

9.0

TRANSPORTATION

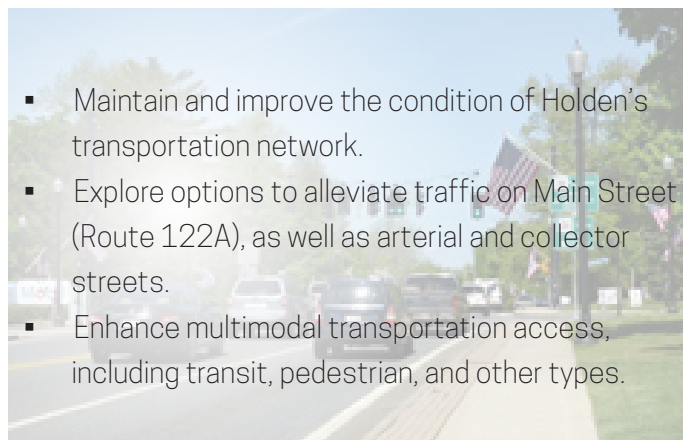
INTRODUCTION

Holden is surrounded by the Towns of Princeton, Rutland, Paxton, West Boylston, Sterling, and the City of Worcester. The Town features access to several major regional roadways, including Interstate-190 (I-190) which passes north-to-south through the eastern border of Town, and Interstate 290 (I-290) and Interstate-90 (I-90) to the south towards Worcester. Holden no longer receives fixed-route transit service provided by the Worcester Regional Transit Authority (WRTA). The same year as the original Master Plan was written, WRTA Route 32 was eliminated. WRTA Route 14 was re-purposed in 2013 to remain within Worcester. Holden receives paratransit services operated by the Holden Council on Aging (COA), under contract with the WRTA. Service is available to residents who qualify; those who are 60 years of age or older, or persons with a disability (regardless of age). Due to its limited transit service and small-town character, the dominant mode of transportation in Town is the automobile. Holden is located in the Central Massachusetts Regional Planning Commission

(CMRPC) planning region and is also a member of the Central Massachusetts Metropolitan Planning Organization (CMMPO) for transportation planning purposes. This chapter is an evaluation of Holden's transportation network including an inventory of existing roadway conditions, infrastructure maintenance, traffic volumes, safety, bicycle and pedestrian accommodations, freight rail and trucking, and public transportation. The objective of this chapter is to provide recommendations in order to fulfill the following goals:

Main Street (CMRPC, 2018)

- Maintain and improve the condition of Holden's transportation network.
- Explore options to alleviate traffic on Main Street (Route 122A), as well as arterial and collector streets.
- Enhance multimodal transportation access, including transit, pedestrian, and other types.



PRIOR PLANNING AND ENGAGEMENT EFFORTS

Route 122A Access Management Plan (2011)

In 2011, CMRPC prepared an Access Management Plan for Route 122A from Shrewsbury Street to Mt. Pleasant Ave. An access management plan reviews the current and potential land uses along a corridor by evaluating the ability for the current adjacent parcels to provide safe and efficient vehicle, transit, bicycle and pedestrian movement. The Plan's recommendations were divided into short, medium- and long-term improvements in order to help local authorities consider both internal and external movements through the planning, design, permitting, and project approval stages. Recommendations from the Plan include coordination with property owners to consolidate/eliminate multiple driveways into one wherever possible and application of driveway design standards and guidelines in the development review process.

Route 31 Corridor Profile Study (2014)

In 2014, CMRPC completed the Route 31 Corridor Profile Study. The study detailed the current conditions (traffic volumes, congestion, safety, and drainage), environmental considerations, and current land uses of the area. The profile focused on Route 31 from the Paxton town line to its intersection with Route 122A, and included an extension area on Manning Street from Route 31 to the West Boylston town line for data purposes. The study recommended improved sidewalk connectivity, drainage improvement, and signalized intersection improvements at the Route 122A intersection.

CMMPO Transportation Improvement Program (TIP) (2019)

The Transportation Improvement Program (TIP) is a planning document that lists all highway, bridge, transit, and intermodal projects in the Central Massachusetts Metropolitan Planning Organization (CMMPO) region. The TIP is a federally mandated requirement for all Metropolitan Planning Organizations (MPOs). The TIP is a prioritized listing of all transportation investments in an MPO's planning area for the next 5 federal fiscal years. Potential TIP projects are scored and selected by CMMPO staff and CMMPO Advisory Committee before being endorsed by the CMMPO. Projects that are included in the TIP are programmed to receive federal-aid funding. Currently there are 2 Holden projects listed on the CMMPO 2019-2023 TIP. Listed in TIP year 2019 is Massachusetts Department of Transportation (MassDOT) Project #607908, which is a bridge maintenance project for bridges on I-190 over River Street and the Quinapoxet River. Listed in TIP year 2022 is MassDOT Project #608815, which is a road resurfacing project on Route 122A planned from Shrewsbury Street to Route 31.

Long Range Transportation Plan (LRTP) (In Progress)

The Long-Range Transportation Plan (LRTP) is a planning document that describes the region's current transportation system and how that system should be maintained or modified over a 20-year period. The federal planning provisions passed in August of 2005 require the CMMPO to update the LRTP every 4 years, since it presides over a region that does not meet federal air quality standards for ozone. The LRTP document was last updated in 2016 and the current update is now under development for 2019. Consistent with recommendations from the WRTA's Comprehensive Service Analysis (CSA), the LRTP recommends implementing a new WRTA Route (Route 32) to connect Holden with Worcester. No other project specific information related to Holden was included in the Plan.

EXISTING CONDITIONS

The local road network is among the most expensive and important investments towns can make in transportation. According to the Master Plan Community Survey 69% of residents drive alone to work and 16% of residents highlighted “road/traffic/sidewalks” as Holden’s greatest need. Not only do Town residents rely on the road network for transportation around Town, but commercial and industrial uses also rely on the road network for the transportation of goods and services. The following section describes the current conditions of the Town’s overall transportation network including travel characteristics, traffic volumes and congestion, bridges, roadway safety, sidewalks and pedestrian mobility, and transit.

Travel Characteristics

Commuting data provides insight into the connection between residence and employment, especially as it relates to transportation infrastructure improvements. Journey-to-work information is collected by the United States Census Bureau. The most recently available commuting flow data comes from the American Community Survey (ACS) 5-Year estimates for 2009 to 2013. The top 10 municipalities of origin and top 10 municipalities of destination were selected. Similar information was collected through the Master Plan Community Survey and during the Master Plan community events. Figure 9 - 1 displays the Residence Location of Holden Workers and Figure 9 - 2 displays the Workplace Location of Holden Residents.

The majority of Holden residents currently work in Worcester or Holden, which was the same trend identified in the Master Plan (2008). The arterial routes 122A (Main Street) and 31 (Reservoir Street and Highland Street), and Shrewsbury Street provide access to the retail and employment centers in Holden. Traffic generators in town include the Holden Health Care Center, the U.S. Post Office, Alden Research Laboratory, Inc., local businesses, restaurants, an industrial park, and the Wachusett Regional High School. Motorists traveling to and

from these generators experience congestion and delay on Main Street and Shrewsbury Street.

Since 2000, the number of Holden residents working in Worcester has dropped, while the number of residents working in Town has increased. This reversed the trend from 1990 to 2000 when 531 fewer residents worked in Town. Locations further east in the Metro-West area - such as Boston, Westborough, and Framingham - have also become important locations of employment for Holden residents. Since 1990, Holden has been a strong employment center for its residents as well as those living in Worcester and Rutland. Although Holden still sees strong commuting numbers from Worcester and Rutland, those rates have slightly declined from 1990 and 2000. This generates less commuting time for local workers as confirmed by the survey results. The Master Plan Community Survey demonstrated that majority of residents’ travel ten or less miles to get to work. Approximately 25% of respondents reported that they drive 1 to 10 miles followed by retirees/unemployed (18%) and people who travel 30+ miles (16%).

Of the top 10 places of residence for Holden workers, the top 5 are towns directly adjacent to Holden, followed by 5 towns located to the south west. The changing patterns seen in places of residence versus employment demonstrate that people are traveling farther for work, predominately commuting from surrounding towns into larger metropolitan areas. These findings indicate that transportation decisions may need to focus on inter-city transit or explore expanded options for residents, particularly employed residents.

Registered Motor Vehicles in Holden

Data on motor vehicle registration is available from MassDOT through the Massachusetts Department of Revenue - Division of Local Services. Table 9 - 1 compares the number of registered vehicles locally and statewide over the last two and a half decades and calculates change in registration rates. Since 2005, the number of registered motor vehicles has decreased in Massachusetts overall and has slightly increased (4%) in Holden during the same time period (Figure 9 - 3).

Figure 9 - 1: Journey to Work, Residency of Holden Workers (Top 10 Locations)

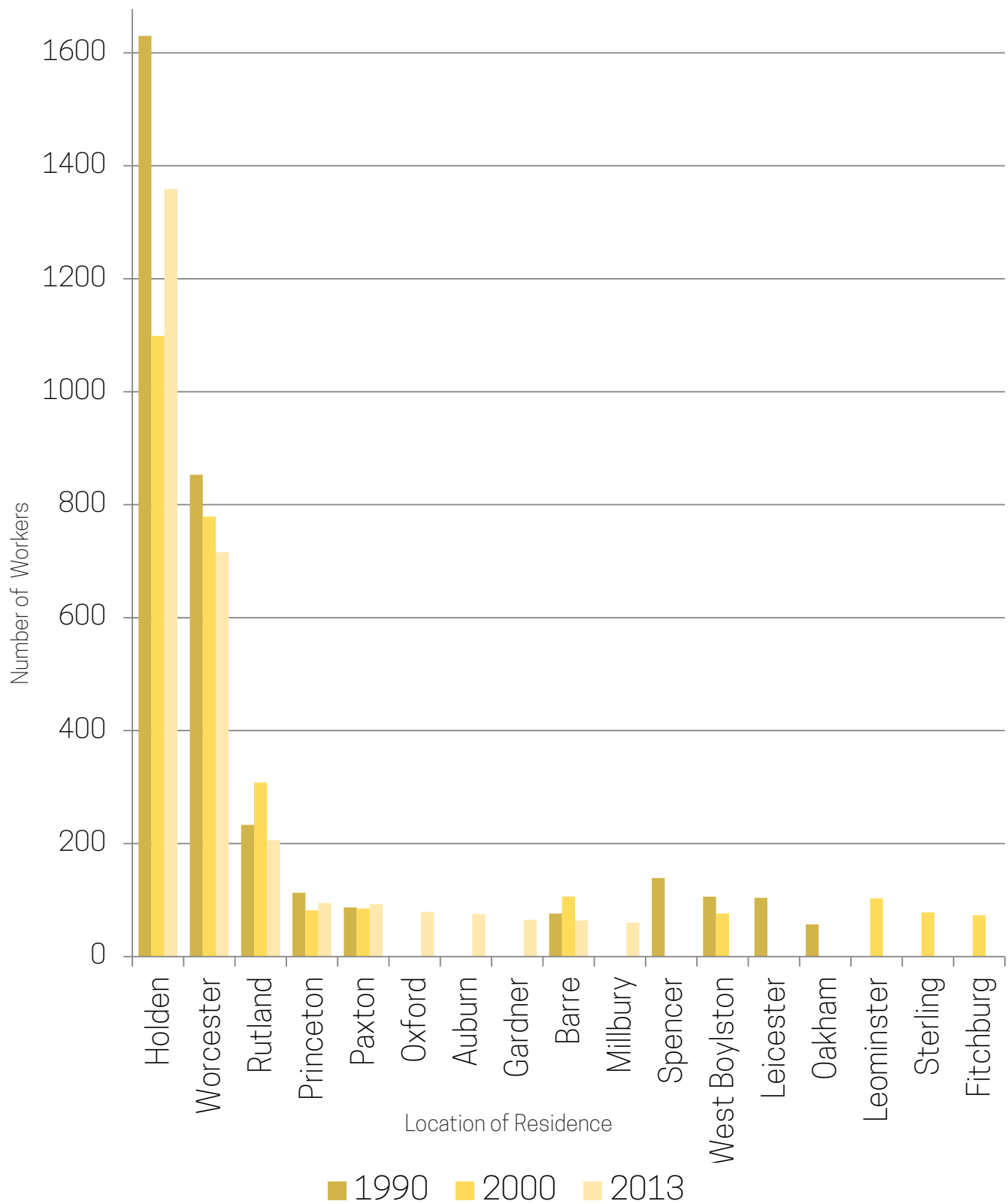


Figure 9 - 2: Journey to Work, Workplace Locations of Holden Residents
(Top 10 Locations)

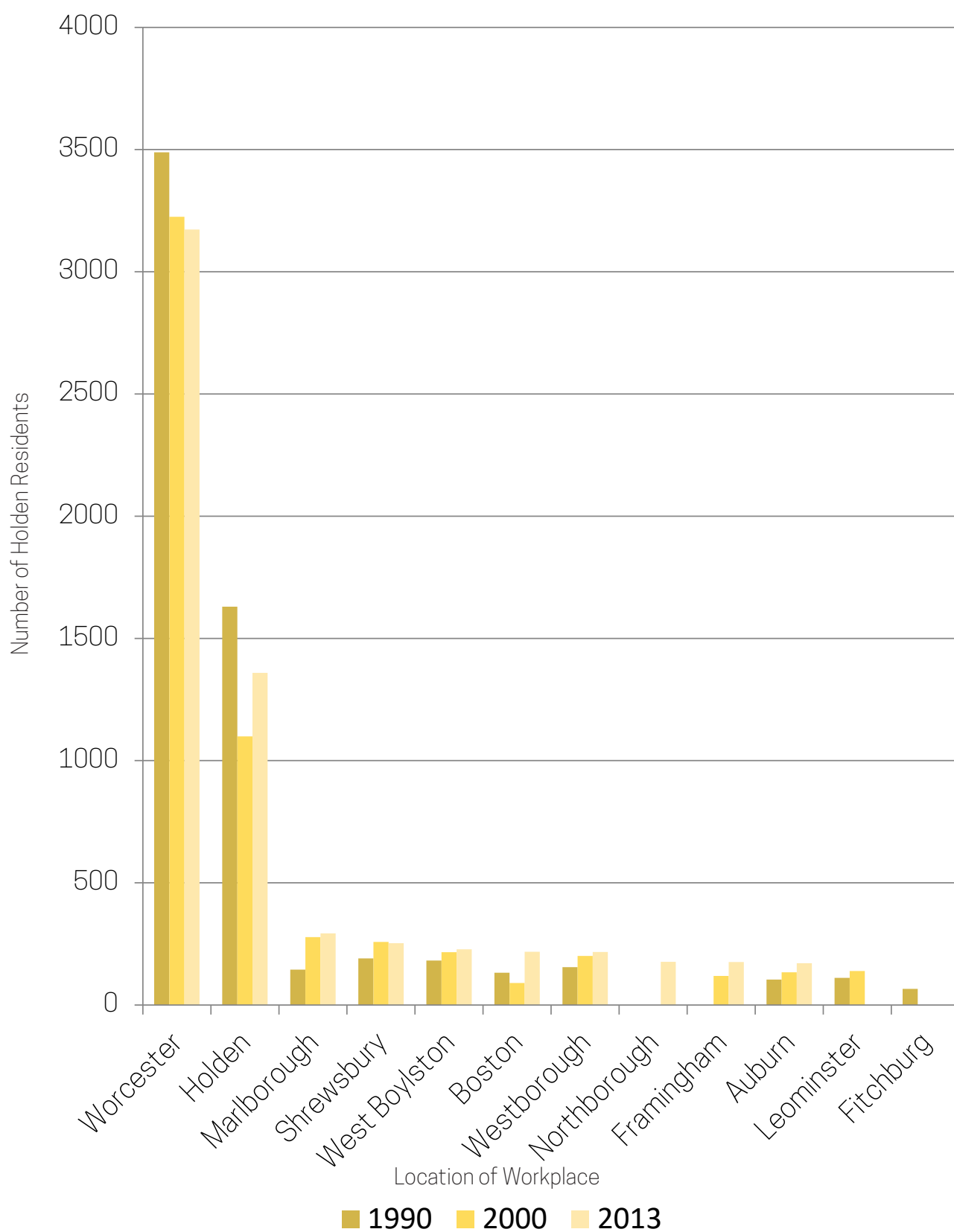
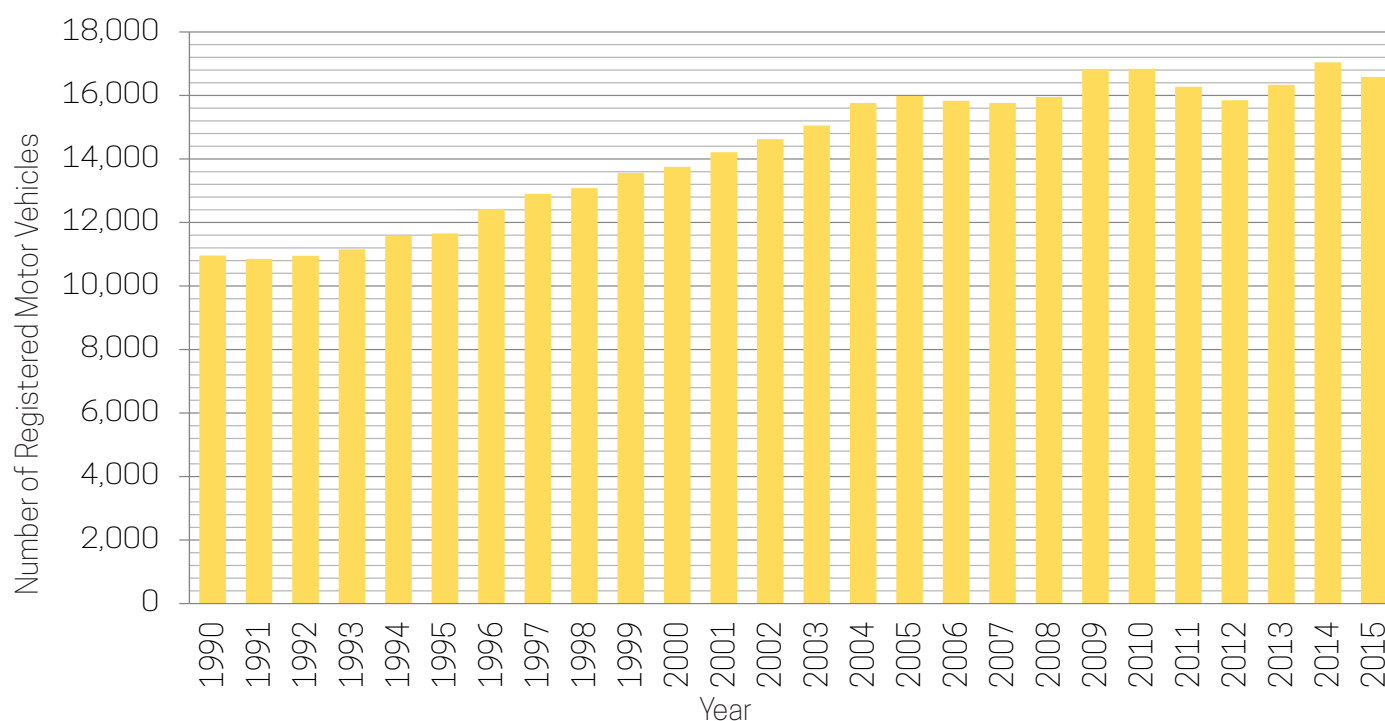


Table 9 - 1: Registered Motor Vehicles in Holden (Town of Holden, 2018)

	1990	2005	% GROWTH*	2015	% GROWTH
Massachusetts	4,074,063	5,639,105	38%	5,295,952	-6%
Holden	10,961	15,988	46%	16,584	4%

*Note: Growth rates between 1990 and 2005 are sourced from the 2008 Holden Master Plan

Figure 9 - 3: Registered Motor Vehicles in Holden (Town of Holden, 2018)



Road Jurisdiction

The ownership, or jurisdiction, of a road is key for attributing responsibility to the correct entities. The MassDOT Road Inventory File (RIF) is the official State database of public and private roadways in Massachusetts. The RIF contains the most complete digital information on roadway ownership for all communities in Massachusetts, includes information on classification and layout. This information helps determine the amount of local aid dollars each town receives. The official source of road ownership is the Town Clerk, who is responsible for sending updated information to MassDOT for any inclusions or exclusions when a new roadway is accepted as a Town road.

According to the most current version of the MassDOT Road Inventory File dated June 15, 2018, the ownership by road miles in the Town of

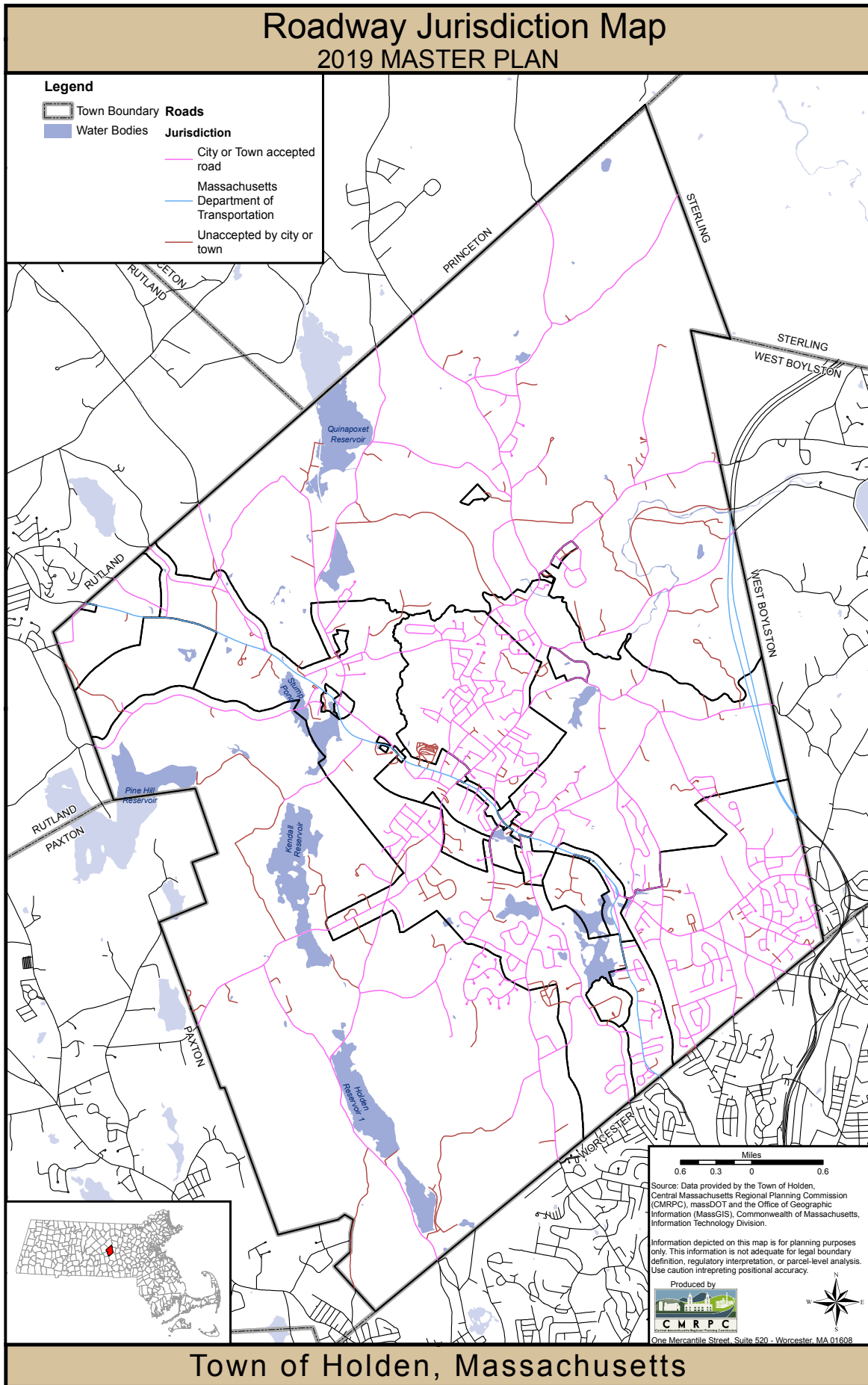
Holden includes approximately 117 miles of locally accepted roadways, compared to 12 miles of state-owned roads. As shown in Table 9 - 2, there are approximately 36 miles of unaccepted roadways in town, which includes private dirt roads or roadways owned by the Massachusetts Department of Conservation and Recreation (DCR). Map 9 - 1 displays the jurisdiction of all roadways across town.

Table 9 - 2: Road Jurisdiction in Holden (MassDOT, Town of Holden, 2018)

Jurisdiction	Road Miles
Holden Accepted	117.24 miles
MassDOT	12.18 miles
Unaccepted by Holden	36.42 miles

*Note that many of the miles of unaccepted road may be private dirt roads or DCR roads

Map 9 - 1: Holden Roadway Jurisdiction Map



Roadway Functional Classification

Highway travel involves movement through a network of roads. Functional classification is the process of categorizing roads and highways into different functional groups based on the service they provide. This classification determines how travel can be routed throughout a road network in a logical and efficient manner. According to the Federal Highway Administration, roads are classified into a hierarchy of 4 categories:

- Principal Arterials
- Minor Arterials
- Collectors (Major, Minor)
- Local Roads

Roads higher in the hierarchy, such as Principal Arterials or Minor Arterials, are designed to provide greater mobility and typically have higher design speeds. Arterials are typically used for longer through-travel between major trip generators (larger cities, recreational areas, etc.). In contrast, roads lower in the hierarchy, such as Local Roads, provide local access to private property or low volume public facilities and typically feature lower design speeds. Collectors provide a less developed level of service at a lower speed for shorter distances. They collect traffic from local roads and connect them with arterials, as well as connect smaller cities and towns with each other and to arterials. Arterials and Collectors have further sub-classifications of “Urban” or “Rural” and “Major” or “Minor” based on population density characteristics. Map 9 - 2 displays the functional classification of all roadways across Town.

According to the most current version of the MassDOT Road Inventory File dated June 15, 2018, the functional classification by road miles breaks down in the Town of Holden as shown in Table 9 - 3.

Federal-aid eligible roads are those qualified to receive financing from federal sources. Funds are allocated

Table 9 - 3: Functional Classification by Road Miles in Holden (MassDOT, 2018)

Functional Classification	Miles of Roadway
Principal Arterial	7.00 miles
Minor Collector	3.05 miles
Minor Arterial	17.05 miles
Major Collector	13.11 miles
Local Roads	120.61 miles
Interstate	4.99 miles
Total	165.84 miles

from the federal government to state governments, to be distributed for roadway improvement projects through the Transportation Improvement Program (TIP). Functional classification, in conjunction with urban/rural designation, determines whether a roadway qualifies for receipt of these funds. Eligibility includes all interstates, urban/rural arterials, urban collectors, and rural major collectors. Rural minor collectors and local roads - the majority of Holden’s roads – are not eligible for these funds. Additionally, MassDOT is required by the Federal Highway Administration to advertise High Risk Rural Roads (HRRR) projects. A high-risk rural road is any road with a functional classification of rural major collector, minor collector, or local rural road with significant safety risks for lane departure crashes. As of 2017, MassDOT identified 25 locations statewide for HRRR projects. Of these high-risk rural roads, 13 locations are located in the CMRPC region, including Worcester Road/Gregory Hill Road (Route 31). This road is identified as a HRRR from 0.4 miles South of Ball Hill Road to East Princeton Road (3.337 mi). Map 9 – 2 depicts Holden Roadway Functional Classifications.

Regional and Local Road Network

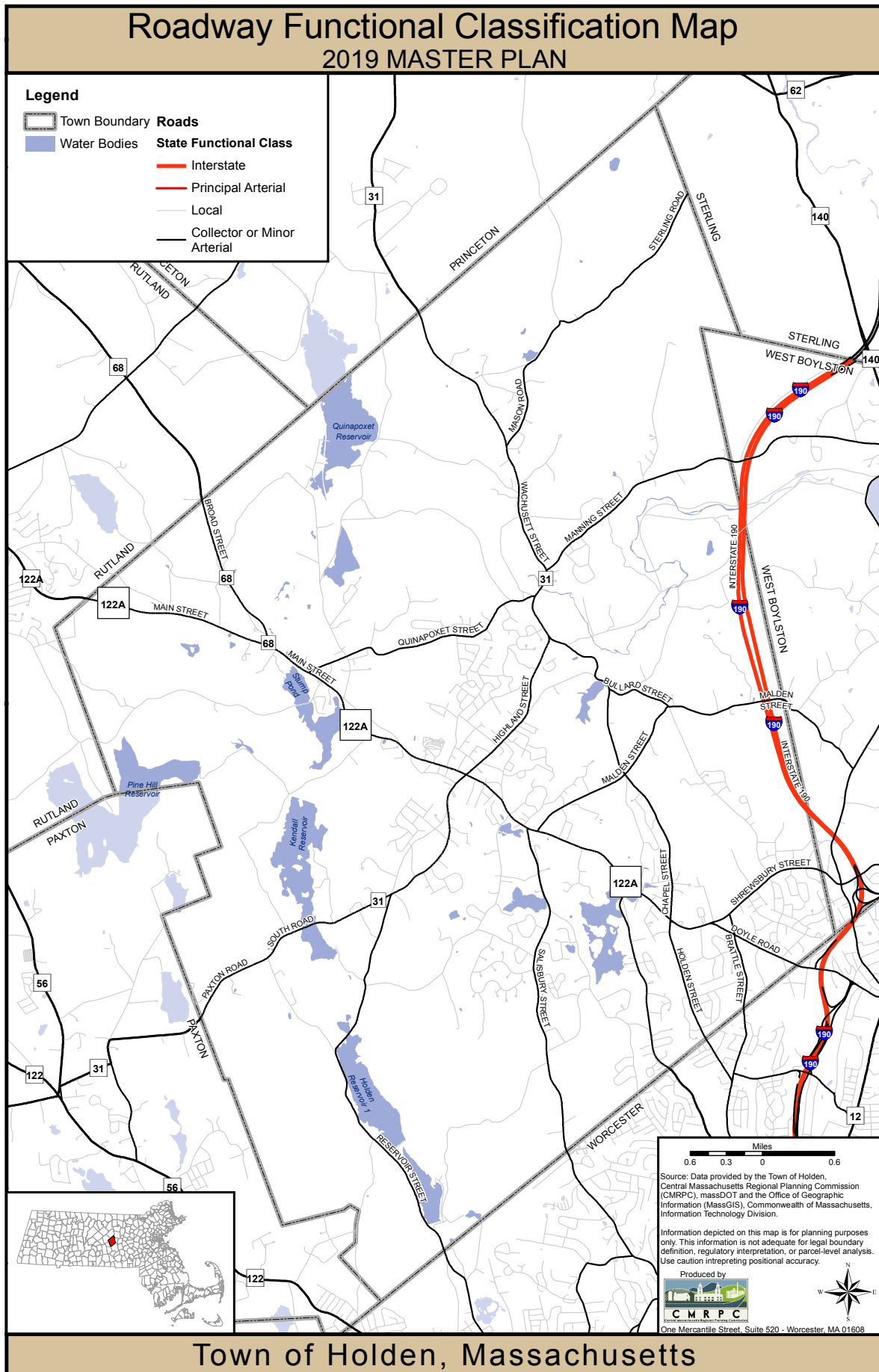
This section will provide a setting of the regional and local roadway network with a brief narrative of each vital link in Holden. Roads included:

Interstate 190

The only Interstate Highway that provides a direct connection to Holden, I-190, is a spur of I-90. Its southern portion ends at I-290 in Worcester and its northern section ends at MA Route 2 in Leominster. While there are no interchanges in the Town of Holden, exit 2 at Ararrat Street is the exit most

commonly utilized to get to and from Holden by I-90. Exit 3 in Worcester at West Mountain Street and exit 5 at MA Route 140 in West Boylston also provide nearby connections to Holden for those traveling on the Interstate.

Map 9 - 2: Holden Roadway Functional Classification Map



Route 122A (Main Street)

Massachusetts State Route 122A (Main Street) is a major north-south road running from the Worcester City line to the Rutland Town Line. A significant outside and crosstown connection, Route 122A is the most heavily traveled roadway in Holden (see Table 9 - 6). From the Worcester City line to its intersection with Shrewsbury Street, Main Street is a predominantly residential road with some light industrial and commercial use. The road's cross section is on average 27 feet wide with 2-foot shoulders. From its intersection with Shrewsbury Street to its intersection with MA Route 31 (Highland Street/Reservoir Street), Main Street is a 43-foot-wide road with 8-foot shoulders and sidewalks on both sides. As a state-owned road, no parking is allowed on Main Street. This section of road is dominated by commercial establishments and experiences high congestion during peak periods. From its intersection with MA Route 31 until it reaches the Rutland Town Line, Main Street is a residential road 40-feet wide with 8-foot shoulders on both sides and a single sidewalk on the eastern side of the road terminating at the intersection with MA Route 68 (Broad Street). Route 122A is listed in TIP year 2022 as MassDOT Project #608815, which recommends resurfacing the road from Shrewsbury Street to Route 31.

Route 31 (Highland Street, Reservoir Street, Wachusett Street)

Massachusetts State Route 31 is a major north-south road running from the Paxton Town Line to the Princeton Town Line. From the Paxton Town Line, Route 31 is a narrow predominately-residential road with very narrow shoulders. There are crosswalks and Yield to Pedestrian markings, but no sidewalks or curb ramp accommodations at present. Beginning at the "Holden Commons," plaza sidewalks are present on the east side of the road, switching to the west side at 75 Reservoir Street. Route 31 continues in this layout until it intersects with Route 122A. From its intersection with Route 122A until the Princeton Town Line, Route 31 is a predominately residential road. A sidewalk is present on the west side of Route 31 from the Route 122A intersection until its intersection with Nola Drive.

Route 68 (Broad Street)

Massachusetts Route 68 begins in Holden at Route 122A and continues to the Rutland Town Line. From there, it continues to Gardner before terminating in Boylston. In Holden, Route 68 is a sparsely populated road with a few houses and one commercial nursery, extending only a total of 1.5 miles into Town. There are no pedestrian or bicycle accommodations but the layout of the shoulders of the road are sufficiently wide to accommodate pedestrian and bicycle mobility.

Manning Street

Manning Street is an east-west street in Holden connecting Route 31 to I-190 and Route 140 in West Boylston via the Raymond Huntington Highway. For its entire length, Manning Street is a rural road. It includes a few areas of housing, including one subdivision. The Central Mass Rail Trail crosses Manning Street and has a parking lot accessible from this intersection.

Salisbury Street

Salisbury Street is a north-south road providing connections for Holden to the Salisbury Street neighborhood of Worcester to the south and Main Street to the north. Salisbury Street is a narrow road with limited shoulders. There is a sidewalk along most of the road, but only on the west side. The combined Holden Town pool and recreation area is located along Salisbury Street.

Shrewsbury Street

Shrewsbury Street is an east-west road providing connections from 122A to I-190 via Doyle Road and Mountain Street West in Worcester. Shrewsbury



Main Street and Industrial Drive (CMRPC, 2018)

Street begins at the West Boylston Town Line and is predominantly a residential street for its entire length with many residential neighborhoods to its north and south. There is limited sidewalk infrastructure on Shrewsbury Street with the section existing on the north side from the West Boylston Town Line to the Mount view Middle School. The possibility of conducting traffic flow improvements to Shrewsbury Street is currently being investigated with the intention to place the project on the TIP list for construction in 2024.

Road Network Conditions

In 2017, Vanasse Hangen Brustlin, Inc. (VHB) completed a Pavement and Sidewalk Management Study for Holden utilizing the Road Manager pavement module designed by VHB. This system inventoried and surveyed road conditions for the entire Town of Holden. A Pavement Management System (PMS) assessment is a planning tool used to collect and monitor current information, as well as evaluate and prioritize pavement maintenance, rehabilitation, and repair strategies. When implemented properly, a PMS provides decision-makers with information to better understand the long-term consequences of short-term budgeting decisions. The Town’s PMS is currently managed by the Holden Highway staff within the Department of Public Works (DPW), with strong support from VHB. Over time, all data management will be turned over to the Holden Highway staff. The Highway staff are responsible for delivering safe, well-maintained public roads for efficient transportation in the community. An inventory of roadways in Town was prepared by the Holden DPW and is included in



Appendix C. The inventory provides information regarding roadway length, width, sidewalks, and latest maintenance actions. Many roads in town were built 15 to 20 years ago as new subdivision streets. Today, some of Holden’s roads are reaching the end of, or have surpassed, their functional lifespan. New residential developments steadily add to the number of miles of roadway for which the DPW is responsible.

As part of developing the PMS, VHB surveyed the condition of all roadways in Holden. This survey includes data on pavement, sidewalk, and Americans with Disabilities Act (ADA) ramp conditions. The pavement condition survey conducted by VHB categorizes road segments into treatment “bands” based on a Pavement Condition Index (PCI). The PCI rates the condition of each pavement segment on a scale of 0 to 100, which determines the types of needed repairs. As shown in Table 9 - 4, the road conditions and the associated PCI scores are ranked according to five major treatment bands.

Table 9 - 4: Holden Pavement Management System Treatment Band Descriptions (Holden Pavement and Sidewalk Management Report, VHB, 2017)

Treatment Band	PCI*	Description
Base Rehabilitation	0-60	Poor condition – in need of base improvement. Typical repairs are reclamation or full depth reconstruction.
Structural Improvement	61-72	Deficient condition – pavement surface structure in need of added strength for existing traffic. Typical repairs are overlay with or without milling.
Preventative Maintenance	73-85	Fair condition – pavement surface may be in need of surface sealing, full depth patch and/or crack sealing
Routine Maintenance	86-92	Good condition – may be in need of crack sealing or minor localized repair.
Do Nothing	93-100	Excellent condition - in need of no maintenance

*These are only general PCI ranges for reference purposes, and represent only one pavement type. There are several fields considered by the strategy table when assigning repair types to each individual street.

The Network PCI for the Town of Holden is 85, an overall indication that the roadways in Town are in fair-to-good condition and require mostly preventative maintenance. This finding aligns with the Master Plan Community Survey results in which 48% of residents reported they found the overall road conditions in town adequate, compared to 10% who reported the conditions are overall poor. Figure 9 - 4 displays the number of miles in each pavement condition band and Map 9 - 3 shows the pavement conditions of all roadways in Town as determined by VHB.

Each pavement treatment band is associated with a specific cost of repair determined with the assistance of MassDOT and the Town of Holden. Based on the most recent survey, it is estimated that the current backlog of maintenance for all roadways in Town will cost \$6,781,000. Since the costs of repairs increase as the road deteriorates, it is significantly more cost effective to repair roadways early on or preventatively, rather than waiting until they reach more costly repair categories.

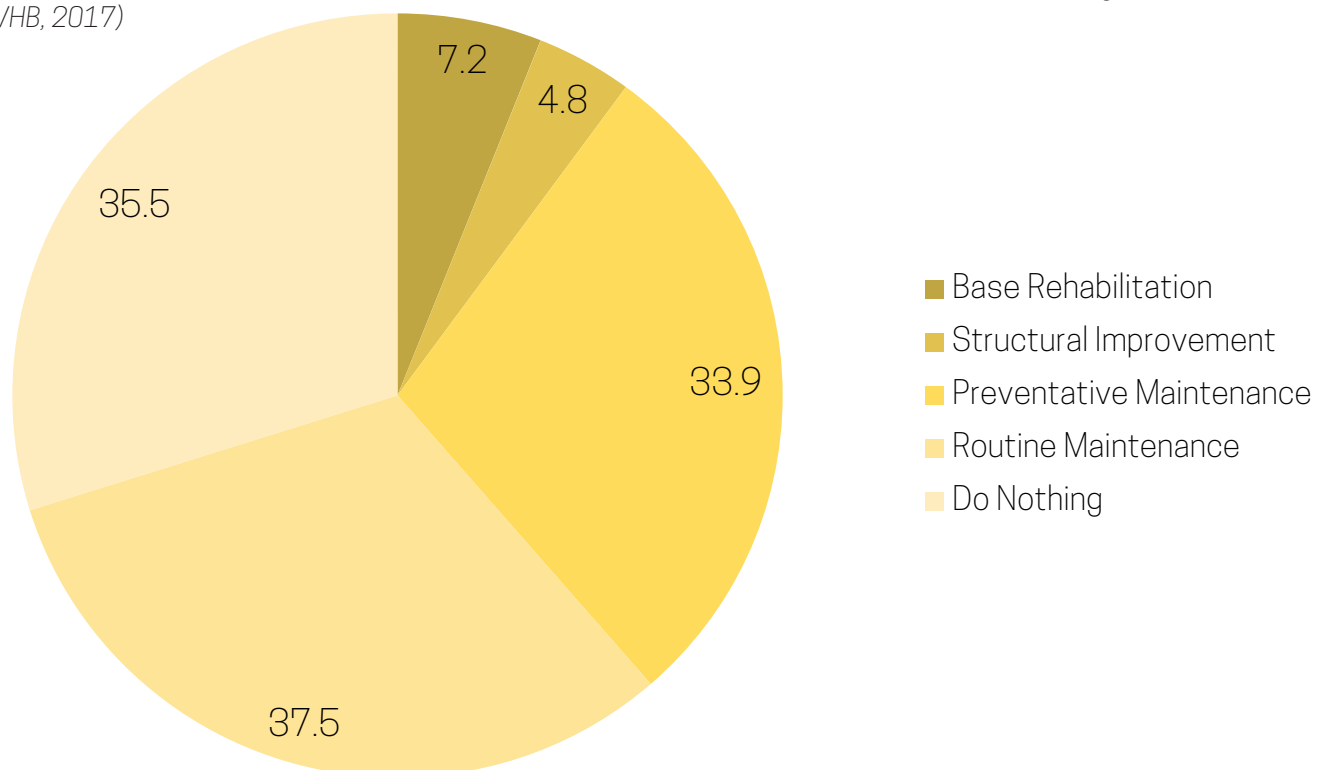
Heavy Vehicles

CMRPC collects vehicle classification data during traffic counts. The most current data shows that four roads in town carry heavy vehicles as 9 to 14% of their total traffic volume. Those roads include Main Street (Route 122A), Highland Street (Route 31), Reservoir St (Route 31), and Shrewsbury Street (Route 122A).

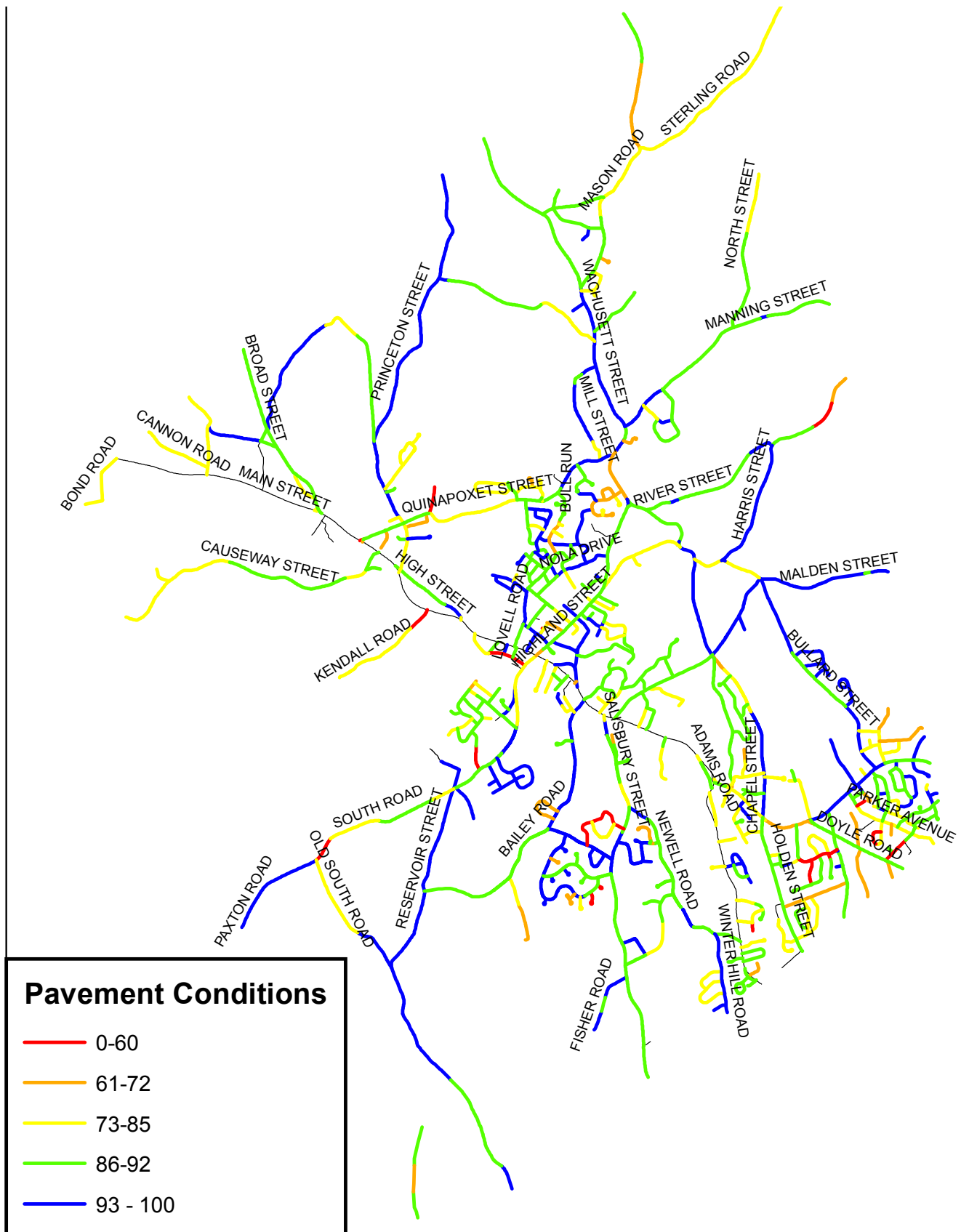
Bridges

The MassDOT Bridge Inspection Management System (BIMS) is the statewide dataset for bridge structures and their inspection status. The database features information on MassDOT and municipality-owned bridges with spans greater than 20 feet. Inspections are completed bi-annually. Information on MassDOT and municipality-owned bridges with spans between 10 and 20 feet, and culverts with spans of 4 to 10 feet, are not available at this time, but data collection efforts are underway. The BIMS identifies 29 total structures in Holden, 14 of which are owned by MassDOT and 15 owned by the Town. Of all bridges in Town, 1 is structurally deficient. 9 are in unknown condition with no current inspections. The bridge identified as being structurally deficient is the Salisbury Street Bridge over the Providence and

Figure 9 - 4: Holden Pavement Condition and Treatment Band in Miles (Holden Pavement and Sidewalk Management Report, VHB, 2017)



Map 9 - 3: Holden Roadway Pavement Conditions Map (Holden Pavement and Sidewalk Management Report, VHB, 2017)



Worcester Rail Road. As previously noted, there currently are 2 projects listed on the CMMPO 2019-2023 TIP. Listed in TIP year 2019 is MassDOT Project #607908, which is a bridge maintenance project for bridges on I-190 over River Street and the Quinapoxet River. Table 9 - 5 shows all the bridges in the MassDOT BIMS database located in the Town of Holden.

Table 9 - 5: Holden Bridges Inventory (MassDOT, Town of Holden, 2018)

Facility Carried	Year Built	Year Reconstructed	Type of Service	Length	Bridge Owner	Structurally Deficient	Structure Category	Feature Intersected	Bridge Inspection Date
Hwy Mill St	1989		Highway	15.2	Holden	No	Bridge (NBI)	Water Asnebumskit River	5/5/2015
Hwy Princeton St	1954		Highway-Pedestrian	7.9	Holden	No	Bridge (NBI)	Water Asnebumskit Brook	6/14/2016
Hwy Princeton St	1930	2009	Highway	27	Holden	No	Bridge (NBI)	Water Quinapoxet Res Outlet	9/1/2015
Hwy Union St	1850	1950	Highway	5.5	Holden	Unknown	Culvert	Water Wachusett Brook	No Current Inspection
Hwy Old Broad St	1930		Highway	2.1	Holden	Unknown	Culvert	Water Brook	No Current Inspection
St 31 South Rd	1850	1900		1.8	Holden	Unknown	Culvert	Water Kendall Resrvr	No Current Inspection
Hwy River St	2017		Highway	28.2	Holden	No	Bridge (NBI)	Water Quinapoxet River	2/21/2017
Hwy Stonehouse Hill	1993		Highway	27.5	Holden	No	Bridge (NBI)	Water Reservoir Out	9/1/2015
Hwy Manning St	1969		Highway-Pedestrian	9.8	Holden	No	Bridge (NBI)	Water Trout Brook	10/3/2016
Hwy Mt Pleasant Av	1985		Highway-Pedestrian	7.7	Holden	Yes	Bridge (NBI)	Water Asnebumskit Brook	10/4/2016
Hwy River St	2004		Highway-Pedestrian	25.6	Holden	No	Bridge (NBI)	Water Quinapoxet River	12/2/2016
Hwy Malden St	1964		Highway	5	Holden	No	SHORT SPAN BRIDGE	Water Wachusett Brook	7/15/2015
Hwy Wachusett St	1950		Highway	3.4	Holden	Unknown	CULVERT	Water Chaffin Pond Otlt	NO CURRENT INSPECTION
Hwy Shrewsbury St	1850	1937	Highway	6.1	Holden	Unknown	SHORT SPAN BRIDGE	Water Chaffin Pond Otlt	NO CURRENT INSPECTION

Table 9 - 5 Continued

Hwy Mill St	2009		Highway	13.3	Holden	No	BRIDGE (NBI)	Water Quinapoxet River	2/12/2016
St122 A/ Main St	1930	1950	Highway	1.8	MASSDOT	Unknown	CULVERT	Water Traprock Brook	NO CURRENT INSPECTION
St122 A/ Main St	1938		Highway	1.2	MASSDOT	Unknown	CULVERT	Water Swamp	NO CURRENT INSPECTION
St122 A/ Main St	1940		Highway	1.8	MASSDOT	Unknown	CULVERT	Water Chaffin Pond Otlt	NO CURRENT INSPECTION
St122 A/ Main St	1948	1986	Highway-Pedestrian	12.2	MASSDOT	No	BRIDGE (NBI)	Water Asnebumskit Brook	7/13/2015
St 31 Reser- voir St	1983		Highway-Pedestrian	15.5	MASSDOT	No	BRIDGE (NBI)	Rr Pwrr	12/1/2015
St122 A/ Main St	1900	1949	Highway	20.1	MASSDOT	No	BRIDGE (NBI)	Rr Pwrr	3/23/2016
Hwy Salis- bury St	1907	1958	Highway-Pedestrian	27.4	MASSDOT	Yes	BRIDGE (NBI)	Rr Pwrr	3/23/2016
Hwy Malden St	1979		Highway-Pedestrian	94.2	MASSDOT	No	BRIDGE (NBI)	I 190	9/16/2015
I 190 Sb	1979		Highway	33.8	MASSDOT	No	BRIDGE (NBI)	Hwy River St	6/8/2016
I 190 Nb	1979		Highway	33	MASSDOT	No	BRIDGE (NBI)	Hwy River St	6/8/2016
I 190 Sb	1979		Highway	254.2	MASSDOT	No	BRIDGE (NBI)	Water Quinapoxet River	8/15/2016
I 190 Nb	1979		Highway	254.2	MASSDOT	No	BRIDGE (NBI)	Water Quinapoxet River	8/19/2016

Traffic Volumes

Congestion costs the traveling public time and money. Although slower travel speeds tend to decrease fatalities and serious injuries, congestion also inhibits the efficient movement of emergency vehicles. Holden is located near several major regional roadways, including I-190 and Interstate Routes I-290 and I-90. Good transportation access serves the community in terms of economic development. However, access to Holden and the surrounding region is constrained by increasing congestion. As congestion intensifies on the major

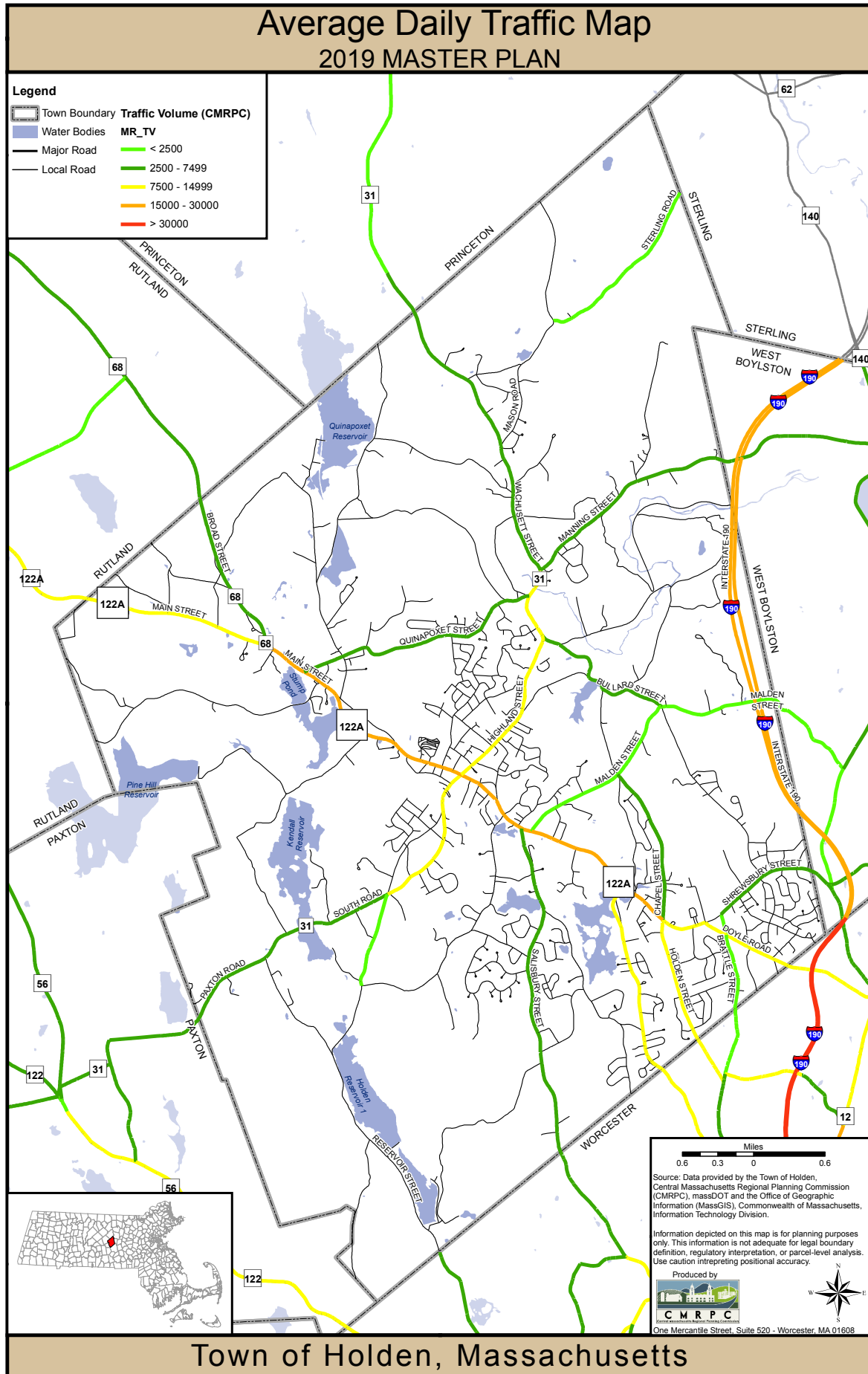
roads, traffic spills over into local neighborhood streets.

Traffic counts are collected regularly in the Town of Holden by CMRPC on Federal-aid-Eligible roadways and other select local roadways. This data is shown on Table 9 - 6 and Map 9 - 4. The highest volume road in Holden is Main Street (Route 122A) followed by Shrewsbury Street, Doyle Road, Highland Street (Route 31), and Reservoir Street (Route 31).

Table 9 - 6: Traffic Volume in Holden (CMRPC, 2018)

Date	Street	Location	Northbound/ Eastbound	Southbound/ Westbound	Total
7/30/2014	Boyden Rd	North Of Main St (Rt. 122a)	321	203	524
8/16/2018	Brattle St	At Worcester City Line	1,012	944	1,956
6/9/2016	Brattle St	Between Shrewsbury St & Doyle Rd	652	508	1,160
10/13/2010	Broad St (Rt68)	At Rutland Town Line	1,910	1,935	3,845
4/30/2013	Bullard St	Between Wachusett St & Malden St	1,424	1,747	3,171
7/7/2010	Bullard St	North Of Shrewsbury St	1,418	1,196	2,614
8/8/2018	Chapel St	North Of Shrewsbury St	1,698	1,907	3,605
6/9/2015	Doyle Rd	At Worcester City Line	6,015	6,491	12,506
10/24/2016	Doyle Rd	South Of Shrewsbury St	5,514	5,556	11,070
6/14/2016	Highland St (Rt31)	North Of Main St (Rt. 122a)	3,462	4,474	7,936
8/16/2018	Holden St	At Worcester City Line	3,764	4,691	8,455
10/13/2010	Main St (Rt122a)	At Rutland Town Line	5,346	5,305	10,651
8/16/2018	Main St (Rt122a)	At Worcester City Line	3,724	3,865	7,589
6/14/2016	Main St (Rt122a)	North Of Reservoir-Highland St (Rt. 31)	8,707	7,866	16,573
6/16/2016	Main St (Rt122a)	North Of Shrewsbury St	10,025	10,856	20,881
6/14/2016	Main St (Rt122a)	South Of Broad St (Rt. 68)	7,466	8,313	15,779
8/13/2013	Main St (Rt122a)	South Of Reservoir-Highland St (Rt. 31)	9,537	10,695	20,232
7/9/2013	Malden St	At West Boylston Town Line	929	1,001	1,930
11/4/2010	Malden St	North Of Main St (Rt. 122a)	869	785	1,654
4/30/2013	Malden St	North Of Wachusett St	774	764	1,538
6/16/2016	Mount Pleasant Ave	East Of Main St (Rt. 122a)	2,088	1,811	3,899
5/7/2013	Paxton Rd (Rt31)	At Paxton Town Line	2,746	2,820	5,566
11/4/2010	Quinapoxet St	East Of Princeton St	1,541	1,693	3,234
7/12/2012	Reservoir St	At Worcester City Line	1,148	1,113	2,261
5/7/2013	Reservoir St	South Of South Rd (Rt. 31)	1,208	1,124	2,332
5/7/2013	Reservoir St (Rt31)	North Of Reservoir St	3,866	3,872	7,738
5/2/2013	Reservoir St (Rt31)	South Of Main St (Rt. 122a)	6,434	6,108	12,542
8/16/2018	Salisbury St	At Worcester City Line	2,389	2,417	4,806
6/14/2016	Salisbury St	South Of Main Street (Rt. 122a)	3,362	3,321	6,683
8/16/2007	Shrewsbury St	At West Boylston Town Line	2,353	2,464	4,817
9/7/2017	Shrewsbury St	East Of Chapel St	6,994	6,981	13,975
4/30/2013	Shrewsbury St	East Of Doyle Rd	2,126	2,143	4,269
10/13/2010	Sterling Rd	At Sterling Town Line	182	182	364
6/14/2016	Wachusett St	East Of Highland St (Rt. 31)	2,622	2,461	5,083
4/30/2013	Wachusett St	North Of Malden St	1,892	2,082	3,974
10/13/2010	Wachusett St (Rt31)	At Princeton Town Line	1,302	1,346	2,648
6/14/2016	Wachusett St (Rt31)	Between Manning & Quinapoxet St.	5,311	5,643	10,954
5/2/2013	Wachusett St (Rt31)	North Of Manning St	2,380	2,381	4,761
5/2/2013	Wachusett St (Rt31)	South Of Quinapoxet St	4,502	4,314	8,816
7/30/2014	Woodland Rd	North Of Main St (Rt. 122a)	1,664	612	2,276

Map 9 - 4: Holden Average Daily Traffic Map



Congestion Management Processes

CMRPC is responsible for maintaining the region's Congestion Management Process which includes the following tasks:

- Development of congestion management objectives.
- Establishment of measures of multimodal transportation system performance.
- Collection of data and system performance monitoring to define the extent, duration, and causes of congestion.
- Identification of congestion management strategies.
- Implementation activities, including identification of an implementation schedule and possible funding sources for each strategy.
- Evaluation of the effectiveness of strategies.

To complete this process, CMRPC conducts extensive data collection throughout the region including for the Town of Holden. CMRPC utilizes a variety of methods to collect this information, such as Travel Time and Delay Studies, Intersection Turning Movement Counts (TMC), and the Regional Travel Demand Model. The following section describes each method's activities.

Travel Time and Delay Studies

In 2016, CMRPC conducted a Travel Time and Delay Study along Route 122A in Holden. The results found that, on average, congestion adds 1.6 minutes to commutes when traveling northbound and 6.7 minutes when traveling southbound. Map 9 - 5 and Map 9 - 6 shows the average speeds observed during AM and PM peak hour over the course of the study.

Turning Movement Count (TMC) Intersections Encountered Delay

For all intersections where Turning Movement Counts are obtained, it is possible to analyze the total delay encountered during peak hour periods. Net delay is calculated from "average delay encountered for entering vehicles" byproduct data collected during intersection Line of Sight (LOS) research. Signalized intersections have delays of varying levels in all

directions factored into the calculation. "Stop" sign-controlled intersections have delay calculated only for those vehicles arriving on the minor approaches required to stop as well as vehicles on the major approaches waiting to make a left turn. Generally speaking, signalized intersections often exhibit more total delay. However, a busy stop-controlled location that may not presently meet the criteria for signalization can face substantial delays if volumes on the minor approaches predominately seek to cross the major approaches. Traffic signals establish orderly traffic flows and increase safety by providing the opportunity for traffic volumes to proceed on both the major and minor intersection approaches, thus balancing encountered vehicle delay. When two heavily traveled streets cross at a major signalized intersection, significant delays are often generated due to the high traffic volumes. Once signal operations are optimized, geometric improvements can then be considered, such as the construction of widened or additional travel lanes.

The below list includes selected intersections in Holden with their observed delay in minutes. These values represent the *total* number of minutes that drivers, *as a group*, wait at the intersection during the peak morning or afternoon travel periods.

- Shrewsbury Street / Doyle Road / Mount View Drive (5,795)
- Route 122A / Route 31 (2,815)
- Route 122A / Shrewsbury St (2,069)
- Chapel St / Holden St / Shrewsbury St (1,877)

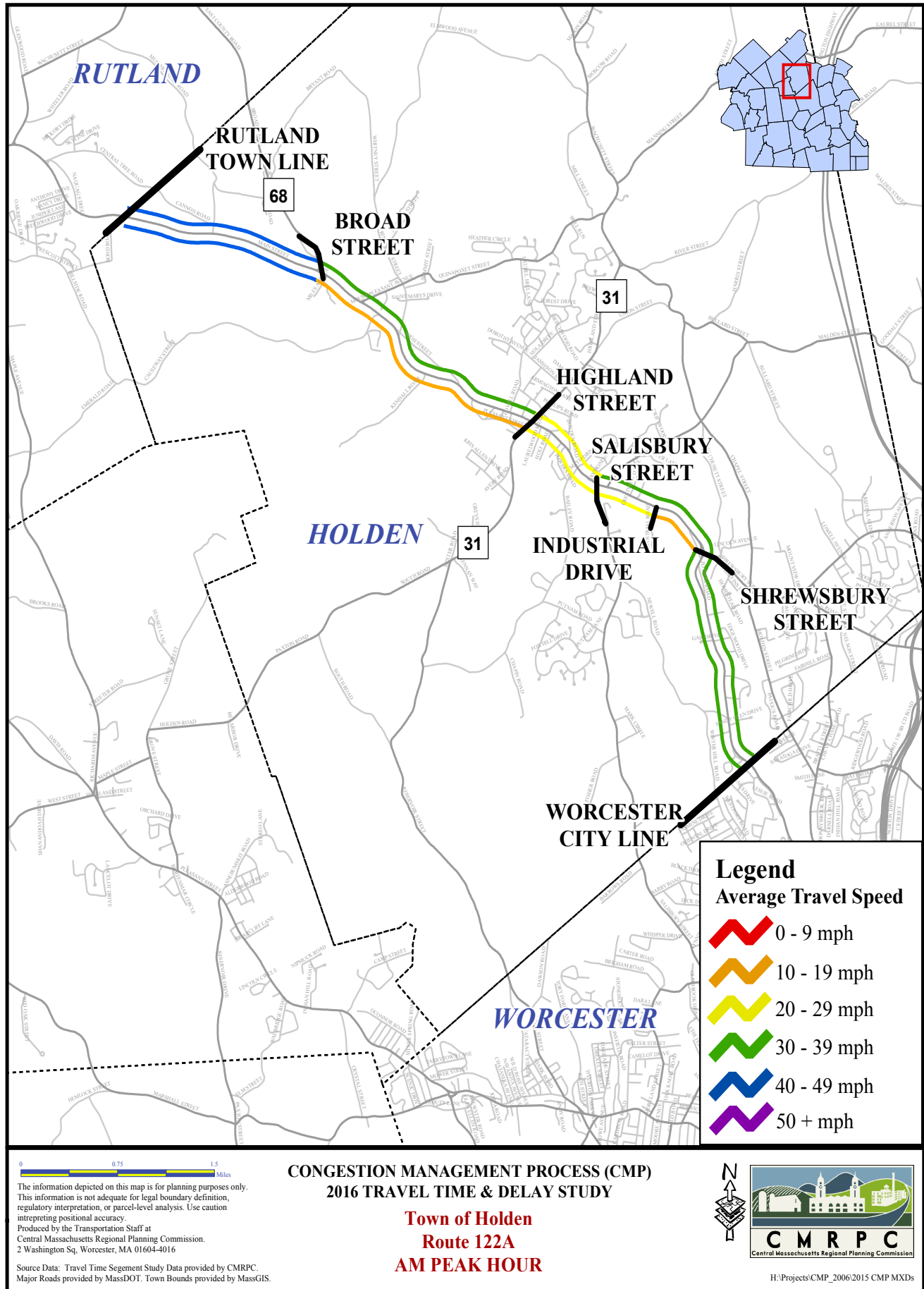
Regional Travel Demand Model

The final way that congested roadways are identified by CMRPC is through the regional travel demand model – a computer program to calculate current congestion based on roadway design, and to project areas that will experience congestion in the future.

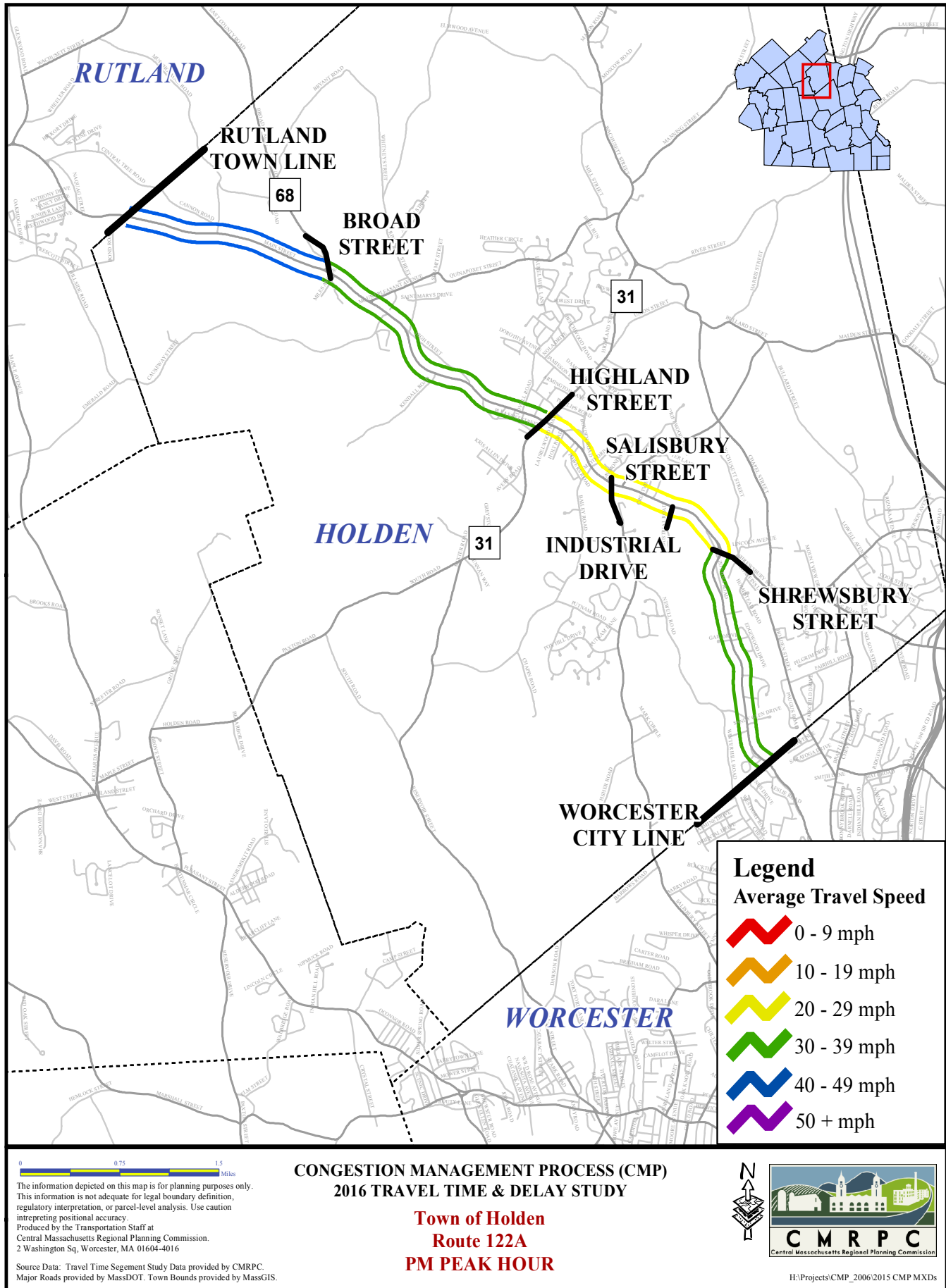
Based on the most recent run in 2017, CMRPC's travel demand model identifies the following roadways in Holden as currently congested:

- Route 122A from Route 140
- Shrewsbury Street from Doyle Road to Main Street

Map 9 - 5: Holden Morning Peak Hour Travel Times Map



Map 9 - 6: Holden Afternoon Peak Hour Travel Times Map



Doyle Road from Shrewsbury Street to the Worcester City Line is projected to be congested by the year 2040.

Freight Rail and Trucking

Genesee & Wyoming Inc. (G&W), owns and operates the Providence and Worcester Railroad (P&W). G&W is based in Darien, Connecticut. The company owns and maintains interest in 120 railroads in the United States, Canada, and other parts of the world. The P&W operates freight service in central and southern New England. The P&W line runs from Worcester to Gardner and cuts through the central portion of Holden. The railroad enters Holden from the north just to the west of the Quinapoxet Reservoir and crosses Route 122A and Route 31 downtown. The rail line crosses Salisbury Street, then again crosses Route 122A near Chaffin Pond, before continuing on to the Worcester city line. At-grade railroad crossings are locations where railroads and roadways intersect at the same level, leading to potential safety hazards.

The following 6 at-grade G&W crossings are located within Holden, listed from north to south.

- Princeton Street (Lights only)
- Quinapoxet Street (Gates)
- Sunnyside Avenue (Lights only)
- Pleasant Street (Lights only)
- Bailey Road (Lights only)
- Industrial Drive (Gates)

Of the at-grade crossings in Holden that do not currently have gates, none of them are at high volume roads. The at-grade crossings are located on lower volume local roads concentrated in the northern and central parts of Town. Flashing beacons

The 2008 Master Plan recommended investigating the need to install crossing gates at Industrial Drive. Since then, crossing gates have been installed and/or improved. The at-grade crossing located on Industrial Drive has the highest average car volume.

and crossbuck signs are located at each of the crossings; the crossings at Quinapoxet Street and Industrial Drive also have drop-down gates.

Transportation Safety

Transportation planning in the CMMPO region is rooted in encouraging an efficient, economical, and safe multimodal transportation system. Thus, improving safety on all public roads is one of many considerations in the transportation planning process. The safety information reported below includes data provided by MassDOT for the period of 2013 to 2015 regarding automobile crashes and for the period of 2006 to 2015 regarding non-motorist crashes.

Generally, crashes in the Central Massachusetts region during the period of 2013-2015 have increased 5% compared to the previous reporting period 2011 to 2015. The total number of fatalities is also higher (6.8%), with a relevant spike in pedestrian fatalities. The region had a total of 215 identified pedestrian crash clusters with a total of 1,167 crashes.¹ There were 673 total crashes recorded in Holden from 2013 to 2015, which

comprised mainly property damage only crashes (472) and non-fatal injury crashes (195), followed by fatal injury crashes and incidents that were not reported. There were also no intersections in Holden on the Statewide Top 200 High Crash Locations list for the 2013-2015 reporting period.

The intersection of Main Street (Route 122A) and Reservoir Street was identified as a Highway Safety Improvement Program (HSIP)-Eligible Automobile Crash Cluster.² This intersection reported 35 total crashes between 2013 and

¹ Crash clusters are a result of consolidating nearby crash locations and creating an imaginary buffer of a 25-meter radius for automobiles and 100-meter radius for non-motorist crashes. The resulting polygons are merged and generate crash clusters.

² The Highway Safety Improvement Program (HSIP) is a federal-aid program designed to significantly reduce traffic fatalities and serious injuries on all public roads. A HSIP-eligible crash cluster is defined by MassDOT as "one in which the total number of 'equivalent property damage only' crashes are within the top 5% in the region." An HSIP-eligible project is "any strategy, activity, or project that corrects or improves a hazardous public road location or feature, or addresses a highway safety problem."

2015, including 28 non-injury crashes and 7 injury crashes. In terms of non-motorized accidents, from 2006 to 2015, MassDOT has record of 19 pedestrian crashes, a majority of which were non-fatal injuries (15), followed by 2 fatal injuries and 2 property damage only accidents. Using the Crash Cluster method, 1 Pedestrian - Motor Vehicle Crash Cluster was identified on Highland Street. Over the same period, there were 18 bicycle-related crashes, mostly consisting of non-fatal injuries except for 1 property-damage only accident at the corner of Highland Street and Damon Road. Based on this data, there were 3 bicyclist-motor vehicle crash clusters identified on Reservoir Street, Main Street (Route 122A), and Highland Street (Route 31).

Table 9 - 7 lists the locations of all crash clusters in Holden between 2013 and 2015. Only those locations with more than 1 accident and an EPDO rating greater than 5 in the 3-year span are listed. Note that only Main Street (Route 122A)/Reservoir Street was identified as a HSIP-Eligible Auto Crash Cluster while the other sites listed are standard, non-motorized crash clusters. As shown on Map 9 - 7, the data indicates that the highest accident locations in Holden tend to occur along the Main Street-122A corridor in the southeast portion of Town. The intersection of Main Street and Industrial Drive displays the highest crash location. The highest traffic volumes in Town are correspondingly located along this corridor.

Bicycle and Pedestrian Mobility

Providing accommodations for all transportation user types enables greater accessibility and mobility throughout the community. For instance, providing sidewalks and controlled crossings in

areas where pedestrian activity is significant or encouraged are common strategies to ensure user safety. Additionally, any segment of roadway in Town that has a paved shoulder of at least 4 feet in width is generally considered appropriate for bikeway accommodations. In Holden, pedestrian and bicycle facilities are used for both commuting and recreational purposes. This section discusses the current level of pedestrian and bicycle facilities in Holden including sidewalks, trails, paths, and bicycle accommodations.

Complete Streets

A Complete Street is one that provides for safe and accessible travel for all modes of transportation for people of all ages and abilities. While it is true that many areas have transportation systems that favor automobiles over other forms of movement, there is a growing desire to “complete” streets in a manner that serves a greater number of transportation modes. Planners, engineers, public health officials, and municipal leaders are working to build roads that are safer, more accessible, and convenient for all users. Networks of complete streets make it easier for people who rely on transit to access jobs, and providing safe places to walk encourages walking and bicycling for both transportation and recreation.

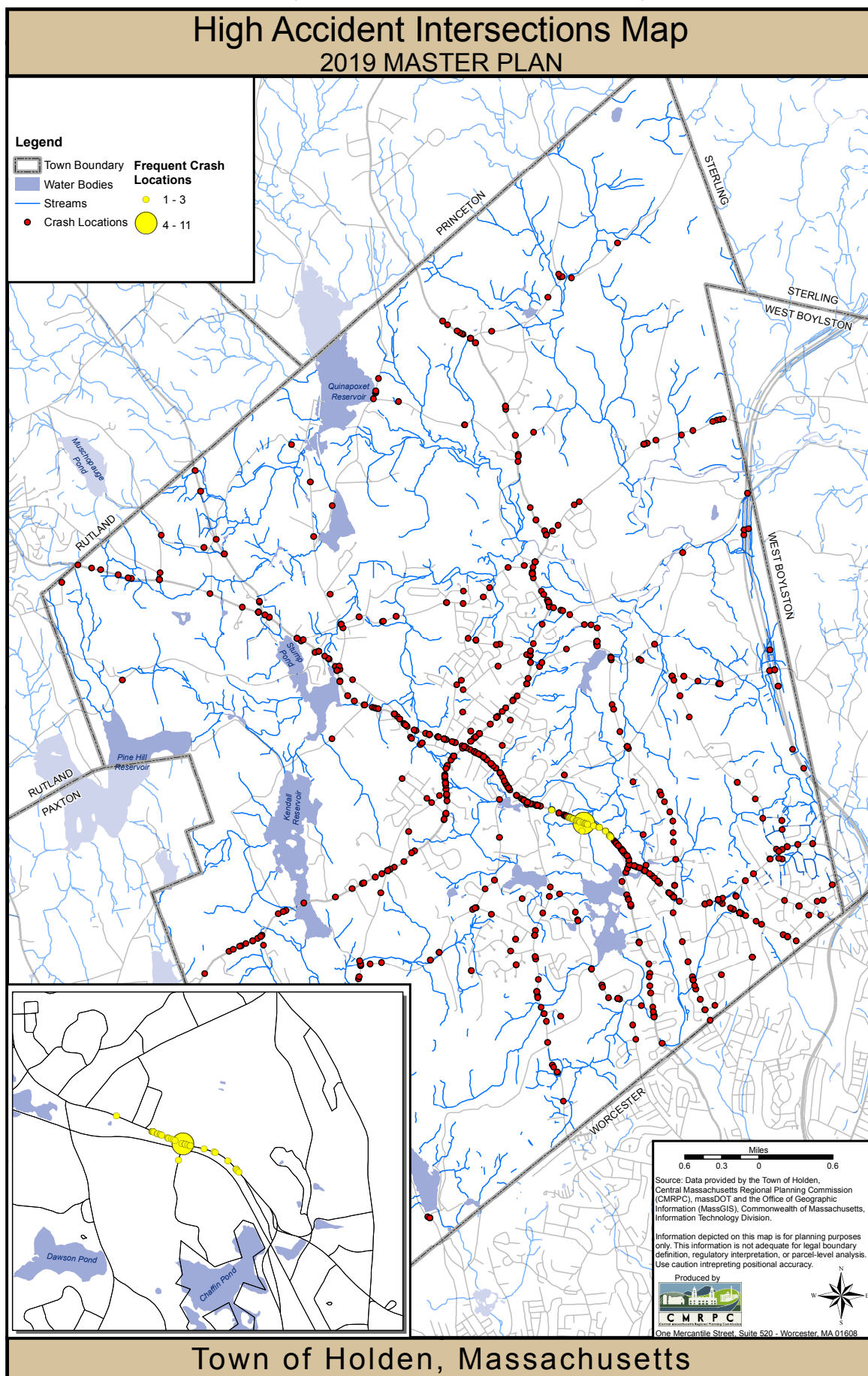
In 2013, the Town of Holden partnered with CMRPC staff to perform a Neighborhood SAFE survey, or a preliminary field assessment of conditions surrounding Town Hall and Davis Hill Elementary School on Jamieson Road. Neighborhood SAFE combines elements of Safe Routes to School (SRTS) Assessments and Road Safety Audits (RSAs) to provide communities with guidance on

Table 9 - 7: Crash Clusters in Holden (2013-2015) with EPDO greater than 5

Location	Total Crashes	EPDO	Crash Type
Main St (Route 122A) / Reservoir Street	35	63	Automobile* (HSIP-Eligible)
Reservoir St	3	15	Bicycle
Highland St (Route 31)	2	10	Pedestrian
Main St (SR 122A)	2	10	Bicycle
Highland St (SR 31)	2	6	Bicycle

*Note that only Main St (SR 122A) / Reservoir St. was identified as an HSIP-Eligible Auto Crash Cluster while the others listed are standard, non-motorized crash clusters.

Map 9 - 7: Holden Accident Intersections Map



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infrastructure issues and improvements. The assessment functioned as a precursor to Complete Streets development in town, allowing Town officials and other decision-makers to better understand the area's infrastructure and safety conditions in order to determine impediments to safe bicycling and walking.

The assessment focused on an approximately 0.5 mile radius surrounding the center of Town and the Davis Hill Elementary School. This location was selected for the initial Neighborhood SAFE project for multiple reasons: a prior request from the Town for CMRPC to host a Walkable Communities Workshop, the nearby high-crash intersection of MA-31/MA-122A, and the walkable neighborhoods around Davis Hill Elementary and the Town Center. Particular emphasis was placed on walking and biking accessibility for school-aged children. The 2013 Neighborhood SAFE assessment highlighted gaps within the sidewalk network including physical disconnections, varying sidewalk materials and width, and lack of curb-cuts on certain intersection corners which negatively impacted the travel route for walking school-age children. The study recommended a combination of infrastructure improvements, further study, traffic enforcement, and policy development.

Adopting a Complete Streets approach demonstrates a community's intention to improve quality of life for all members of the community, regardless of their neighborhood. According to the National Complete Streets Coalition, by adopting a Complete Streets policy, communities direct their transportation planners and engineers to routinely design and operate the entire right-of-way in a manner safe and access for all users, regardless of age, ability, or mode of transportation. This means that every transportation project will make the street network better and safer for drivers, transit users, pedestrians, and bicyclists – making the Town a better place to live.

In July 2017, the Holden Board of Selectmen voted to adopt a Complete Streets Policy as developed by the DPW Director John Woodsmall and DPW Senior Civil Engineer Isabel McCauley. The successful

adoption of the Complete Streets Policy completed the first step in Tier I of the MassDOT Complete Streets Program. The policy encourages Town officials to examine every infrastructure project from a Complete Streets perspective, assessing where bicycle and pedestrian mobility best practices could apply and where improvements are needed. In fact, the policy formalized the DPW's existing work such as sidewalk and ADA ramp reconstruction.

Since the adoption of the policy, Holden's DPW Department has collaborated with the Planning and Development Department and other municipal departments to implement some of the concepts outlined in the Complete Streets Policy. Holden's Complete Streets Policy is also currently being incorporated into a revision of the Town's Subdivision Control Regulations. Holden is in the process of completing a Tier II Complete Streets Prioritization Plan, which assembles a listing of complete streets projects. Once approved, the Complete Streets Prioritization Plan will allow the Town to become eligible for Tier III Complete Streets infrastructure funding. The Town will also be eligible for construction project funds after the Tier II Plan has been approved by MassDOT. Complete Streets are context sensitive in that there is no one design that fits all situations and locations. Each Complete Street project is unique and should respond to community character and need. A Complete Street may include infrastructure such as sidewalks, bike lanes or widened shoulders, transit only lanes or other amenities, crosswalks, median refuge islands, accessible pedestrian signals and roundabouts, and other traffic, pedestrian, and bicycle accommodations.

Employing a Complete Streets approach to municipal transportation networks allows for a balanced approach that considers the needs of all system users - resulting in a system that is integrated and provides safe and convenient access. By working toward a network of Complete Streets, Holden can potentially improve: safety, system efficiency, public transit, livability, transportation options, public health, energy, environmental conditions, and economic development.

Sidewalks

Sidewalks are provided in Holden along most arterial/collector roadways and some local roadways. As previously noted, VHB surveyed the condition of all roadways in Holden in 2017 as part of its Pavement and Sidewalk Management Study. VHB performed sidewalk and ADA ramp data collection efforts in tandem with the pavement data collection. The inventory includes information on the corresponding sidewalks and ADA ramps, such as the location of sidewalks along roads, cross slope, sidewalk width, type of material, ADA compliance or accessibility level, and general condition. In 2017, there were a total of 63.9 miles of sidewalks and 367 total ramps surveyed in the Town and 275 locations identified as missing ramps.

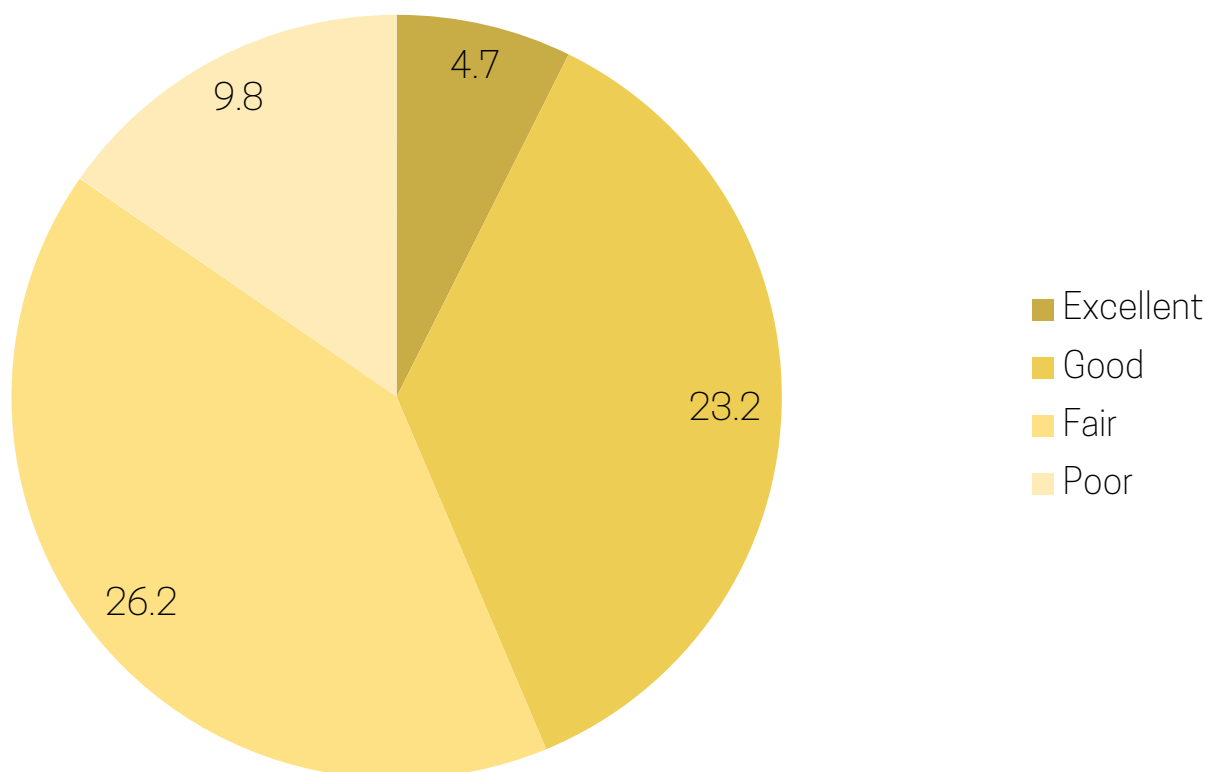
Similar to the pavement segments, the sidewalk segments are given a ranking of Excellent, Good, Fair, and Poor. Figure 9 - 5 displays how the condition of Holden's sidewalks are distributed. Similar to the

According to the 2019 Master Plan Survey results, sidewalks, crosswalks, pedestrian mobility (66%) and dedicated bike lanes (39%) received the majority of votes from residents when asked which types of transportation options the town should explore.

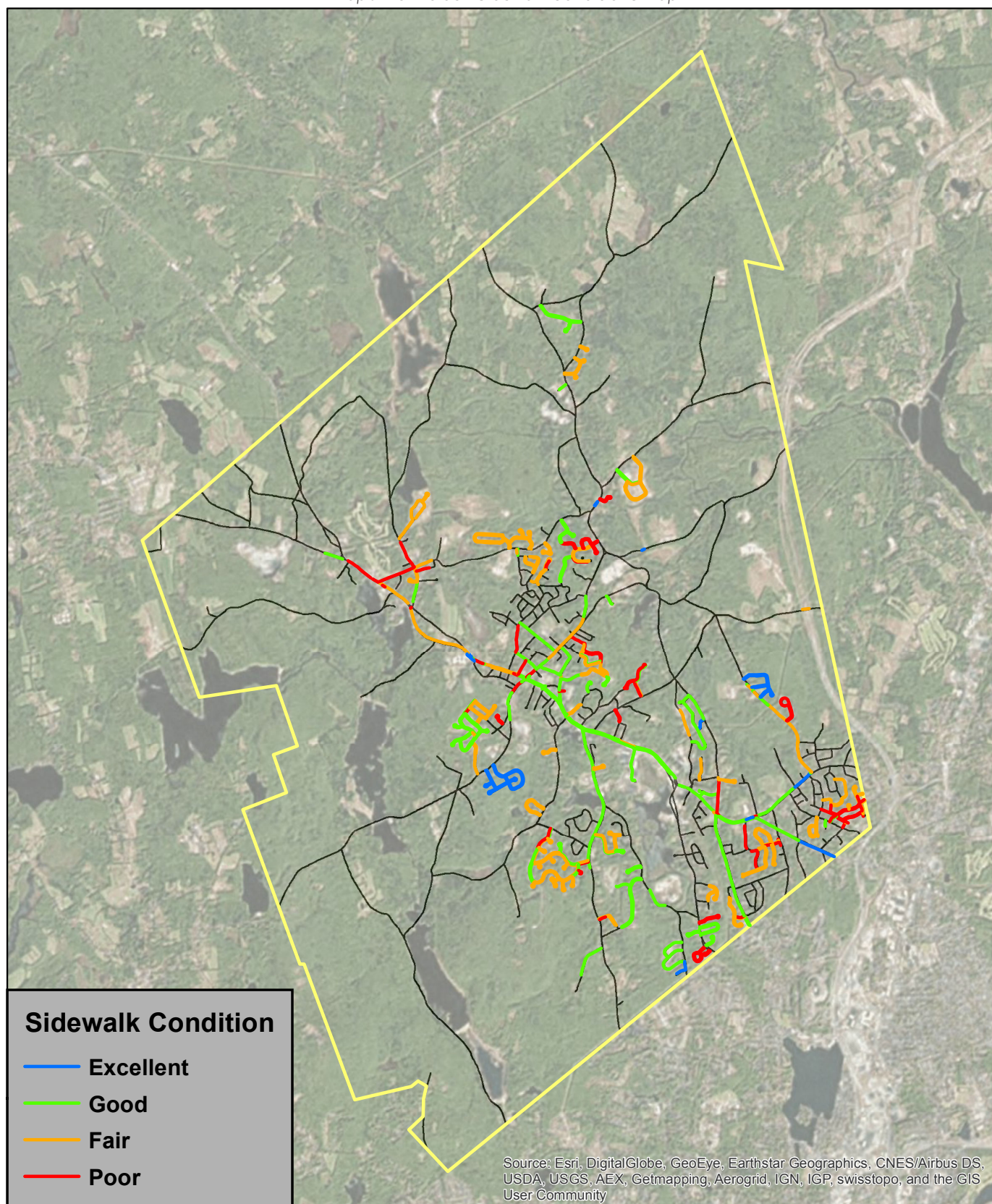
pavement conditions in town, the majority of sidewalks are in Fair (41%) to Good (36%) condition, followed by Poor (15%) and Excellent (8%). An inventory was also completed for the conditions of ADA ramps along these sidewalks using the following categories: Excellent, Good, Fair, Poor, and Missing. As noted, existing sidewalks are predominately missing ramps at appropriate locations. This amounts to 275 missing ramp sites or 43% of necessary ramps. The ADA ramps currently installed correspond with the conditions

of the pavement and sidewalks, so were found in primarily good (24%) to fair (17%) condition. Map 9 - 8 displays the Town's sidewalk conditions and Map 9 - 9 displays the Town's ramp conditions as determined by VHB. Similar to pavement, repair costs for sidewalks and ramps can be estimated. According to the study, the estimated repair backlog for sidewalks in Holden will cost \$1,858,300 and the estimated backlog for ramp repairs will

Figure 9 - 5: Sidewalk Condition in Miles (CMRPC, 2018)



Map 9 - 8: Holden Sidewalk Conditions Map



Holden Sidewalk Condition Map

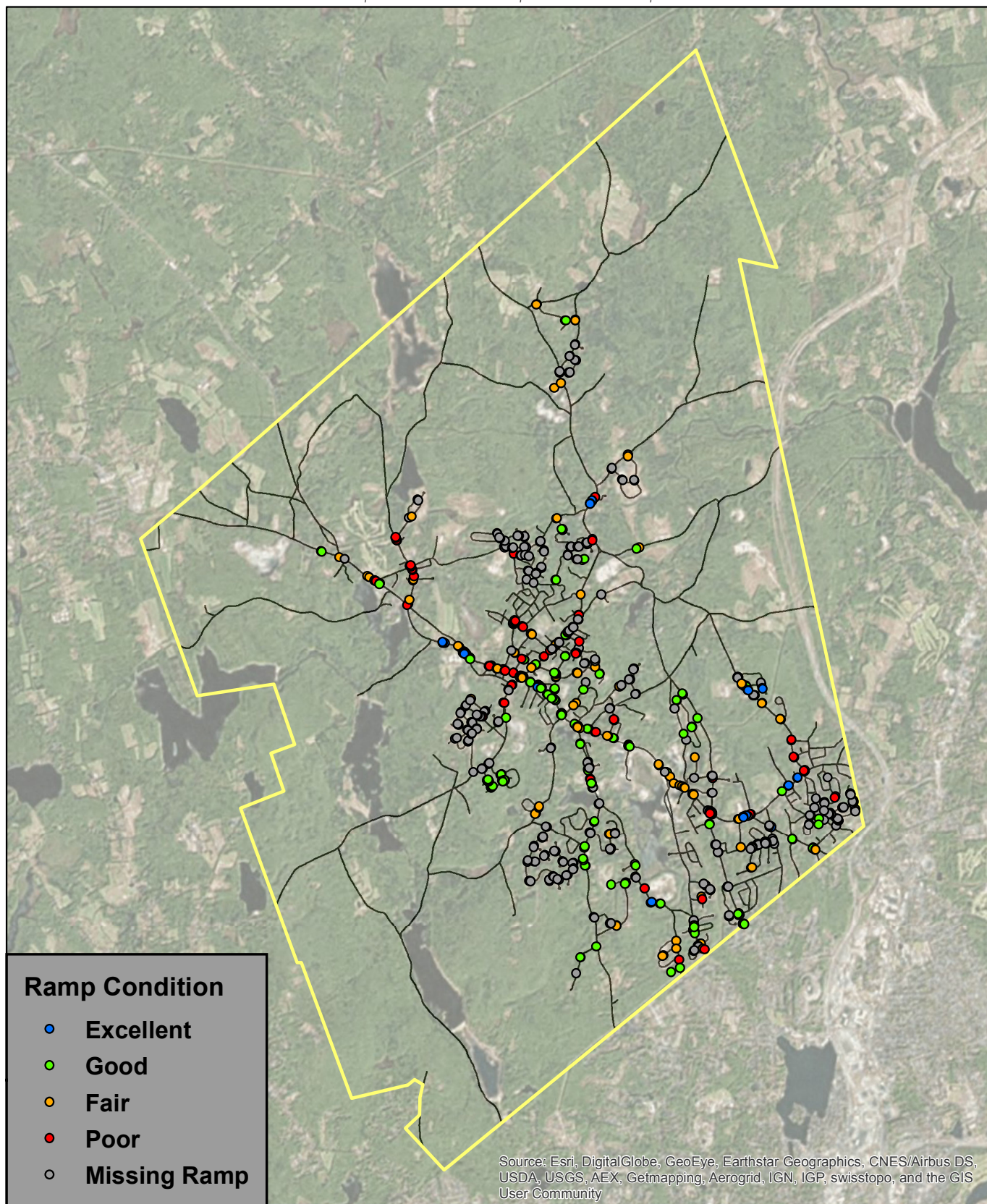


0 0.5 1 2 Miles

Produced by VHB on May 25, 2017



Map 9 - 9: Holden Ramp Conditions Map



Holden Ramp Condition Map



0 0.5 1 2 Miles

Produced by VHB on May 25, 2017



cost \$693,000. A more detailed analysis of the sidewalks and ramps in Holden can be found in the Holden Pavement and Sidewalk Report (2017).

Sidewalks in town are currently evaluated on a case-by-case basis as there is no formal sidewalk replacement plan in place. Standard Town procedures require that when a roadway is resurfaced, where necessary, any corresponding sidewalks are reconstructed in conjunction. During the winter season, the Public Works Department is responsible for plowing sidewalks along Boyden Road, Chapel Street, Doyle Road, Flagler Drive, Highland Avenue, Holden Street, Jamieson Road, Lovell Road, Main Street (Route 122A), Maple Street, Mt. Pleasant Avenue, Princeton Street, Quinapoxet Street, Reservoir Street, Salisbury Street, Shrewsbury Street, Walnut Street, Phillips Road, and Woodland Road. The sidewalk routine and winter maintenance in town is conducted following three prioritization tiers as described:

- Tier 1: Sidewalks That Are Roughly Within Half-Mile of a School
 - Tier 1 sidewalks are always maintained and/or plowed first by the Holden DPW.

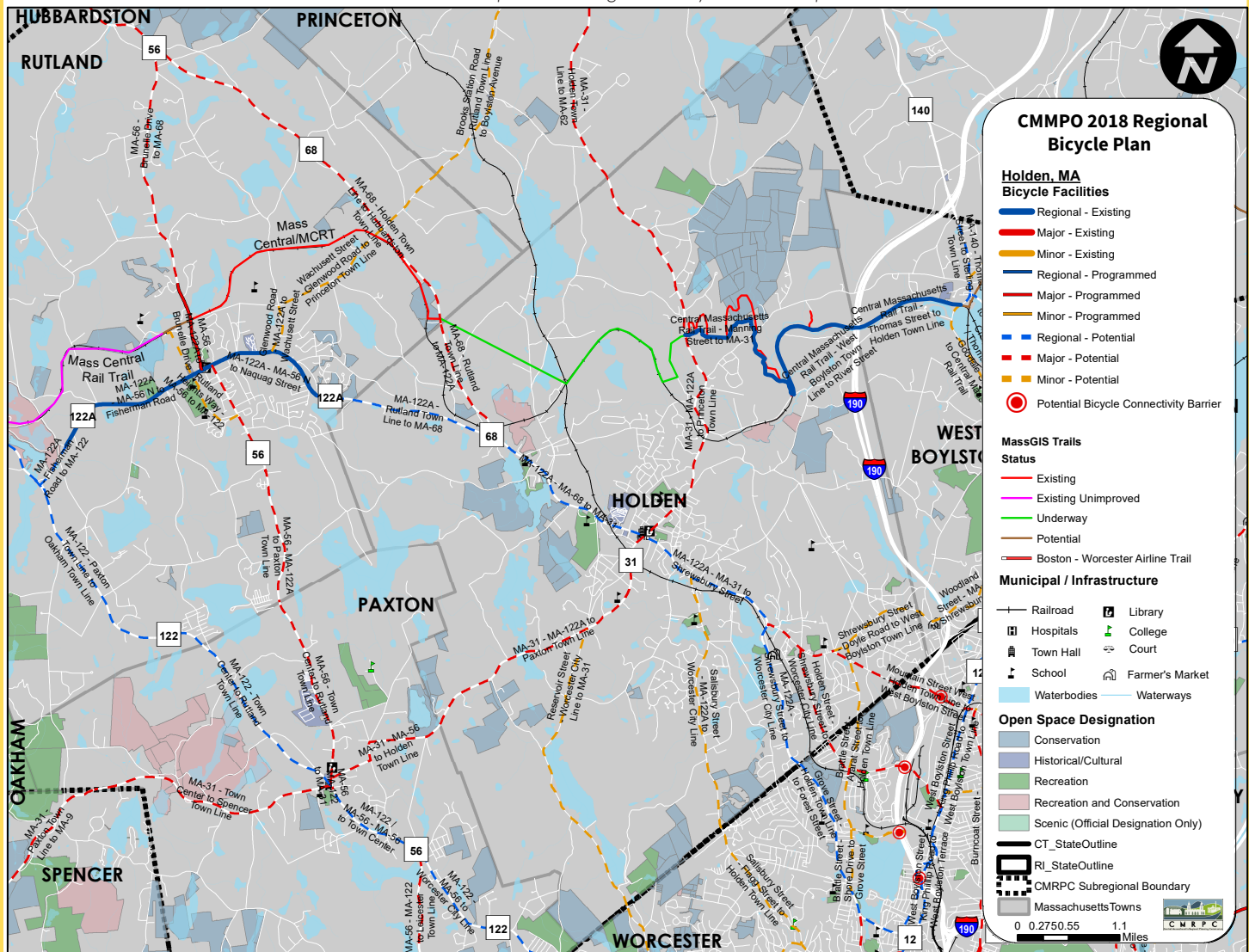
- Schools that fall under Tier 1 prioritization may be delayed if the DPW cannot maintain or clean up the sidewalks in time. There is no responsibility on the property owner to clear sidewalks within a certain timeframe.
- Tier 2: Denser Neighborhoods
- Tier 3: Remaining Sidewalks

The Master Plan (2008) recommended a sidewalk program to install new sidewalks and maintain existing sidewalks at critical locations such as elementary schools. Since then, all sidewalks were inventoried, surveyed, and ADA Compliance was accounted for as part of the PMS implementation.

Table 9 - 8: Holden Bicycle Facilities (CMMP0, 2018)

Facility Name	Location	Miles	Status	Priority
Massachusetts Central Rail Trail (MCRT) - Manning St. to MA-31	Multi-Use Pathway	1.06	Existing	Regional
MCRT - River St. to Manning St.	Multi-Use Pathway	0.96	Existing	Regional
MA-122A - MA-31 to Shrewsbury St.	Paved Road	1.71	Potential	Regional
MA-122A - MA-68 to MA-31	Paved Road	2.05	Potential	Regional
MA-122A - Rutland Town Line to MA-68	Paved Road	1.57	Potential	Regional
MA-122A - Shrewsbury St. to Worcester City Line	Paved Road	1.62	Potential	Regional
Doyle Rd. - Shrewsbury St. to Worcester City Line	Paved Road	0.83	Potential	Major
Holden St. - Shrewsbury St. to Worcester City Line	Paved Road	1.06	Potential	Major
MA-31 - MA-122A to Paxton Town Line	Paved Road	3.27	Potential	Major
MA-31 - MA-122A to Princeton Town Line	Paved Road	4.54	Potential	Major
MA-68 - Rutland Town Line to MA-122A	Paved Road	1.4	Potential	Major
Shrewsbury St. - MA-122A to Doyle Rd.	Paved Road	0.91	Potential	Major
Brattle St. - Shrewsbury St. to Worcester City Line	Paved Road	0.81	Potential	Minor
Reservoir St. - Worcester City Line to MA-31	Paved Road	3.38	Potential	Minor
Salisbury St. - MA-122A to Worcester City Line	Paved Road	2.81	Potential	Minor
Shrewsbury St. - Doyle Rd. to West Boylston Town Line	Paved Road	1.05	Potential	Minor

Map 9 - 10: Regional Bicycle Plan Map



Bicycle Facilities

Bikeways are facilities that promote and accommodate bicycle travel. Bikeway is a term for any road, street, path, or other way which is, in some manner, specifically designated for bicycle travel. Bicycle facilities do not have to be designated for exclusive use by bicycles, and may or may not be shared with other modes of transportation. Bikeways include on-street facilities that accommodate the use of bicycles within the right of way, whether they are intended to share a lane with motor vehicle traffic or are provided designated lanes. As shown on Map 9 - 10 and Table 9 - 8 there are 2.02 total miles of existing bicycle facilities in Holden, compared to 27.01 total miles of potential bicycle facilities.

Multi-Use Pathways

Regional and multi-use corridors connect various centers of activity throughout the region to one another. They are envisioned to provide connectivity between jurisdictions across a larger geographic area. Connected facilities that are usable for all groups and ages will also lead to a greater range of appeal. Separated, multi-use pathways such as rail trails, greenways, are helpful to users who do not have the experience level of daily cycling commuters, as well as those that use alternative mobility devices. These corridors may be located along arterial and collector roadways or take the form of multi-use pathways, such as the Massachusetts Central Rail Trail (MCRT). The MCRT is a public trail proposed along a 104-mile former railroad corridor from Northampton to Boston. The former rail line runs through the northern section of

Holden connecting to Rutland and West Boylston. As noted in Table 9 – 8, the existing bicycle facilities in town include two segments of the MCRT near Manning Street (1.06 miles) and River Street (0.96 miles), which function as regional connections to neighboring towns. To date, there are approximately 5.2 miles of the rail trail built in Holden, extending from MA-31 to the West Boylston Town line (see Table 9 - 9). There are 4 miles of rail trail being considered for multi-use regional connections from the Rutland town line to MA-31. It is important that the Town coordinate with MassDOT and DCR to ensure that regional multi-use trails and pathways are advanced to meet the needs of subregional and regional travel via alternative modes. For detailed information on MCRT and its uses, see Chapter 7: Open Space and Recreation.

Transit

In Massachusetts, there are 15 Regional Transit Authorities (RTAs) and the Massachusetts Bay Transportation Authority (MBTA) that provide public transportation services to their member communities. Holden is a member community of the Worcester Regional Transit Authority (WRTA) and receives paratransit services for eligible residents. Holden no longer receives fixed-route transit service provided by the WRTA. The same year as the original Master Plan was written, WRTA Route 32 was eliminated. WRTA Route 14 was repurposed in 2013 to remain within Worcester.

Route 32 served Worcester and Holden, including the Holden Industrial Park, Town Hall, and Wachusett Regional High School, with limited trips during the peak commuting hours. Route 32 was eliminated due to low performance and budget restrictions. Route 14 served Worcester and Holden, ending at the intersection of Brattle Street and Shrewsbury

Street. Due to low performance, the WRTA altered the route to remain within Worcester and no longer operate west of the intersection of Pullman Street and Mountain Street West in Worcester.

Holden receives paratransit services operated by the Holden Council on Aging (COA), under contract with the WRTA. Service is available to residents who qualify; those who are 60 years of age or older, or persons with a disability (regardless of age). In-town transportation is available Monday through Friday from 9:30 AM to 1:30 PM. Out-of-town transportation (one town out from Holden) is available Monday through Friday with hours varying between 8:45 AM to 2:30 PM. Transportation is provided on a reservation basis and rides are scheduled on a 48-hour advanced notice.

In Fiscal Year 2018, the Holden Council on Aging (COA) provided over 2,100 passenger trips.³ On average, the COA completes 175 passenger trips per month, or nearly nine passenger trips per day of service (see Figure 9 - 6). Of the nine individual COA’s that provide paratransit services within the WRTA service area, Holden ranks eighth in total passenger trips provided in FY 2018. Holden ranks 3rd of the same 9 communities in total population.

Over the past 10 years, the Holden Council on Aging has provided an average of 2,800 passenger trips annually (see Figure 9 - 7). With a high of 3,780 trips in FY 2010 and a low of 2,102 trips in FY 2018, passenger trips decline by an average of 6% each year. The WRTA, along with peer agencies locally and nationally, have been experiencing a period of declining ridership over the past few fiscal years. Much of the ridership decrease is focused on the fixed-route system versus the paratransit system. Historically, WRTA paratransit ridership does not

Table 9 - 9: Holden Multi-Use Facilities Recommendations (CMMP0, 2018)

Facility Name	Location	Miles	Status	Priority
MCRT	MA-31 to West Boylston Town Line	5.2	Existing	Regional Multi-Use
MCRT	Rutland Town Line to MA-31	4	Considered	Regional Multi-Use

³ Holden Council on Aging; Worcester Regional Transit Authority
<https://www.mass.gov/service-details/chapter-90-past-apportionment>

Figure 9 - 6: Holden COA Passenger Trips (FY 2018)

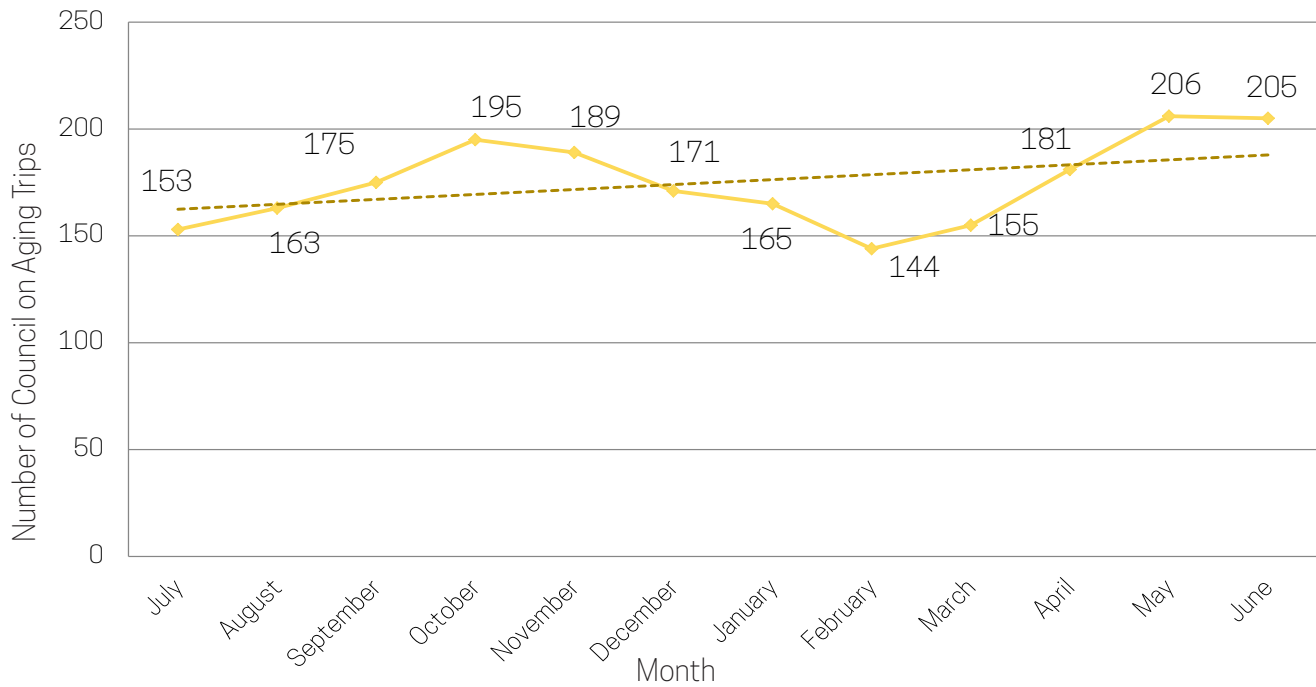
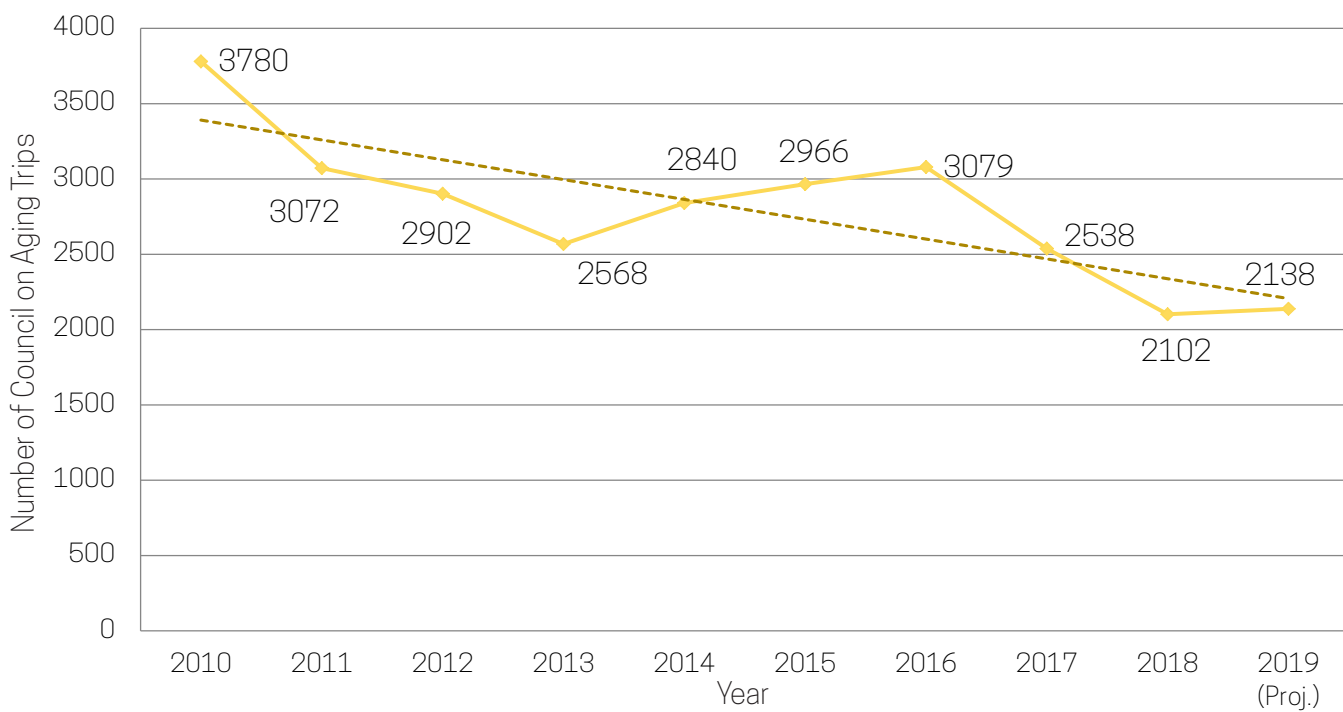


Figure 9 - 7: Holden COA Passenger Trips (Holden COA, 2018)



fluctuate greatly, ranging between 3% annual increase or 4% annual decrease.

The WRTA completed a Comprehensive Service Analysis (CSA) plan of its fixed-route network in 2015. The plan examined the existing service provided by the WRTA, identified potential areas of future expansion, and provided recommendations on how to improve service. Holden was identified as one of 5 communities in the CSA that are areas of potential high transit demand not currently served by WRTA fixed-route service. The area of potential high transit demand identified in the plan largely focuses on the population and employment needs of the Main Street corridor (Route 122A) from Shrewsbury Street to Wachusett Regional High School. Map 9 - 11 displays the level of potential transit demand across town, indicating higher demand in the southern portion of Town, primarily within the Town Center.

Nearly half of the Master Plan Community Survey respondents reported they would not use public transportation if it were available in Town because they prefer to use their own vehicle or have access to alternative modes of transportation. This is compared to 13% of respondents who would use public transportation, if available in Town, and 34% of respondents who were unsure and would need more information first. In 2018, the Tufts Health Plan Foundation and the University of Massachusetts Boston published the Massachusetts Healthy Aging Data Report. In the report, Community Profiles of all municipalities across the Commonwealth discuss 179 indicators of individual and community health, with state comparisons for each variable. According to the Holden's 2018 Healthy Aging Profile, nearly 89% of residents age 65 and older own a motor vehicle compared to 82% statewide. Additionally, there are approximately 30% of licensed drivers age 61 and older, compared to 29% statewide. This data, combined with the survey results, show that Holden residents are dependent on automobiles and prefer to drive themselves to their destinations.

Currently, there are no plans to provide fixed-route transit service to Holden. However, WRTA planning

staff continue to monitor the Town and work with the community to determine the potential need/demand as part of its long-range planning efforts.

Transportation Network Companies (TNCs)

In Massachusetts, rideshare companies such as Uber or Lyft are referred to as Transportation Network Companies (TNCs). The current form of rideshare services are provided as a curb-to-curb on-demand ride service, in which customers request a ride through a smartphone application. Trips are operated in a privately-owned vehicle, and are generally not shared services. In 2017, the Massachusetts Department of Public Utilities (DPU) released trip count data provided by TNCs, as required by law. Nearly 9,000 TNC trips originated within Holden, and over 10,000 TNC trips traveled to Holden as its destination. (Massachusetts Department of Public Utilities (DPU), 2018) Compared to other Massachusetts communities with a similar population size, Holden ranked in the lower third of total TNC trips completed in 2017 (see Figure 9 - 8).

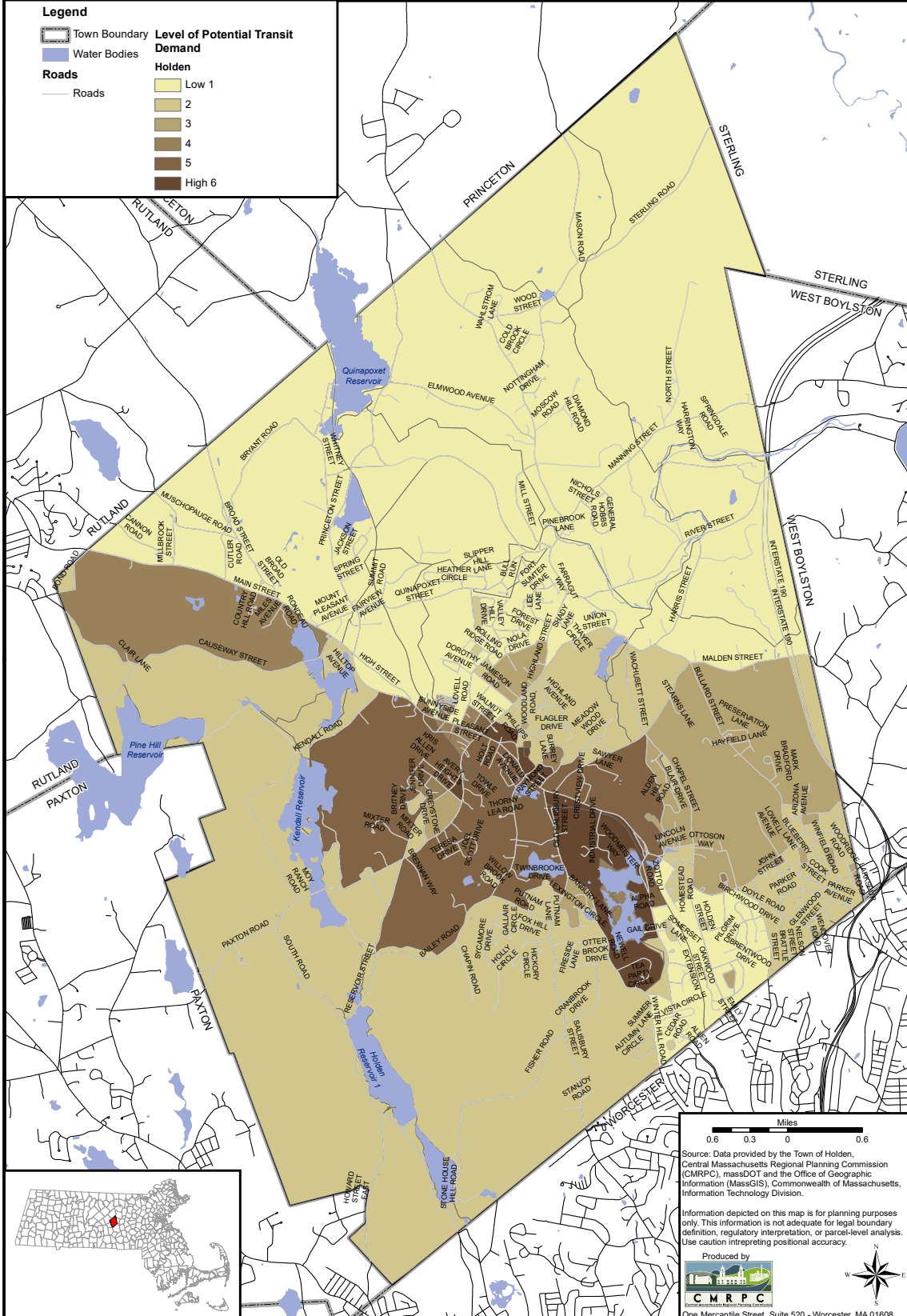
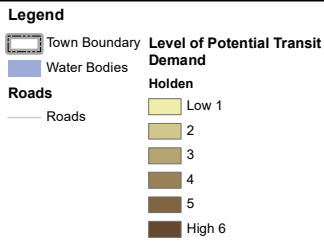
From the Master Plan Community Survey results, just over half of residents (51%) indicated that they have never used rideshare applications such as Uber or Lyft, compared to nearly a third of residents (31%) who sometimes use rideshare. One out of ten (10%) respondents would consider using rideshare as a transportation option. As TNCs continue to evolve, additional data from future Massachusetts DPU Rideshare reports will be needed to determine the local impact to Holden. In some of the country's largest metropolitan areas (Boston, San Francisco), TNCs have increased both traffic volume and vehicle miles traveled, and created competition for taxicabs and public transportation.⁴

Road Network Funding

Local road networks are a multi-million-dollar taxpayer investment that directly influences a municipality's economy and quality of life. Therefore, the prioritization of pavement system maintenance is very important. The Massachusetts

⁴ Schaller, Bruce "The New Automobility: Lyft, Uber and the Future of American Cities." Schaller Consulting. Brooklyn, New York (2018) <http://www.schallerconsult.com/rideservices/automobility.pdf>

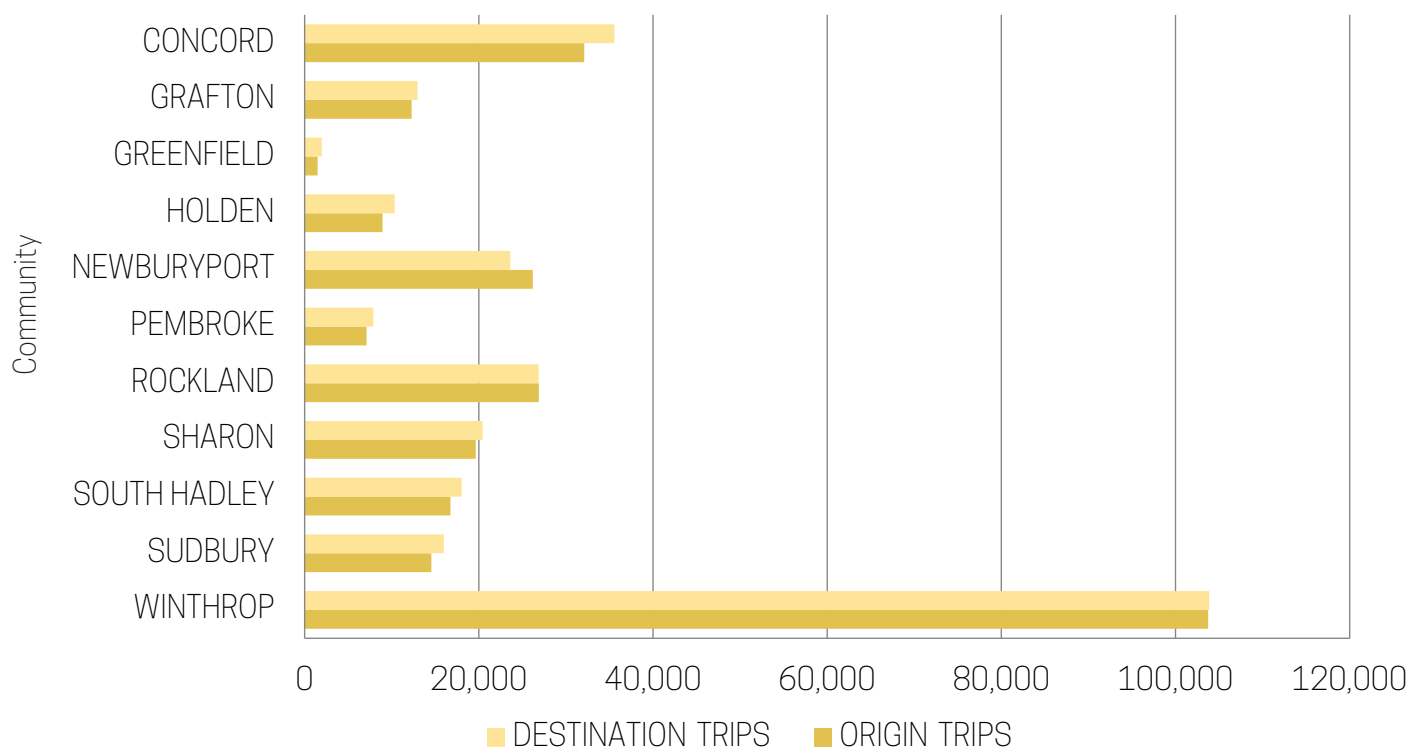
Level of Potential Transit Demand 2019 MASTER PLAN



Town of Holden, Massachusetts

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Figure 9 - 8: Rideshare Trip Counts by Community (DPU, 2017)



Chapter 90 Program is a State funding program directed by MassDOT that reimburses towns for “maintaining, repairing, improving and constructing town and county ways and bridges which qualify under the State Aid Highways Guidelines adopted by the Public Works Commission.” The funds may be used for construction and preservation work to extend the life of capital facilities, bikeways, salt sheds, road building equipment, and garages for the storage of road building equipment. Chapter 90 funds are allocated annually and based on a formula developed by the Legislative Rural Caucus of the Transportation Committee. This formula uses 3 weighted categories to determine the percentage of the total allocation each town will receive. The categories include: Roadway mileage (58.33%), Population (20.83%) and Employment (20.83%).

Based on this formula, with a population of 17,346 people, employment figure of 3,863 people, and a road network of 116.81 miles, Holden received approximately \$613,619 of Chapter 90 funds in FY 2017. Figure 9 - 9 shows Holden’s Chapter 90 apportionments over the past 10 years (note that the spike in 2015 represents extra funding provided as a result of extreme winter conditions).

(MassDOT, 2019) For FY 2019, the statewide funding pool was \$200,000,000 and Holden’s portion of that total was \$615,739.⁵ In October of 2018, Governor Baker released an additional \$40,000,000 in Chapter 90 funding, of which Holden received \$123,148, bringing the FY2019 Chapter 90 funding to \$738,887. Figure 9 - 10 shows the Chapter 90 funds allocations to the surrounding towns for FY 2019. Since budgets are often limited, it is necessary for a municipality to identify a series of factors when making pavement management decisions, including the current condition of the roadway network, prioritization schedule of repairs, best practice techniques, and most importantly, the projected long-term consequences if the repairs are delayed or deferred. If a new road is accepted by the Town, the road mileage portion of the calculation will increase, and with it, potentially, increasing the Town’s Chapter 90 funding. For this to happen, any time a new road is accepted by the Town, the MassDOT RIF must be updated. However, to prevent unforeseen liabilities, Holden should first ensure that any newly accepted roads are built to the proper standards.

⁵ <https://www.mass.gov/service-details/chapter-90-past-apportionment>

Figure 9 - 9: Town of Holden Chapter 90 Funding by Year (CMRPC, 2018)

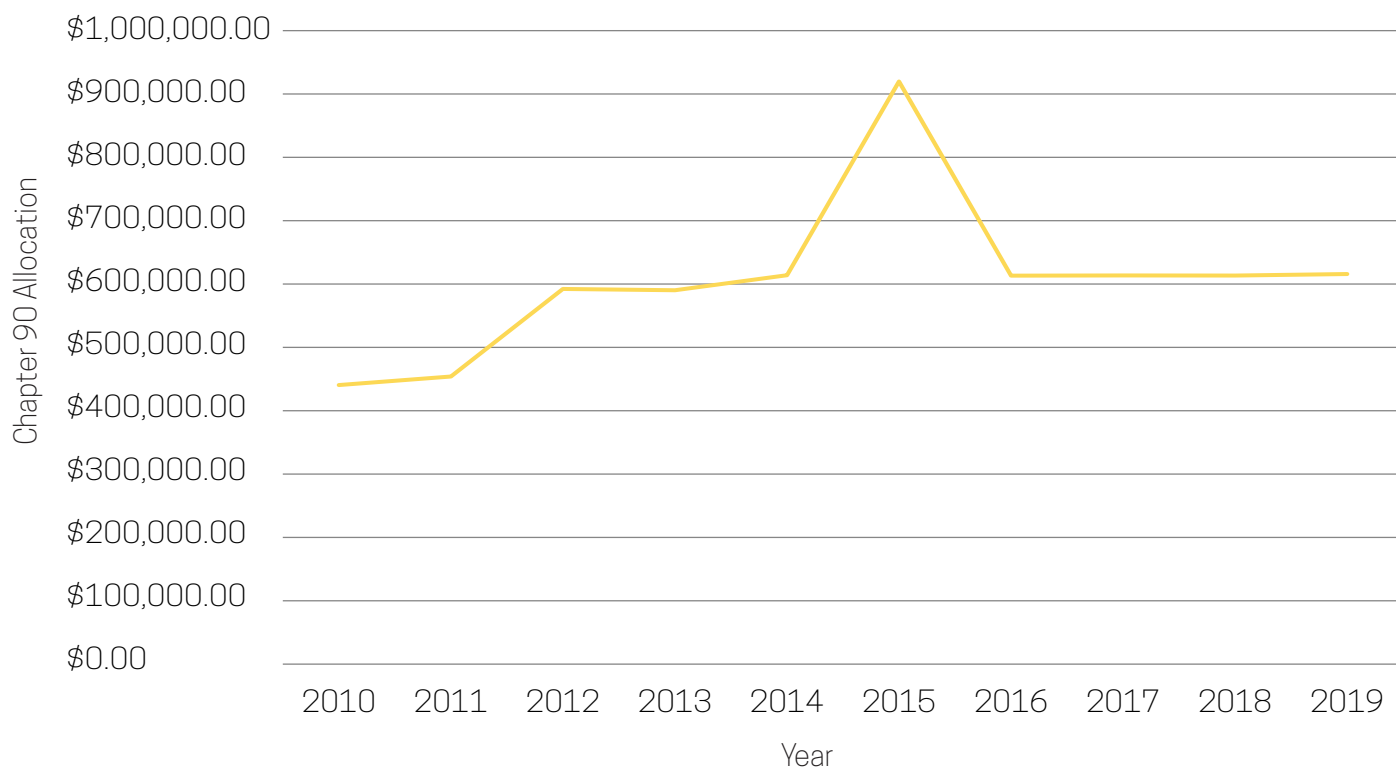
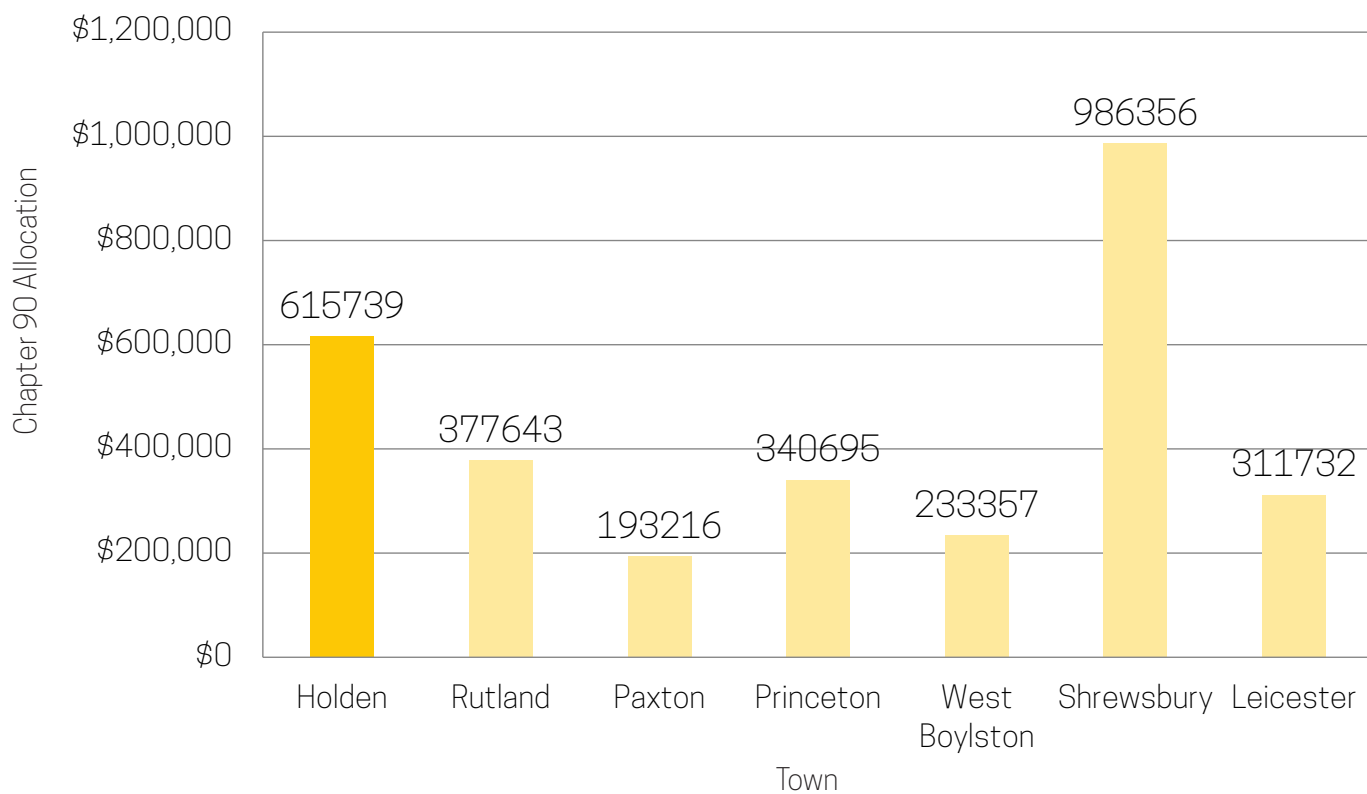


Figure 9 - 10: Chapter 90 Funding for Surrounding Towns (MassDOT, CMRPC,



ISSUES AND OPPORTUNITIES

The issues and opportunities in the following section were identified through a review and analysis of priorities identified in previous reports, current data, as well as needs expressed through the Master Plan public outreach efforts. Through these outreach efforts, Holden residents were able to voice their ideas, needs, and concerns about transportation in town. Among the many responses, several themes stood out, which include:

The need to maintain the current transportation infrastructure.

The need to increase safety and the availability of pedestrian and bicycle facilities around town, particularly in the Town Center area.

The potential expansion of transit access through the Worcester Regional Transit Authority or the Pioneer Valley Transit Authority.

Traffic Congestion and Safety

A combination of safety data and community observations evidence that the Town Center, or intersection of Route 122A/31, is a frequent crash location. Residents who completed the Master Plan Survey reported that the intersection of Main Street and Route 31 is the most difficult area to navigate, followed by the Main Street/Shrewsbury Street intersection and the Chapel Street/Holden Street intersection along Shrewsbury Street (see Map 9 - 12 and Table 9 - 10). The current traffic signal for Main Street southbound only provides a solid green light and lacks a turn-only green arrow. Residents reported this as a significant issue because vehicles cannot safely make the left onto Highland Street while other cars travel northbound on Main Street due to typical speeds.

The Intersection of Route 122A/31 is an HSIP-eligible intersection and could benefit from HSIP target funding as have various areas and intersections throughout the region in the past. Communities that wish to pursue HSIP funding for a project to improve safety at any of the locations included in the regional priorities list will need to perform a Road Safety Audit (RSA). The Federal Highway Administration defines a Road Safety Audit (RSA) as the formal examination of an existing or future road or intersection by an independent, multidisciplinary team. The purpose of an RSA is to identify potential safety issues and possible opportunities for safety improvements considering all roadway users.

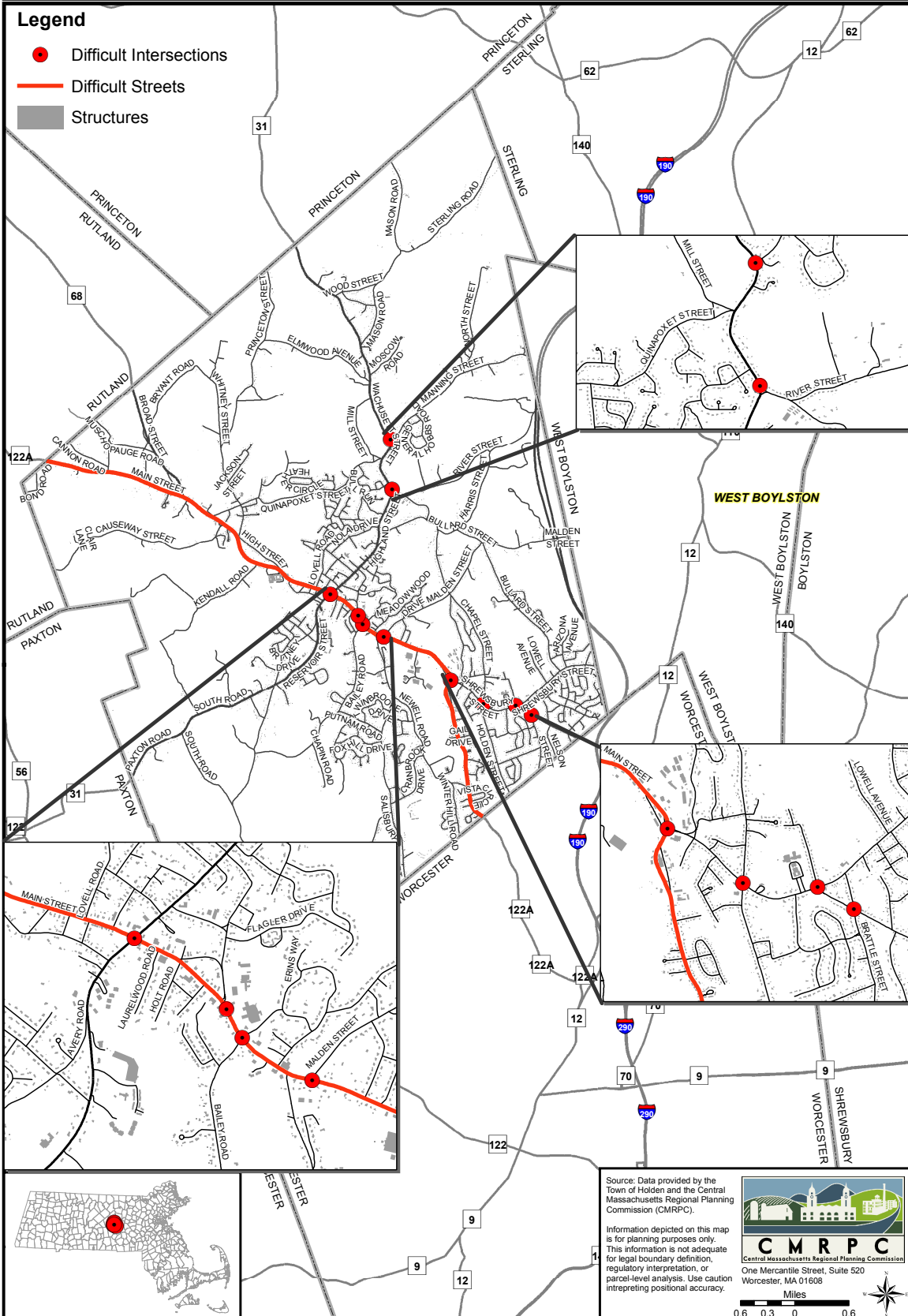
Table 9 - 10: Most Difficult Areas/Intersections in Holden (Holden Master Plan Survey Results, 2018)

	No. Resident Responses
Main St and Route 31	135
Main St and Shrewsbury St	56
Chapel St and Holden St along Shrewsbury St	37
Mayo Dr and Bailey Rd along Main St	20
Manning St and Route 31	19
Post Office	16
Wachusett St and Highland St	14
Shrewsbury St and Doyle Rd	12
Brattle St and Doyle Rd	12
Malden St and Main St	12

Most Difficult Areas/Intersections Survey Results 2019 MASTER PLAN

Legend

- Difficult Intersections
- Difficult Streets
- Structures



Town of Holden, Massachusetts

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Source: Data provided by the Town of Holden and the Central Massachusetts Regional Planning Commission (CMRPC).

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis. Use caution interpreting positional accuracy.



Central Massachusetts Regional Planning Commission
One Mercantile Street, Suite 520
Worcester, MA 01608



As previously noted, the most recent CMRPC travel demand model (2017) identified 3 roadways in Holden as currently or projected to be congested including: Route 122A from Route 140 (Shrewsbury Street to Mount Pleasant Avenue), and Shrewsbury Street from Doyle Road to Main Street. Additionally, Doyle Road from Shrewsbury Street to the Worcester City Line is projected to be congested by the year 2040. As shown on Table 9-10 these areas also reflect those reported by residents in the Master Plan Survey as a difficult to navigate, such as the Doyle Road and Brattle Street intersection.

Currently the Town is in the initial development stages of a potential TIP project: Shrewsbury Street from Main Street to Doyle Road, including a small portion of Doyle Road to Brattle Street (approx. 1.3 miles). This project includes resurfacing and the new roadway design will include components of a complete street such as accommodations for vehicles, pedestrians, and bicyclists throughout the corridor. The project is in the concept stages and the Town will be seeking PNF/TIP development from CMRPC. Holden is also working with MassDOT regarding a loop detection system at both approaches on Route 31.⁶ Other potential next steps include further study and identification of potential alternative designs for the Town Center including (but not limited to) a roundabout or rotary, or hybrid of both. Additionally, once MassDOT approves Holden's Complete Streets Tier 2 Prioritization Plan, the Town will be eligible to apply for Tier 3 infrastructure funding to implement traffic and safety improvements such as installation of traffic light signalization, intersection reconstruction, traffic calming measures, pedestrian signal timing, and more.

Regarding parking, the majority of residents who took the

survey do not believe there are parking issues in Town. However, there are a moderate number of residents that reported parking challenges and identified specific areas that offer limited availability or make parking difficult in Town:

- Town Center/Main Street corridor especially during Holden Days and other Town events
- Senior Center
- Wachusett Street
- School parking
- Small business parking
- Challenges with the overnight parking ban

Currently there is a small provision in the Holden Zoning Bylaw under parking requirements and standards that allows for reduction in the number of parking spaces for a proposed development. Although the provision is not often utilized, Walgreens and Holden Dental located on Main Street incorporated this provision in their developments. In order to better understand the observed parking challenges, it is recommended that the Town work with a consultant to conduct a parking study. This would include data collection and assessment

of existing parking supply and demand for public and private lots, as well as on-street parking. In addition to collecting the baseline data of existing parking supply, staff would coordinate a utilization study or parking occupancy counts, which can be scheduled during Special Town Events and/or a regular session to examine parking demand in various parts of Town. CMRPC has experience with conducting parking studies previously for Downtown Worcester, and staff are currently working with the Town of Westborough on Phase I and the City of Worcester on Phase II of their parking studies. Note that the inventory data collection for Westborough

Residents who took the 2019 Master Plan Survey reported the following Top 3 Holden Priority Transportation Issues:

Congestion (88%)

Road/Bridge Conditions (74%)

Transportation Access for Aging Populations (61%)

⁶ Loop detection systems are detectors on stoplights that support traffic flow.

was conducted through District Local Technical Assistance (DLTA) funds. Both Worcester and Westborough have received EEA grants to support a Phase II comprehensive zoning analysis to update and implement the State's Smart Parking Toolkit in their parking requirements/traffic regulations.

Transportation Access for Youth And Seniors

Residents expressed concern over transportation access for youth and seniors within the community, especially regarding the safety implications. For instance, the Early Childhood Center (ECC) located on Main Street nearby Mt. Pleasant Avenue experiences safety issues with the traffic light in front of the building. The area is very challenging to navigate; it is safer to turn onto Main Street southbound, and turnaround somewhere else, if you want to take Main Street northbound from the school. The traffic light is for the school and is only activated with the crosswalk signal, not with the flow of traffic. The intersection of Main Street/Princeton Street has curvature issues and is another extremely difficult intersection for community members, and particularly students, to navigate. In 2014, there was a severe accident on Main Street and Princeton Street where a student was critically injured in front of Pizza 17 while exiting Princeton Street onto Main Street. Several Wachusett Regional School District buildings are located along Main Street and experience heavy traffic flow, as there are many vehicles going in and out of the school buildings. Additionally, increased student enrollment has often resulted in delayed school arrival/dismissal periods.

The Massachusetts Safe Routes to School (SRTS) Program promotes healthy, active transportation modes for children and their parents in their travel to and from school. The SRTS Program works to increase safe biking and walking among elementary and middle school students by using a collaborative, community-focused approach that bridges the gap between health and transportation. SRTS utilizes the 6 E's to implement its program: Education, Encouragement, Enforcement, Evaluation, Engineering, and Equity. The Massachusetts SRTS Program is sponsored by MassDOT with funds from the Federal Highway Administration, and SRTS

partner schools may qualify for infrastructure project grant funding. Funding is only available to schools that have been partnered with the SRTS Program for at least 6 months.

Once schools become a Safe Routes to School Partner, MassDOT will conduct assessments of the relevant infrastructure, after which Partner Schools will become eligible to apply for capital improvement projects. All proposed projects must be within 2 miles of a school and that school must serve at least 1 grade that falls between Kindergarten and the 8th grade. School partners also receive year-round pedestrian and bicycle safety education instruction, as well as engagement initiatives tailored to meet each school's health, safety, and environmental priorities. Since the SRTS Program was launched in 2006, 29 infrastructure project grants were awarded across the Commonwealth, totaling over \$16 million in construction funds to improve safer routes for children to walk and ride bicycles to and from school. Currently, neither the Town of Holden nor the Wachusett Regional School District have any schools partnered with the SRTS program.

Regarding older adults, more than half of Master Plan Community Survey respondents (61%) reported that Transportation Access for Aging Populations is one of the Top 3 Transportation Priorities in Town. It recommended that the Town improve connectivity of public spaces between the Holden Senior Center and the 80-unit age-restricted housing development at 68 Reservoir Street/Route 31. The housing development and Senior Center are only 0.4 miles apart from one another, but the current route of travel for pedestrians is tough to navigate and does not provide many areas to pause for older adults. Currently, residents traveling from Reservoir Street are forced to cross the street at least 3 times to get to the Senior Center. A new sidewalk on Reservoir Street on the same side as the housing development would be an immediate need, as well as a crosswalk and rapid flashing beacon in front of the Senior Center entrance on Main Street. These improvements can be funded through the Complete Streets program.

As previously noted, the Holden COA ridership data indicates that this particular service is performing lower than other towns. On average, the Holden COA

completes about 175 passenger trips per month, or nearly 9 passenger trips per day of service. Of the 9 individual COA's that provide paratransit services within the WRTA service area, Holden ranks eighth in total passenger trips provided in FY 2018; however, Holden ranks third amongst the same 9 communities for total population. The WRTA, along with peer agencies locally and nationally, have been experiencing a period of declining ridership over the past few fiscal years. Much of the ridership decrease is focused on the fixed-route system as opposed to the paratransit system. Historically, WRTA paratransit ridership does not fluctuate greatly, ranging between 3% annual increase or 4% annual decrease.

Holden was identified as 1 of 5 communities in the WRTA Comprehensive Service Analysis (CSA) Plan (2015) as an area of potential high transit demand that is not currently served by WRTA fixed-route service. The area identified in the CSA Plan largely focuses on the population and employment needs of the Main Street corridor (Route 122A) from Shrewsbury Street to Wachusett Regional High School.

Based on the Master Plan Survey Results, when asked about additional municipal services or facilities, public transportation or bus service to Worcester received wide support. One respondent indicated additional transportation options for residents who can no longer drive because the "elder vans are very limited as to where they will go." Another respondent noted that the senior classes during the evening at the Senior Center, in addition to employed seniors, could benefit from increased transportation access. However, within the Transportation section of the Master Plan Survey, nearly half of respondents reported they would not use public transportation if it were available in town because they prefer to use their own vehicle or have access to alternative modes of transportation. This is compared to 13% of respondents who would use public transportation, if available in town, and 34% of respondents who were unsure and would need more information first. The survey results show that Holden residents are dependent on automobiles and prefer to drive

themselves to their destinations. Yet there remains about a third of respondents who are open to the idea of public transportation if Holden, the WRTA, and/or CMRPC provided more information on what this would look like in Holden.

There is a unique opportunity for the Holden COA to engage with the WRTA and explore opportunities to maximize the uses of its existing local paratransit service. Through further study and analysis, the Town and Senior Center can work with the WRTA to identify potential improvements to support the COA van service and increase local ridership, such as identification of additional routes and/or local destinations. Due to the general interest in increased public transportation, the Town may want to conduct public outreach in order to increase visibility and resident awareness around COA vans and general public transportation (CMRPC can assist). Following this, the Town may want to consult with the WRTA to pilot a small program using the existing infrastructure to test the community's usage and response.



GOALS, OBJECTIVES AND ACTION ITEMS

The Master Plan recommends the following action items based on the goals and objectives crafted with careful consideration of the public outreach results, analysis of current conditions, and progress achieved since 2008. The action items accompanying the objectives will also be reflected in the Implementation Chapter (Chapter 11).

Goal 9.1: Maintain and improve the condition of Holden's transportation network.

Objective 9.1.1: Maintain high quality roads.

- **Action Item 9.1.1.1:** Continue the existing road survey program using the Pavement Management System (PMS) tool to help determine road maintenance and funding needs.

- **Action Item 9.1.1.2:** Continue internal tracking of roadway conditions within the existing Pavement Management System (PMS) tool.

Objective 9.1.2: Maintain a connected and accessible sidewalk system that is useful to everyone.

- **Action Item 9.1.2.1:** Continue a sidewalk and Americans with Disabilities Act (ADA) ramp survey program using the Pavement Management System (PMS) tool to help determine sidewalk/ ramp maintenance funding needs.
- **Action Item 9.1.2.2:** Continue internal tracking of sidewalk/ADA ramp conditions using the PMS tool.
- **Action Item 9.1.2.3:** Review Holden's policies, programs, services, and facilities and develop an ADA/Section 504 Self-Evaluation and Transition Plan.

Objective 9.1.3: Maintain safe bridges that accommodate necessary traffic.

- **Action Item 9.1.3.1:** Continue to develop and then implement a bridge inventory and capital plan.

CAPITAL ITEMS

Implement Road Maintenance Program as outlined in Pavement Management System

Improve ADA Ramps and Sidewalk Repair, Replacement and Expansion as outlined in Pavement Management System and Complete Streets Policy

Implement transportation (sidewalk and ramp) aspects of ADA/ Section 504 Transition Plan

Implement future Bridge Capital Plan and Replacement

Ensure that sidewalks and bike lanes areas are clear of obstructions so that all users may safely use them; may require relocation of utility structures

Add marked bike facilities to roadways with excess shoulder capacity

Implement the recommendations in the CMMPO Regional Bicycle Plan in coordination with all planned roadway improvements

- **Action Item 9.1.3.2:** Develop a bridge capital plan.

Goal 9.2: Explore options to alleviate traffic on Main Street (Route 122A), arterial and collector streets.

Objective 9.2.1: Explore options to improve road safety on state-owned Main Street (Rt. 122A) for all users.

- **Action Item 9.2.1.1:** Coordinate with MassDOT, owner of Main Street (Route 122A), to conduct an updated assessment of the area including a Road Safety Audit, traffic study or other survey work.
- **Action Item 9.2.1.2:** Ensure that signage, poles, and other structures do not impede safe multi-modal access.
- **Action Item 9.2.1.3:** Expand public education campaigns that promote the rules of the road so that all transportation system users are aware of their responsibilities.
- **Action Item 9.2.1.4:** Work to incorporate Safe Routes to School materials and practices into local education systems.
- **Action Item 9.2.1.5:** Consolidate driveways when possible to reduce access points and provide better visual cues including clear markings for exit and entrance only.

Objective 9.2.2: Explore options to improve road safety on arterial and collector streets for all users.

- **Action Item 9.2.2.1:** Ensure that signage, poles, and other structures do not impede safe multi-modal access.
- **Action Item 9.2.2.2:** Expand public education campaigns that promote the rules of the road so that all transportation system users are aware of their responsibilities.
- **Action Item 9.2.2.3:** Work to incorporate Safe Routes to School materials and practices into local education systems.

Goal 9.3: Enhance multimodal transportation access, including transit, pedestrian, and other types.

Objective 9.3.1: Develop a Complete Streets Tier II Prioritization Plan.

- **Action Item 9.3.1.1:** Review the priority locations and recommendations identified for Holden in the 2018 Central Massachusetts Metropolitan Planning Organization (CMMPO) Regional Bicycle Plan.
- **Action Item 9.3.1.2:** Review the walk-to-school zones for sidewalk gap installation or upgrades.
- **Action Item 9.3.1.3:** Review the on-road and multi-use recommendations for potential bicycle facilities in Holden and ensure that the recommended segments are prioritized in future construction activity.
- **Action Item 9.3.1.4:** Ensure that local planning processes reflect and are consistent with the recommendations of the Regional Bicycle Plan.

Objective 9.3.2: Connect existing neighborhoods including commercial areas and schools with a system of pathways.

- **Action Item 9.3.2.1:** Identify areas for sidewalk reconstruction and/or expansion.
- **Action Item 9.3.2.2:** Utilize the MassDOT Complete Streets Funding Program process to pursue infrastructure funding and continue to close the gaps in the pedestrian network.
- **Action Item 9.3.2.3:** Examine arterial and collector streets with excess shoulder capacity to determine how they can be converted into Complete Streets with bicycle facilities.
- **Action Item 9.3.2.4:** Ensure that Regional Multi-Use Trails and Pathways are advanced to meet the needs of sub-regional and regional travel via alternative modes.

Objective 9.3.3: Conduct a “Transportation Needs” survey throughout the community in order to promote transit and help future transit planning efforts.

- **Action Item 9.3.3.1:** Collaborate with CMRPC, WRTA to study current transit uses, and identify opportunities for a future transit planning study.
- **Action Item 9.3.3.2:** Work with CMRPC, WRTA to improve existing paratransit services provided by the WRTA in partnership with the Council on Aging.
- **Action Item 9.3.3.3:** Explore best practices to assist carpooling commuters; identify key travel patterns as well as needs.
- **Action Item 9.3.3.4:** Explore partnerships with organizations to provide carpool lots.

Objective 9.3.4: Build resilience into the transportation system by planning for emerging trends.

- **Action Item 9.3.4.1:** Account for electric vehicle charging stations in parking lot design.
- **Action Item 9.3.4.2:** Build space for ride share pick-up and drop-off in commercial thoroughfares.
- **Action Item 9.3.4.3:** Anticipate the impact of autonomous vehicles; consider revising parking standards to include a maximum, rather than minimum, number of parking spaces.
- **Action Item 9.3.4.4:** Coordinate with Town Departments to incorporate green infrastructure into planned road improvements.

Intersection of Highland and Main Streets, adjacent to Town Hall (CMRPC, 2019)



What does
Holden think
about
Transportation?

TRANSPORTATION

Holden Community Survey Results

