

7

Transportation and Circulation Element

Introduction

Charlton has experienced rapid residential growth, most notably during the last 30 years. The main reasons for this growth are the availability of land, the relatively low cost of house lots, and the proximity and access to major highways. Looking to the future, ever increasing numbers of vehicles on Charlton's transportation system will pose a challenge for the Town.

During the master planning process, Charlton residents repeatedly raised transportation-related issues and concerns. Traffic congestion is frequently cited as an important quality of life consideration. Residents fear that uncontrolled new growth will exacerbate traffic congestion and thus degrade the quality of life. Mitigation of potential impacts and alternatives to automobile-based transportation systems need to be evaluated as part of the planning process.

This Transportation and Circulation Element of the Charlton Master Plan Update will first describe the components that comprise the Town's existing transportation system. These components include a description of the roadway network, quantification of vehicular traffic demands, and an overview of the non-vehicular transportation infrastructure (transit, freight, pedestrians, bicyclists).

The major routes in Charlton are Route 20 and the Massachusetts Turnpike (I-90), both east-west roadways. Route 169 is a north-south roadway on the westerly side of town and Route 31 is a north-south roadway that bisects the Town. All other roadways are not state numbered routes. Stafford Street, Brookfield Road, Oxford Road, and Center Depot Road are connector roads that carry commuter traffic volumes.

A future conditions section follows, discussing potential transportation and pedestrian issues. Also discussed are planned developments and planned transportation improvement projects, and the impact projected on the transportation facilities throughout Charlton. The section concludes with the strategies, goals, and objectives developed to address the future growth in Charlton and its impact on the transportation network.

The future vision of Charlton's transportation infrastructure will depend upon decisions made with regard to other elements contained in this Master Plan Update. Decisions made regarding purchases of open space and development of commercial and residential sites will greatly influence the future of Charlton's transportation system.

Regional Planning Commission

Regional and sub-regional agencies play a role in the development and execution of a municipality's master plan. As overseers of a larger area, they help to coordinate activities, prevent conflicts, and ensure a smooth communication of the execution of the strategies, goals, and objectives from one municipality to another. The Central Massachusetts Regional Planning Commission (CMRPC) is Charlton's regional planning agency. The CMRPC represents 40 cities and towns in southern and central Worcester County.

Commission membership consists of community representatives, gubernatorial appointees and city and state agencies who collaborate to develop comprehensive plans and recommendations in areas of population and employment, transportation infrastructure, economic development, regional growth, and the environment. The Commission also provides technical assistance and advocacy to its member communities. CMRPC works with its 40 cities and towns through six sub-regional organizations. Charlton is a member of the Southwest sub-region (the applicable sub-region of the CMRPC)¹.

Existing Conditions

Mobility in and around Charlton is the central theme of the Transportation and Circulation Element of the Master Plan Update. The sections below discuss the components that comprise the existing transportation network in Charlton.

Roadway Network

Vehicular traffic in Charlton is carried on several major roadways. The major east-west roadways in Charlton are the Massachusetts Turnpike (I-90) and Route 20. I-90 provides access between Boston and New York State. The nearest access point to I-90 is located approximately six miles from the center of Charlton. Even though there are two I-90 rest areas within Charlton, there is no I-90 interchange. Route 20 parallels

¹<http://www.cmrpc.org/index.htm>

I-90 to the south and provides regional east-west access. A roadway widening project along Route 20 from Richardson's Corner to Route 169 was completed in ~~2001~~[2005](#).

The major north-south roadways in Charlton are Route 169 located on the westerly side of town and Route 31 located in the center of town. Route 169 provides access to Route 20 to the north and Southbridge to the south. Wetlands limit development potential to the east of this roadway. Route 31 runs through the center of Charlton providing access to Spencer to the north and Dudley to the south. Despite Charlton's regional accessibility, the majority of Charlton's developable land is not directly accessible from its major access routes, specifically Route 20 and Route 169, which limits development potential.

In addition to the aforementioned numbered routes, Stafford Street, Brookfield Road, Oxford Road, and Center Depot Road, are connector roads that link the neighboring towns and carry significant commuter traffic. All other roadways in the town principally serve local traffic.

At a recent public meeting as part of the Master Planning process, the inconsistency of signage within Charlton was raised as an issue, particularly relating to Stop and Yield signs. Subsequently, the issue of confusing and/or inconsistent roadway signage was raised. Missing or outdated street signs around Charlton create navigation issues for non-residents and safety issues for emergency responders looking for street addresses.

Roadway Jurisdiction/Functional Classification

The jurisdiction of a roadway indicates the prevailing right-of-way ownership for that roadway and identifies who is responsible for maintenance, enhancements, and repairs. The majority of the roadway system is governed by the Town of Charlton with two roadways (Route 20 and Route 169) under MassHighway jurisdiction.

A roadways functional classification indicates its design function - to serve local demands with multiple driveways to maximize access; or to serve regional demands with limited access points to maximize mobility.

Functional classifications were obtained for segments of Route 20, Route 169, Route 31, Brookfield Road, Center Depot Road, Hammond Hill Road, Muggett Hill Road, Richardson Corner Road, and Stafford Street. All roadways are classified as urban minor arterials or rural major collectors. The majority of the roadways in Charlton are classified as local roadways.

■

Vehicular Traffic

To gain an understanding of existing travel patterns and to provide a basis for recommendations, historical traffic data, trip distribution patterns, and mode choice data were obtained. This section discusses these data.

Traffic Volumes and Functional Classification

Table 7-1 summarizes roadway jurisdiction and growth on various roadways throughout Charlton using MassHighway² and CMRPC³ historical traffic volume data.

**Table 7-1
 Traffic Growth on Select Roadways in Charlton**

Route	Count Date		Average Daily Traffic Volume ¹		Annualized Growth Rate (average percent growth/year)
	First Year	Last Year	First Year	Last Year	
Route 20, east of Route 169	1996	2005	18,300	19,200	0.5%
Route 169, south of Route 20	1986	2002	9,000	11,400	1.5%
Brookfield Road north of Route 31	1996	2005	4,500	5,100	1.4%
Muggett Hill Rd, east of Route 31	1987	2006	3,500	3,900	0.6%
Stafford Street, east of Center Depot Road	1990	2005	3,200	3,800	1.2%
Route 31, north of N Main Street	1995	2005	2,600	5,900	8.5%
Route 31, at Spencer TL	1985	2002	2,200	2,600	1.0%
Center Depot Road, north of Route 20	1985	2002	1,900	3,600	3.8%
Hammond Hill Road, north of Oxbow Road	1986	2005	1,300	1,700	1.4%
Richardson Corner Road, south of Route 20	1985	2002	1,100	2,300	4.4%

source: MassHighway and CMRPC traffic count data
 1 - Average daily traffic volumes expressed in vehicles per day (vpd).

The data indicate that traffic volumes along roadways providing access to Route 20, Route 169, and Route 31 are growing by 0.6 percent per year (Muggett Hill Road) and 4.4 percent per year (Richardson Corner Road). Along Route 31, traffic volume growth varies significantly between 1.0 and 8.5 percent per year. Along the state numbered routes, Route 20 and Route 169, traffic volumes have grown at lower rates between 0.5 and 1.5 percent per year, respectively. There were no roadways where traffic decreases were seen.

Journey-to-Work

An evaluation of journey-to-work census data for employed Charlton residents indicates where residents work and how they get there. According to US Census

▼
² <http://www.mhd.state.ma.us/default.asp?pgid=content/traffic01&sid=about>
³ CMRPC Traffic Counts, Town of Charlton, emailed June 19, 2007

data⁴, approximately 26 percent of Charlton residents were employed in Worcester in 2000. An additional 19 percent of Charlton residents were also employed in Charlton. The majority of the remaining locations of employment of Charlton residents are neighboring towns and employment centers near I-495. Approximately 1 percent of Charlton residents work in Boston. These residents would benefit from commuter shuttle or bus service to Worcester which has an MBTA commuter rail station providing service to Boston. Table 7-2 below illustrates this data.

Table 7-2
2000 Census Journey-to-Work Data for Charlton Residents

Location of Employment	Percent of Employed Charlton Residential Population
Worcester	26%
Charlton	19%
Southbridge	5%
Auburn	5%
Webster	4%
Shrewsbury	3%
Westborough	3%
Sturbridge	3%
Oxford	2%
Dudley	2%
Marlborough	2%
Boston	1%
Leominster	1%
Leicester	1%
Other ¹	23%

source: US Census, 2000, Census Transportation Planning Package, Part 2, 2003

1 - Other towns and cities not listed comprise less than one percent each of employment locations of Charlton residents.

An evaluation of journey-to-work census data for employees of businesses in Charlton was also conducted. This assessment quantifies the locations of residence of people who commute to Charlton for work. According to US Census data⁵, approximately 34 percent of people who worked in Charlton also resided in Charlton in 2000. Approximately 7 percent of people employed in Charlton resided in Worcester. The majority of the remaining locations of residence of Charlton employees are neighboring towns, including two towns in Connecticut. Table 7-3 below illustrates this data.



⁴ US Census, 2000, Census Transportation Planning Package, Part 2, 2003
⁵ US Census, 2000, Census Transportation Planning Package, Part 2, 2003

**Table 7-3
2000 Census Journey-to-Work Data for Charlton Employees**

Location of Residence	Percent of Population Employed in Charlton
Charlton	34%
Southbridge	9%
Worcester	7%
Dudley	5%
Sturbridge	5%
Spencer	3%
Oxford	2%
Holland	2%
Webster	2%
Thompson, CT	1%
North Brookfield	1%
Auburn	1%
Leicester	1%
Brimfield	1%
Brookfield	1%
Woodstock, CT	1%
Holden	1%
Other ¹	23%

source: US Census, 2000, Census Transportation Planning Package, Part 2, 2003

¹ - Other towns and cities not listed comprise less than one percent each of residence locations of Charlton employees.

Mode Choice

An evaluation of mode choice in the region was conducted for Charlton. According to US Census data, approximately 94 percent of Charlton residents reported 'car' as their travel mode to work in 2000. Of this 94 percent, approximately 86 percent were single-occupant vehicles and 8 percent were multiple-occupant vehicles. Approximately 3 percent of Charlton residents work from home. Transit and walk modes rounded out the survey results; approximately 1 percent of Charlton residents utilized transit and 2 percent walked. The low transit mode share for Charlton residents reflects the lack of public transportation options in the Town; this lack of commuter transportation options was cited as a weakness of the Town by residents at a visioning meeting. Table 7-4 below illustrates this data.

**Table 7-4
Charlton Resident Mode Split**

Mode	Percent
Single-Occupant Automobile	86%
Multiple-Occupant Automobile	8%
Transit	1%
Walk	2%
<u>Work at Home</u>	<u>3%</u>
<i>Total</i>	<i>100%</i>

source: US Census, 2000, Census Transportation Planning Package, Part 3 – CT, MA, RI, May 2004
 note: other modes of transportation not listed comprise less than one percent of trips by Charlton residents



Transit and Freight

Public transportation opportunities are limited in Charlton. Bus service to Southbridge and Worcester was terminated in the 1970s and the only form of public transportation that now serves the area is shuttle buses for physically and mentally challenged adults and the elderly. The two private shuttle services are Rehabilitative Resources, Inc. and South Central Mass Elderbus, Inc.

The Rehabilitative Resources, Inc. Transportation Department provides ambulatory and wheelchair transportation service to physically and mentally challenged adults in Charlton⁶. Elderbus is a private paratransit transportation company, under contract with the Worcester Regional Transit Authority (WRTA) that provides transportation to the elderly and disabled in Charlton⁷. In addition to the shuttle services, Charlton is a member of the Worcester Regional Transit Authority (WRTA) but does not receive services other than Elderbus.

Charlton’s passenger rail line service which traveled between Boston and Albany was terminated in the 1950’s. Freight service on the line is provided under extremely rare occurrences. However, there is potential for this to change in the future as an active rail system could be seen as an advantage to the economic development of the Town.



Pedestrians and Bicycles

The majority of roadways in Charlton are typical rural, narrow roadways that provide limited sight lines to drivers. Additionally, vehicular speeds have been cited as an area of concern. These conditions create an unsafe environment for pedestrians

6 <http://www.rehabresourcesinc.org/transport.htm>
 7 <http://www.scmelderbus.org/>

and bicyclists. In order to address these issues, Charlton has adopted bylaws which require subdivision developers to include sidewalks in their site plans.

The Midstate Trail is an off-street trail system in Charlton. This trail passes through Charlton on its route from Ashby to Douglas and is maintained by the Worcester Chapter of the Appalachian Mountain Club. There are no existing statewide designated bicycle routes in Charlton, nor are any accommodations proposed⁸.

In 2003, the Town of Charlton initiated an effort to preserve open space, foster greenway creation, and implement a network of walking trails. These tools are Geographic Information System (GIS) based and were utilized to map existing and future walking trail networks throughout Charlton. This is an ongoing effort.



Existing Transportation Issues

A review of transportation issues that impact safety, mobility, and connectivity within the Town was conducted based on field observations, a review of transportation studies, and community input.

In the area of traffic operations, there are no recurring operational deficiencies at intersections in Charlton that result in unsafe conditions or unreasonable vehicular delays or queues. Although the major transportation facilities in Charlton (especially Route 20) experience greater traffic volumes during the commuter peak periods, intersections along these routes do not experience notable or chronic congestion.

Two transportation issues along Route 20 were identified by the community during a public forum. Given the route's limited access and locations with a concrete barrier in the median, there are few locations to cross Route 20 and, as such, the roadway acts as a north-south barrier that limits mobility and connectivity. Excessive speeds were also identified as an issue along Route 20, which presents a safety issue.

Several locations in Charlton have been demonstrated to experience high crash rates. Based on the Nichols Enterprises Industrial Park Traffic Impact Study⁹, the intersections of Route 20 at Route 169 and Route 20 at Stafford Street experienced crash rates higher than the MassHighway district-wide rates. Two locations in Charlton are included in the Top 1000 High Crash Locations Report: 1999-2001 compiled by MassHighway: Route 20 at Route 169 and Route 20 at Northside Road.



⁸ 2007 Massachusetts Bicycle Transportation Plan, Preliminary Bicycle Network Proposal May 21, 2007
⁹ Traffic Impact Study, Proposed Nichols Enterprises Industrial Park, prepared by AK Associates, March 2006.

throughout the Village Center and to emergency management strategies. Based on a field review, constrained right-of-way in the Village Center area may present an obstacle to roadway improvements. Additionally, it is desirable to strike a balance between vehicular and pedestrian accommodations and the desired character of the Village Center. To achieve this, the following access management tools should be considered as the Village Center is developed:

- ▶ Limit the number of curb cuts and require curb cut consolidation where possible. Doing so will better define vehicle and pedestrian space;
- ▶ Provide internal driveways between parcels; and
- ▶ Keep parking hidden or to the back side of buildings. Doing so will enhance the building edges and draw attention to the building architecture and not the parking facility.

[Route 20/Stafford Street/Maple Street Commercial Redevelopment - Town Meeting in the Spring of 2005 approved a zoning map amendment that re-zoned two blocks of existing mixed use buildings located northerly off of Route 20 \(bounded by Route 20, Stafford Street and Maple Street\) from residential Small Enterprise \(R-SE\) to Community Business \(CB\). The property owner anticipates an eventual redevelopment that would demolish the existing mix of residential units and small commercial establishments and replace them with a multi-tenant commercial plaza design. As the future project is planned and designed, particular attention should be paid to traffic engineering review and maintaining the quality of traffic flow along this heavily-traveled segment of Route 20.](#)

[Southbridge Industrial Road Project - During the past year, the Town of Southbridge has proceeded with the planning, design and eventual implementation of an access road westerly between Route 169 and land in the vicinity of the Southbridge airport to provide access for future economic development in Southbridge. While this effort is located in Southbridge, its proximity to the Charlton town line warrants consideration of this project as it develops for potential traffic impacts due to project traffic flow along Route 169 in Charlton.](#)

Formatted: -VHB Body Text

Potential Transportation Improvements

The Transportation Improvement Program (TIP) is an intermodal program of transportation improvements produced annually by the CMRPC. The TIP is a planning document that lists all transportation related projects in the Central Massachusetts planning region that are programmed to receive federal-aid funding. Non federal-aid (NFA), or state-funded, projects are included as well. Bearing in mind the limited statewide transportation funding resources, the annual program of

projects must demonstrate financial constraint within the federal-aid funding targets and NFA funding estimates.¹³

The only project of note in the recent TIP is safety improvements along Route 20 in Charlton and Oxford. Charlton is not noted in any other significant projects in the 2007-2010 TIP.

Transportation and Circulation Recommendations



Goals for Transportation and Circulation Element

- Maintain or enhance vehicular mobility in town while striking a balance between roadway safety improvements and scenic, rural roadway character.
- Control or regulate the amount of new traffic added to the Town roads by clustering heavy traffic generators where they can be served by existing major roadways, such as Route 20.
- Enhance non-vehicular transportation opportunities and increase opportunities for residents to walk and bicycle safely around Charlton.
- Continue to preserve open space, foster greenway creation, and enhance the network of walking trails
- Develop access management and traffic impact study guidelines
- Consider traffic calming elements where appropriate to regulate high rates of speeds
- Improve emergency management strategies related to I-90 crisis management and mobility for emergency response vehicles (fire, police, etc.), particularly in the Village Center
- Improve consistency of street signage throughout Town to be compliant with published Manual on Uniform Traffic Control Devices (MUTCD) guidelines



Goals, Strategies and Actions

[PLACEHOLDER]

Conclusion



¹³ <http://www.emrpc.org/Transportation/TIP.htm>

Table of Contents

Introduction	1
Regional Planning Commission	2
Existing Conditions	2
Roadway Network	2
Roadway Jurisdiction/Functional Classification	3
Vehicular Traffic	4
Traffic Volumes and Functional Classification	4
Journey-to-Work	4
Mode Choice	6
Transit and Freight	7
Pedestrians and Bicycles	7
Existing Transportation Issues	8
Future Conditions	9
Future Challenges and Opportunities	9
Planned Developments	9
Potential Transportation Improvements	11
Transportation and Circulation Recommendations	12-11
Goals for Transportation and Circulation Element	12-11
Goals, Strategies and Actions	12
Conclusion	12