Route 58) & East Washington Street/Liberty Street (Route 58)	Stop Sign	F	F	
Hanson	County Road (Route 14) & High Street	Stop Sign	B	D	
Kingston	Main Street (Route 106) & Elm Street	Stop Sign	B	D	
Kingston	Main Street (Route 3A) & Crescent Street/Foundry Lane	Stop Sign	C	D	
Kingston	Main Street (Route 3A) & Howlands Lane	Stop Sign	C	F	
Kingston	Main Street (Route 3A) & Landing Road	Stop Sign	F	F	
Kingston	Main Street (Route 3A) & Pilgrim Highway (Route 3) NB Ramps	Stop Sign	F	F	

Appendix D: Identified Congested Intersections (LOS of "D" or Worse), Continued

Community	Intersection	Traffic Control	AM LOS	PM LOS	Notes
Kingston	Main Street (Route 3A) & Pilgrim Highway (Route 3) SB Ramps	Signal	F	F	
Kingston	Main Street (Route 3A) & Spring Street	Stop Sign	C	E	
Kingston	Summer Street (Route 3A) & Cranberry Crossing	Stop Sign	F	F	
Kingston	Summer Street (Route 3A) & Main Street (Route 106)/Linden Street	Stop Sign	D	E	
Kingston	Summer Street (Route 53) & Tarkiln Road	Stop Sign	F	F	
Kingston	Summer Street (Route 53) & Tremont Street (Route 3A)	Signal	F	F	
Kingston	Wapping Road (Route 106) & Pembroke Street (Route 27)/Evergreen Street	Signal	D	D	
Pembroke	Church Street (Route 139) & Union Street/Old Oak Street	Signal	D	F	
Pembroke	Church Street (Route 139) & Pilgrim Highway (Route 3) NB Ramps	Signal	D	C	
Pembroke	Church Street (Route 139) & Pilgrim Highway (Route 3) SB Ramps	Signal	C	E	
Pembroke	Columbia Road (Route 53/139) & Old Washington Street	Stop Sign	E	F	
Pembroke	Schoosett Street (Route 139) & Water Street	Stop Sign	C	D	
Pembroke	Washington Street (Route 53) & Barker Street (Route 14)	Signal	A	D	
Pembroke	Washington Street (Route 53) at Pleasant Street	Signal	F	F	TIP Programmed
Pembroke	Washington Street (Route 53) & Water Street	Stop Sign	D	F	
Plymouth	Main Street Extension (Route 3A) & Sandwich Street	Stop Sign	C	D	
Plymouth	Pilgrim Highway (Route 3) SB Off Ramp & Samoset Street WB	Stop Sign	C	F	
Plymouth	Samoset Street & Algonquin Terrace	Stop Sign	F	F	
Plymouth	Samoset Street & Pilgrim Highway (Route 3) NB On Ramp / Westerly Road	Signal	C	D	
Plymouth	Sandwich Street (Route 3A) & Lincoln Street	Stop Sign	F	F	
Plymouth	Sandwich Street (Route 3A) & South Street	Stop Sign	F	F	
Plymouth	Sandwich Street (Route 3A) & Water Street	Stop Sign	B	F	
Plymouth	State Road (Route 3A) & Hedges Pond Road	Stop Sign	B	E	
Plymouth	State Road (Route 3A) & Herring Pond Road	Stop Sign	F	F	
Plymouth	State Road (Route 3A) & Power House Road/Elliot Lane	Blinker	C	D	
Stoughton	Canton Street (Route 27) & Central Street/Tosca Drive	Stop Sign	F	F	
Stoughton	Canton Street (Route 27) & School Street/Summer Street	Stop Sign	F	F	
Stoughton	Central Street & Commercial Street	Stop Sign	D	F	
Stoughton	Central Street & Lincoln Street	Signal	B	D	
Stoughton	Central Street & Pearl Street	Signal	F	F	
Stoughton	Central Street & Pleasant Street (Route 139)	Signal	F	D	
Stoughton	Central Street & Turnpike Street	Signal	D	C	
Stoughton	Central Street (Route 27) & Island Street	Stop Sign	F	F	

Appendix D: Identified Congested Intersections (LOS of "D" or Worse), Continued

Community	Intersection	Traffic Control	AM LOS	PM LOS	Notes
Stoughton	Central Street (Route 27) & West Street	Stop Sign	F	F	
Stoughton	Lindelof Avenue (Route 139) & Kay Way/Technology Center Drive	Signal	D	C	
Stoughton	Lindelof Avenue (Route 139) EB & AmVets Memorial Highway (Route 24) NB Ramps	Yield	F	F	
Stoughton	Lindelof Avenue (Route 139) EB & AmVets Memorial Highway (Route 24) SB Ramps	Yield	E	F	
Stoughton	Lindelof Avenue (Route 139) WB & AmVets Memorial Highway (Route 24) SB Ramps	Yield	C	F	
Stoughton	Park Street (Route 27) & Ash Street	Stop Sign	D	F	
Stoughton	Park Street (Route 27) & Prospect Street	Stop Sign	E	F	
Stoughton	Park Street (Route 27) & South Street	Stop Sign	F	F	
Stoughton	Park Street (Route 27) & Sumner Street	Stop Sign	F	F	
Stoughton	Park Street (Route 27) & Turnpike Street	Stop Sign	F	F	
Stoughton	Pleasant Street (Route 139) & Lincoln Street	Stop Sign	C	F	
Stoughton	Pleasant Street (Route 139) & Pine Street	Stop Sign	F	F	
Stoughton	Pleasant Street (Route 139) & Prospect Street	Stop Sign	F	F	
Stoughton	Stoughton Center (Northern End)	Signal	C	E	
Stoughton	Stoughton Center (Southern End)	Signal	E	E	
Stoughton	Washington Street (Route 138) & Central Street	Signal	D	E	Reconstructed
Stoughton	Washington Street (Route 138) & Lincoln Street	Stop Sign	F	F	
Stoughton	Washington Street (Route 138) & Monk Street	Stop Sign	C	E	
Stoughton	Washington Street (Route 138) & School Street	Stop Sign	F	F	
Stoughton	Washington Street (Route 138) & York Street	Stop Sign	F	F	
West Bridgewater	East Center Street (Route 106) & East Street	Stop Sign	F	F	
West Bridgewater	North Main Street (Route 28) & Copeland Street	Stop Sign	B	D	
West Bridgewater	North Main Street (Route 28) & Howard Street	Stop Sign	F	D	
West Bridgewater	North Main Street (Route 28) & Matfield Street	Stop Sign	F	F	
West Bridgewater	North/South Main Streets (Route 28) & East/West Center Streets (Route 106)	Signal	F	F	Reconstructed
West Bridgewater	West Center Street (Route 106) & Crescent Street	Stop Sign	F	F	
West Bridgewater	West Center Street (Route 106) & Howard Street	Stop Sign	F	F	
West Bridgewater	West Center Street (Route 106) & Lincoln Street	Stop Sign	D	F	
West Bridgewater	West Center Street (Route 106) & North Elm Street / South Elm Street	Signal	C	F	
West Bridgewater	West Center Street (Route 106) & Prospect Street	Stop Sign	E	D	
West Bridgewater	West Center Street (Route 106) & West Street	Stop Sign	F	F	
Whitman	Bedford Street (Route 18) & Auburn Street (Route 14)	Signal	C	D	TIP Programmed
Whitman	Bedford Street (Route 18) & Warren Avenue	Stop Sign	D	E	

Appendix D: Identified Congested Intersections (LOS of "D" or Worse), Continued

Community	Intersection	Traffic Control	AM LOS	PM LOS	Notes
Whitman	Plymouth Street (Route 58) & Essex Street/Raynor Avenue	Roundabout	D	D	
Whitman	South Avenue (Route 27) & Broad Street	Stop Sign	B	D	
Whitman	South Avenue (Route 27) & Commercial Street	Stop Sign	C	E	
Whitman	South Avenue (Route 27) & Franklin Street (Route 27)/Pleasant Street	Stop Sign	C	F	
Whitman	South Avenue (Route 27) & Park Avenue	Stop Sign	C	F	
Whitman	South Avenue (Route 27) & Raynor Avenue	Stop Sign	D	F	
Whitman	Temple Street (Route 27) & Beulah Street	Stop Sign	C	D	
Whitman	Temple Street (Route 27) & High Street	Signal	C	F	
Whitman	Temple Street (Route 27) & West Street	Stop Sign	C	F	
Whitman	Temple Street (Route 27) at Washington Street	Stop Sign	F	F	