

TEWKSBURY MASTER PLAN 2016



Prepared for:
Tewksbury Planning Board
Tewksbury Department of Community Development

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SNAPSHOT: MASTER PLAN 2016

What are Tewksbury's goals for this Master Plan Update?

- Embrace and continue to maintain a comprehensive, inclusive, and balanced strategy for **managing growth and change**.
- Strive to create **walkable commercial centers** while protecting and respecting the historic and cultural landscape.
- Address its transportation needs by addressing **congestion and safety issues** and promoting alternative modes such as **walking and bicycling**.
- Protect and enhance its **Town Center** in order to maintain its historic integrity and create a sense of place.
- Enhance and expand **open space and community activities** as resources are made available and opportunities arise.
- Ensure that **decent and affordable housing** is available to all income groups while continuing to add more state-recognized, deed-restricted affordable units to achieve the 10 percent minimum under Chapter 40B.
- Promote strategic areas of **sustainable economic development** in order to foster job creation and enhance the tax base, by encouraging private investment in emerging industries.
- Foster the **arts and cultural activities** by creating new opportunities for creative enterprises, and by building on the existing regional network of cultural institutions, destinations, and events.
- Ensure that Town government is responsive to the needs of its residents and businesses, by providing **quality education**, a variety of **municipal services** and well-maintained infrastructure, and by utilizing its financial resources wisely to ensure the town's fiscal health well into the future.
- Work to **reduce conflicts between zoning districts**.



- Coordinate **land use and design along Route 38**, and seek corridor improvements to strengthen the business climate and promote economic growth.

Ten key issues in this Master Plan Update

1. **Traffic congestion** is an issue for Route 38, for roads providing access to I-495 and I-93, and other parts of town. Along Route 38, three intersections during the weekday morning and seven intersections during the weekday afternoon currently operate at a Level of Service (LOS) D or lower. The primary causes of traffic congestion in Tewksbury are existing commuting patterns and major activity areas.
2. Tewksbury’s **Zoning Bylaw** has become increasingly complex and unwieldy, and permitting procedures are not always as clear and efficient as they should be. There needs to be a comprehensive overhaul of the Zoning Bylaw and administrative rules and regulations so that developers, property owners, their neighbors, town boards, and staff will have a shared understanding of the Town’s land use policies and requirements.
3. Tewksbury’s roadways do not **accommodate bicyclists** and exclusive facilities do not exist. Lack of **pedestrian infrastructure** is as problematic in 2016 as it was in 2003, when the last master plan was completed. Tewksbury needs to identify deficient pedestrian links, build new sidewalks, and prioritize improvements of existing sidewalks.
4. Tewksbury has a **shortage of affordable rental housing**. According to the Tewksbury Housing Authority, the waiting list for families is 509, with 61 of those dedicated to local preference applicants. The Housing Authority experiences 1-2 turnovers per year, which means that the local preference wait time is at best 30 years.
5. Wildlife once thrived in Tewksbury’s rivers. After Lowell was founded, however, manufacturing practices there led to water pollution and fish kills. **Point and nonpoint source pollution needs to be managed** to protect public health, wildlife habitat, and natural resources.
6. Tewksbury has a number of community facilities and services issues that have to be addressed, e.g., a larger, **modern central fire station**, school building improvements, renovations to the existing public works building or a new public works facility, and

Where does “nonpoint source pollution” come from?

- Fertilizer, herbicides, and insecticides from lawns and farmland;
- Oil, grease and toxic chemicals from transportation sources, roadways, fueling stations, and parking lot runoff;
- Sediment from improperly managed construction sites or eroding stream banks; and
- Pathogens and nutrients from livestock, pet waste and failing septic systems.

other needs. The Town will have to make tough capital planning choices in order to meet these and other needs at a pace that taxpayers can handle. Tewksbury must grow a **stronger tax base** to meet its local government needs, but at the same time focus on attracting and keeping **high-quality commercial and industrial areas**.

7. The **Heavy Industrial District** needs to be updated and revised. The Planning Board should reconsider whether the mix of commercial uses allowed within the district is still appropriate. There are other issues, too: density and intensity of use, design, and impacts on traffic, noise, and neighborhood quality of life. The lack of adequate buffering between industrial and residential districts is problematic, too.
8. Tewksbury needs to beautify its **gateways**. Islands and the roadside at key entry points need landscaping and coordinated signage that “brands” Tewksbury as a great place to live and prosper. Gateway treatments at highway ramps help to remind drivers that they have left the highway and entered a town. Beautification, image building, community pride, and traffic calming are all key reasons to focus on the Town’s gateways.
9. Housing affordability and **housing cost burden** remain troublesome for many Tewksbury residents. In 2010, 3,010 households in Tewksbury (28.7 percent of all households) paid more than 30 percent of their monthly income on housing costs. The problem is worse for renters: housing cost burden affected 48.8 percent of all renter households in Tewksbury in 2010. Tewksbury may be very close to the 10 percent statutory minimum under Chapter 40B, but that does not mean the Town’s affordable housing needs have been met.
10. Tewksbury needs a **comprehensive strategy to build the economy** it wants and to **target economic growth** where the community wants it to be: Lowell Junction area (Priority Development Site under Chapter 43D), the East Street corridor, the overlay district areas on Route 38 (Town Center, Village Residential, South Village, Village Mixed-Use and Community Village), Route 133, and Woburn Street. While the Town needs to strengthen its economic health, Tewksbury also needs to pay close attention to the quality of development and the mix and types of businesses that should be encouraged. Regulatory and infrastructure barriers need to be addressed, too.

Ten key recommendations in this Master Plan Update

1. Conduct a zoning audit and a **comprehensive Zoning Bylaw review and update**.
 - Consider supplementing or replacing the overlay framework on **Route 38** with distinctive, workable base districts.

- Establish well-developed **buffer standards** for all industrial areas, particularly along East Street.
 - Review uses allowed by right in the **Limited Business District (LB)** and the **Office/Research District (OR)**.
 - Continue to focus on creating a traditional downtown area in the **Town Center**.
2. Adopt and implement a **Low Impact Development (LID)** Bylaw.
 3. Allow convenience retail and personal and business services in industrially zoned districts, i.e., **modernize the Town's industrial district use regulations** to meet contemporary standards for industrial and office parks.
 4. Create **design standards for site plan review** that the Planning Board can administer and enforce: architectural design and landscaping and aesthetics.
 5. Adopt a **Complete Streets policy** where appropriate, that provides for a variety of transportation choices that meet the needs of all age groups, abilities, and preferences.
 6. Provide **pedestrian-scale signage**, street lighting, and wayfinding in **streetscape improvement projects**.
 7. Work with the Northern Middlesex Council of Governments to develop a **Regional Housing Plan** for the Greater Lowell Region.
 8. Work with the **Lowell Regional Transit Authority (LRTA)** to re-examine public transit routes so that they better **address the needs of businesses, consumers, and workers** in accessing Tewksbury's commercial and industrial locations.
 9. Build upon the town's designation as a **Green Community** by targeting the growing **Renewable Energy industries** as prospective employers and taxpayers.
 10. Protect the character of roadways by implementing **traffic calming** in appropriate locations. Use traffic calming techniques to **discourage cut-through traffic** on neighborhood streets.

1 INTRODUCTION

Located in Middlesex County about 19 miles northwest of Boston, Tewksbury is a maturely developed suburb with a population of 28,961. Its neighboring communities include Lowell to the northwest, Dracut to the north, Andover to the northeast, Wilmington to the southeast, Billerica to the southwest, and Chelmsford to the west. Interstate 93 crosses through Tewksbury along the east, and Interstate 495 traverses through the northwest side of town. State Route 38 forms Tewksbury's Main Street. The Merrimack River forms part of the northern boundary of Tewksbury, and the Shawsheen River runs through the southern portion of town.

1.1 HISTORY

Named after the Town of Tewkesbury, England, Tewksbury, Massachusetts was first settled in 1637, and established in the area formerly known as Wamesit in 1734, when the town was officially incorporated from Billerica. Tewksbury was gradually settled during the early decades of the eighteenth century by European settlers. The early economic base depended on farming and grazing, with lumbering as a secondary activity.

Some of Tewksbury's most unique resources exist as a result of the Town's rural history. Tewksbury was once well known for its rural character, including its proximity to Silver Lake in neighboring Wilmington. In the early twentieth century, Tewksbury became a haven for Boston residents and served as a summertime vacation area. Greenhouses and market gardens emerged as the town's primary businesses, and many greenhouses cultivated flowers for sale to the city markets. In fact, Tewksbury was nicknamed the "Carnation Capital of America," and even today, there are several remaining greenhouses.

Tewksbury was transformed by two decades of very high growth following World War II. Subdivisions consumed significant portions of the town's agricultural land. The construction of Interstate 495 and Interstate 93 had a significant impact on the rate of development within Tewksbury. By the 1960s, large outlying tracts of land were developed as residential subdivisions, and the Town adopted a zoning bylaw that was favorable to economic development in order to capitalize on its location on the interstate highway system. This trend continued until the mid-1970s when the demand for land for development began to stabilize.

Commercial and industrial land uses have nearly tripled since 1970, with new businesses locating in the north and western sections of the town. Although Tewksbury has seen new

development in the past two decades, the rate of development has not exceeded the statewide average. This is in large part due to the fact that there are few large parcels of developable land remaining in the community. Many recent development projects have involved multi-family housing initiatives.

1.2 MASTER PLAN CONTEXT

A Master Plan is a comprehensive planning document that establishes long-term policy recommendations for a community's physical development, and outlines implementation strategies that address land use, transportation, local economy, housing, the environment, and community services. In general, communities use the Master Planning process to understand and manage future growth and development. While there are limited areas of Tewksbury that remain undeveloped, much of the community is built out. Therefore, the master planning process has also focused on managing and guiding future redevelopment initiatives.

The Master Plan is one of the main policy tools utilized by the Board of Selectmen, Planning Board, Zoning Board of Appeals, Conservation Commission, the Community Development Department, and other local decision makers. It is important to note that the Master Plan does not replace or trump other important policy documents prepared by the Town, such as the Affordable Housing Production Plan or the Open Space and Recreation Plan. Instead, the Master Plan incorporates the recommendations contained within these plans and is used in a complementary manner.

Given that communities evolve and change over time, it is important that the Master Plan be viewed as a flexible document that can be revised and modified as appropriate. The recommendations set forth should be periodically re-evaluated to ensure that they align with present day conditions and the needs of the community.

Tewksbury's previous Master Plan was completed in September 2003. It outlined strategies to:

- Reduce conflicts between zoning districts;
- Better coordinate land uses along Route 38;
- Improve and enhance the town's gateways;
- Create sustainable economic development practices that generate additional tax revenue and create employment opportunities;
- Preserve large tracts of available open space;
- Give preference to redevelopment and infill development, over the development of greenfields (previously undeveloped land);

- Preserve housing affordability, and provide housing opportunities for all income groups; and
- Promote alternative modes of transportation, including walking and bicycling.

Many of the recommendations contained within the 2003 Master Plan have either been implemented or are in the process of being implemented. The 2003 document serves as the baseline for this update.

In June 2011, Tewksbury's Planning Board hired the Northern Middlesex Council of Governments (NMCOG) to begin updating the 2003 Master Plan. NMCOG conducted a series of public meetings and drafted various components for the Master Plan. RKG Associates, Inc. was retained in September 2014 to gather further public input, refine the drafts and prepare new sections of the plan, and create the final Master Plan document. RKG's work also involved reviewing the status of the 2003 Master Plan and creating goals for the new Master Plan.

1.3 MASTER PLAN GOALS

Planning goals help to describe the community that Tewksbury wants to become. Based on the input received during the public participation process, the following goals have been developed to guide this Master Plan Update:

WHAT KIND OF COMMUNITY DOES TEWKSBURY WANT TO BE?

Tewksbury will:

- Embrace and continue to maintain a comprehensive, inclusive, and balanced strategy for managing growth and change,
- Strive to create walkable commercial centers, while protecting and respecting the historic and cultural landscape;
- Address its transportation needs by addressing congestion and safety issues, and promoting alternative modes, such as walking and bicycling;
- Protect and enhance its Town Center in order to maintain its historic integrity and create a sense of place;
- Enhance and expand open space and community activities as resources are made available and opportunities arise;
- Ensure that decent and affordable housing is available to all income groups while continuing to add more state-recognized, deed-restricted affordable units to achieve the 10 percent minimum under Chapter 40B;

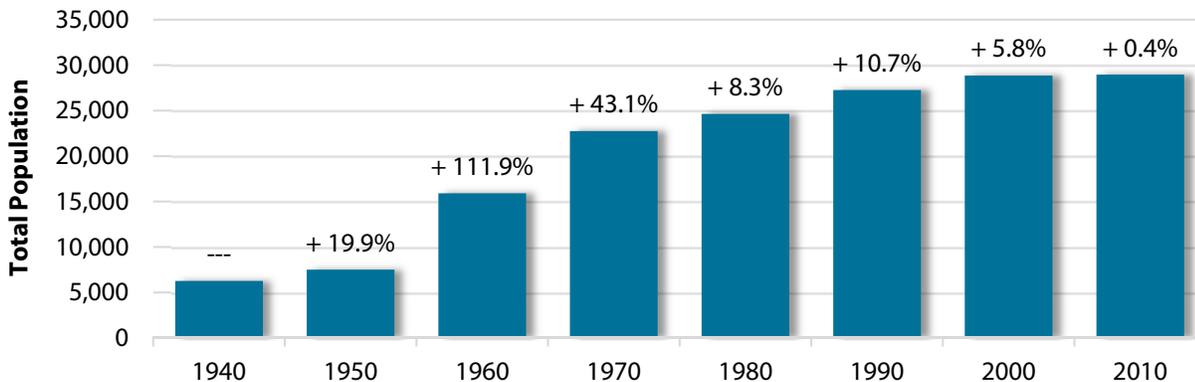
- Promote strategic areas of sustainable economic development, in order to foster job creation and enhance the tax base, by encouraging private investment in emerging industries;
- Foster the arts and cultural activities by creating new opportunities for creative enterprises, and by building on the existing regional network of cultural institutions, destinations, and events;
- Ensure that Town government is responsive to the needs of its residents and businesses, by providing quality education, a broad array of municipal services and well-maintained infrastructure, and by utilizing its financial resources wisely to ensure the town’s fiscal health well into the future;
- Work to reduce conflicts between zoning districts; and
- Coordinate land use and design along Route 38, and seek corridor improvements to strengthen the business climate and promote economic growth.

1.4 KEY DEMOGRAPHICS

Population

As can be seen in Fig. 1-1, Tewksbury’s population grew from 6,261 in 1940 to 28,961, in 2010. The 1950s and the 1960s were the decades that brought the greatest population increases, with the population of the town more than doubling from 1950 to 1960.

Fig. 1.1. Tewksbury Population Growth & Percentage Change



Source: U.S. Census Bureau

The projections for the future population of Tewksbury, as found in Table 1-1, show an increase for both the Town and region, with Tewksbury’s population climbing to 32,640, or 10.2 percent of the region’s total population, by 2035. Projected growth rates for Tewksbury will mirror those in the NMCOG region between 2010 and 2035 with modest increases over the next 25 years.

Table 1-1. Total and Projected Population: 2010 through 2035

Year	Tewksbury Population	Town Growth Rate	NMCOG Region Population	Regional Growth Rate	Tewksbury % of Region
2010	28,961	0.4%	286,901	2.0%	10.1%
2020	30,000	3.6%	297,000	3.5%	10.1%
2025	31,020	3.4%	304,000	2.4%	10.2%
2030	31,820	2.6%	312,000	2.6%	10.2%
2035	32,640	2.6%	320,000	2.6%	10.2%

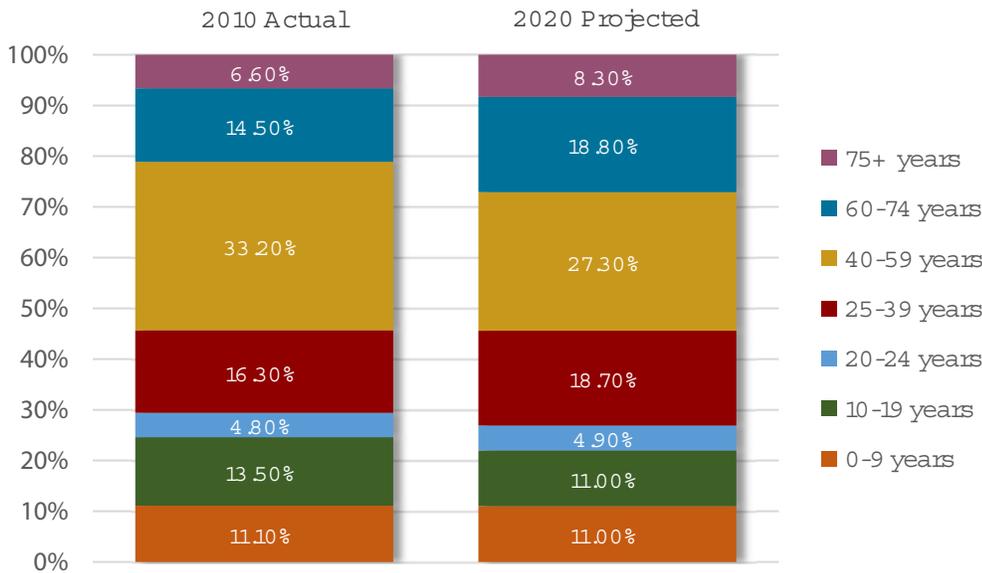
Sources: 2010 U.S. Census; Projections developed by MassDOT in consultation with NMCOG

Population Age

Changes in the age composition of a community have significant implications for planning. For example, families with young children have different needs than empty nest households, or someone over 65 living alone. According to the 2010 U.S. Census, the largest percentage of Tewksbury residents, 33.2 percent, was between the ages of 40 and 59 years old. This is a modest increase from 29.6 percent in 2000, but it is expected to decrease again in 2020 to 27.3 percent. While this age group has fluctuated, it consistently represents the largest age group in Tewksbury between 2000 and 2020, according to population estimates and projections from the University of Massachusetts Donohue Institute (UMDI).

The second largest age cohort is the 25- to 39-year-old group. This group experienced a rather large decline between 2000 and 2010, from 23.6 percent, or 6,816 residents, to 16.3 percent, or 4,709 residents, in 2010. UMDI projects that this age cohort will increase slightly to about 5,606 residents in 2020, but it will be the third largest category, just after the 60-74 year olds. Although most of the age groups are predicted to experience a decline by 2020, the population is getting older in Tewksbury. In fact, as seen in Fig. 1-2, projections developed by UMDI indicate that in 2020, over 25 percent of Tewksbury's population will be over 60 years old and the majority of residents (53.4 percent) will be over 40.

Fig. 1.2. Age Distribution of Tewksbury Residents: 2010 and 2020

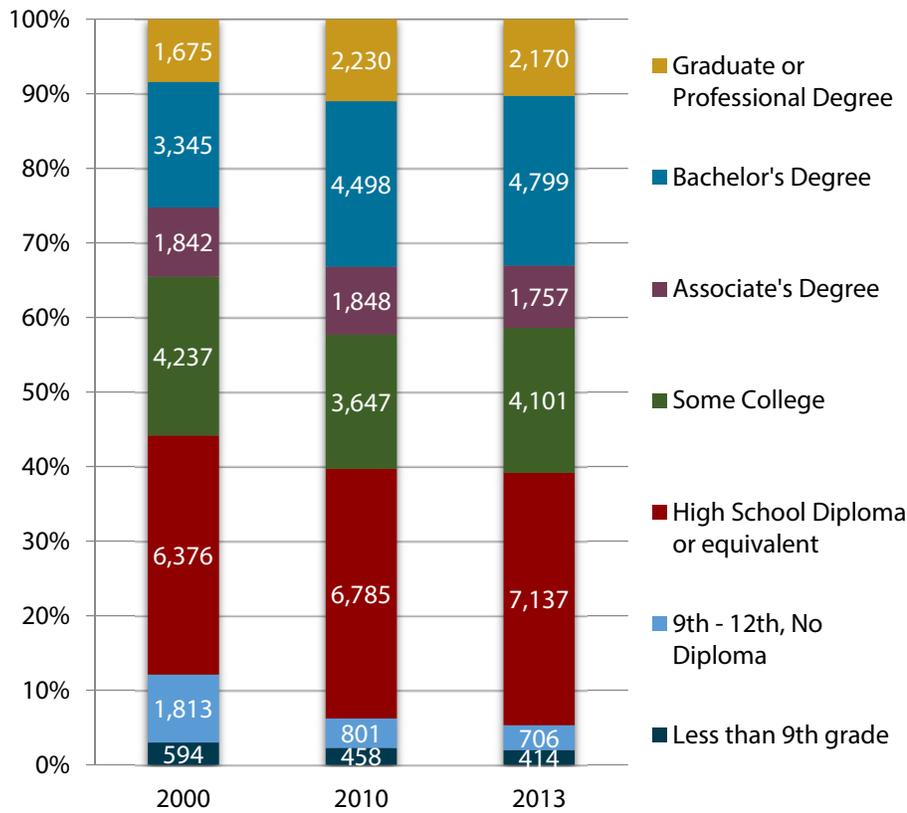


Source: 2010 U.S. Census and MISER, 2005

Educational Attainment

Fig. 1-3 compares the educational attainment levels among Tewksbury residents 25 years of age or older in 2000 and 2010, and estimates for 2013. The number of residents with less than a 9th grade education has been estimated to decrease from 594 in 2000 to 414 in 2013. The number of residents at the 9th to 12th grade educational level without a high school diploma also appears to have decreased dramatically by estimate, from 1,813 in 2000 to 706 in 2013. The number of residents at a high school graduate level appears to have increased from 6,376 in 2000 to 7,137 in 2013.

Between 2000 and 2013, the number of Tewksbury residents with at some college education but no degree appears to have remained fairly constant (4,237 in 2000 vs. 4,101 in 2013). The same is appears to be true for those residents holding an Associate’s degree (1842 in 2000 vs. 1,757 in 2013). The number of residents holding a Bachelor’s degree is estimated to have increased considerably, from 3,345 in 2000 to 4,799 in 2013. The number of residents holding a graduate level of professional degree has also risen, from 1,675 in 2000 to 2,170 in 2013.

Fig. 1.3. Educational Attainment in Tewksbury, 2000-2013

School Enrollment

Table 1.2 illustrates total public school enrollment between 2006 and 2011. The majority of preschool and school-aged children (0-19 years old) are enrolled in the Tewksbury Public Schools. However, there are several other options locally and regionally, including private, parochial, and charter schools. This includes the Shawsheen Valley Technical High School which, as of 2012, enrolls about 150 students a year from Tewksbury.

Public school enrollment has declined by -15 percent between 2006 and 2011. The greatest declines occurred among elementary (K-4) and high school students, with a loss of over 550 students in the five-year period. Enrollment levels have stayed somewhat consistent at Ryan Elementary (5-6) and Wynn Middle School (7-8).

Table 1.2. Total Public School Enrollment: 2006 through 2011

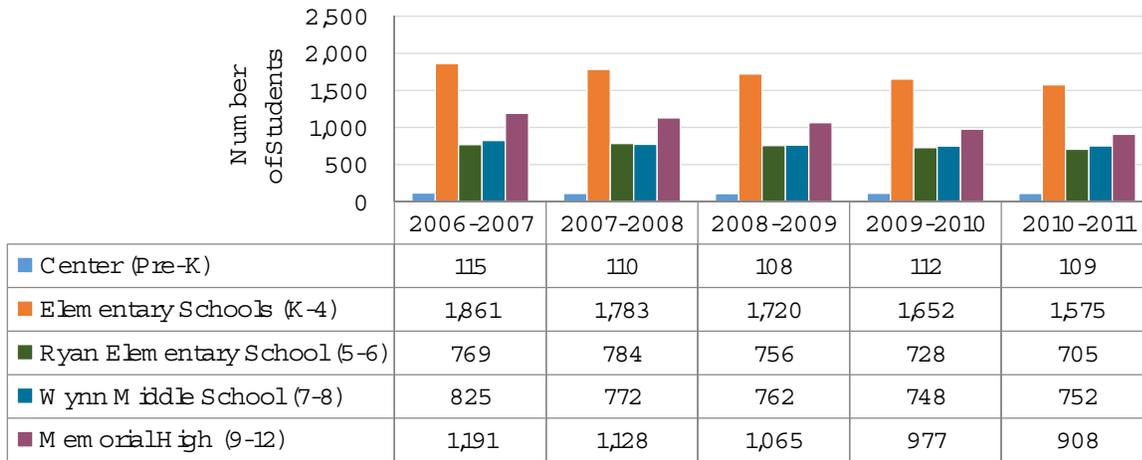
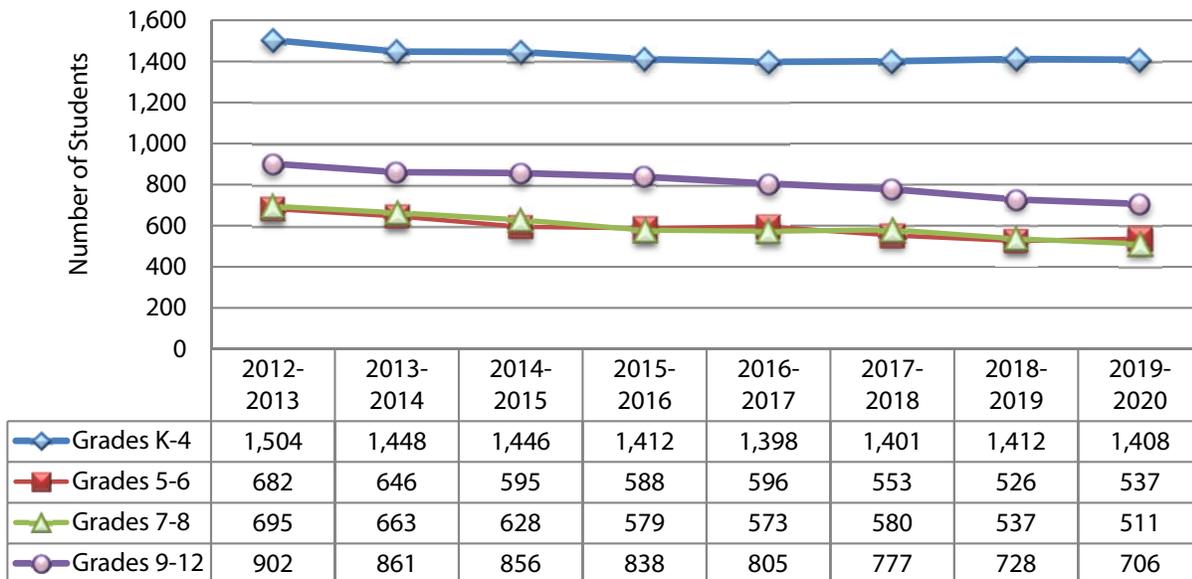


Table 1.3 reports projected school enrollments from Tewksbury Public Schools through 2020. Predictions indicate that an additional -16 percent decline will occur over the next eight years, with only 3,162 students enrolled in Tewksbury Public Schools in 2020, compared to 4,049 students enrolled in 2011. The largest decline is predicted for high school students. This may be due to the increased numbers of students at Shawsheen Valley Technical High School. However, it also coincides with the predicted decline in high school aged populations for 2020: 10-19 year olds are predicted to decline by -8.3 percent. Completion of the new high school may increase these numbers, however, if students begin choosing Memorial High over Shawsheen Valley Technical School.

Table 1.3. Projected School Enrollment: 2020



Source: Tewksbury Public Schools from: 2010-2011 Enrollment Projects Study from the New England School Development Council

Racial and Ethnic Diversity

Table 1.4 provides the Town's population by race and ethnic diversity for 2000 and 2010. According to the 2010 U.S. Census, the White population decreased by -1.8 percent, now comprising 94.4 percent. Despite the decline, it is still the predominate race in Tewksbury. In addition to the White population, the Native Hawaiian and Other Pacific Islander and American Indian and Alaska Native communities decreased, but did not significantly impact the overall ratio. The Asian community, which is the second largest race in Town at 2.7 percent, increased by 70.9 percent between 2000 and 2010. The Black or African American and Hispanic populations also increased over the last decade, with the Hispanic population increasing the most at 71 percent. The Hispanic community is currently the third largest group in the Town at 602 residents, or 2.1 percent of the Town's population.

Table 1.4. Racial and Ethnic Diversity of Residents: 2000 and 2010

Racial/Ethnic Category	2000		2010		%Change 2000-2010
	Population	%	Population	%	
White	27,824	96.4%	27,327	94.4%	-1.8%
Black or African American	194	0.7%	321	1.1%	65.5%
American Indian & Alaska Native	36	0.1%	32	0.1%	-11.1%
Asian	460	1.6%	786	2.7%	70.9%
Native Hawaiian & Other Pacific Islander	2	0.01%	1	0.003%	-50.0%
Some Other Race & Two or More Races	335	1.2%	494	1.7%	47.5%
Total Population	28,851	100.0%	28,961	100.0%	0.4%
Hispanic or Latino (All races)	352	1.2%	602	2.1%	71.0%

Source: 2000 and 2010 U.S. Census

Residents with Disabilities

Table 1.5 provides information about populations with disabilities in Tewksbury. The 2008-2010 American Community Survey estimated that 11.5 percent of Tewksbury's population (3,331 residents) reported having one or more disabilities. Half (50.5 percent) of these residents were 65 years and older, and over a third were between 35-64 years of age. Independent living difficulties (61.5 percent) and ambulatory difficulties (53.8 percent) were among the most common disabilities reported. Of the 3,331 residents that were disabled, 2,066, or 62 percent, were female and 1,265, or 38 percent, were male.

Table 1.5. Characteristics of the Disabled Community Tewksbury: 2010

Disability Status	Count	Percent of Residents with Disabilities
5-17 year olds	258	7.7%
18-34 year olds	161	4.8%
35-64 year olds	1,228	36.9%
65-74 year olds	413	12.4%
75 years and older	1,271	38.2%
Total	3,331	100.0%
Other Characteristics of Disabled Residents		
With a Hearing Difficulty	1,195	35.9%
With a Vision Difficulty	381	11.4%
With a Cognitive Difficulty	1,096	32.9%
With an Ambulatory Difficulty	1,791	53.8%
With a Self-Care Difficulty	690	20.7%
With an Independent Living Difficulty	1,229	61.5%

Source: 2008-2010 American Community Survey

Income

Over the past decade, the socio-economic situation in Tewksbury has changed as shown by increases in median household, median family, and per capita incomes. Table 1.6 shows the change in median household income between 1999 and 2010, while Tables 1.7 and 1.8 show changes in the median family and per capita incomes, respectively. These changes are compared to the rates of change on the Primary Metropolitan Statistical Area (PMSA/NECTA), state, and national levels.

The American Community Survey (ACS) provides local and regional income estimates for 2010. The ACS is an ongoing survey that provides data every year, thereby giving communities the current information they need to plan investments and services. ACS estimates are published in one- and five-year periods, representing the characteristics of the population and housing over time. For this Master Plan, the 5-year ACS estimates were used because they are more precise and reliable.

Table 1.6 below show the changes in Tewksbury's median household income between 1999 (\$69,818) and 2010 estimates (\$84,149). In both 1999 and 2010, the Town's median household income was significantly higher than the median household incomes for the PMSA/NECTA region, state, and nation. Although the median household income in Tewksbury increased by 20.5 percent, or \$14,331, over ten years, the Town's rate of increase was just under the PMSA/NECTA region but smaller than the state and the nation.

Table 1.6 Median Household Income for Selected Geographies: 1999 and 2010

Geographic Area	1999	2010	% Increase 1999-2010
Tewksbury	\$69,818	\$84,149	20.5%
Greater Lowell Region PMSA/Lowell-Billerica-Chelmsford, MA-NH NECTA	\$58,472	\$69,707	19.2%
Massachusetts	\$50,502	\$64,509	27.7%
United States	\$41,944	\$51,914	23.8%

Sources: 2000 U.S. Census; 2006-2010 American Community Survey

Similar to the change in median household income, Tewksbury's median family income increased between 1999 and 2010, as shown in Table 1.7. In 1999, the median family income in Tewksbury was \$78,680—higher than the region, state, and national median family income. By 2010, the Town's median family income (\$98,662) still exceeded all three of these three geographic comparison areas. Figure 2 visually depicts the median family incomes for the four geographic areas in 1999 and 2010.

Table 1.7. Median Family Income for Selected Geographies: 1999 and 2010

Geographic Area	1999	2010	% Increase 1999-2010
Tewksbury	\$78,680	\$98,662	25.4%
Greater Lowell Region PMSA/Lowell-Billerica-Chelmsford, MA-NH NECTA	\$67,583	\$85,001	25.8%
Massachusetts	\$61,664	\$81,165	31.6%
United States	\$50,046	\$62,982	25.8%

Sources: 2000 U.S. Census; 2006-2010 American Community Survey

Table 1.8 reports changes in per capita income between 1999 and 2010. In 1999, Tewksbury's per capita income was \$27,249 – higher than that of the region, state, and country. Eleven years later, the Town's per capita income had increased to \$34,684, which remained higher than the geographic comparison areas. While the rate of increase exceeded that of the nation, Tewksbury's per capita income grew more slowly than that of the PMSA/NECTA and state.

Table 1.8. Per Capita Income for Selected Geographies: 1999 and 2010

Geographic Area	1999	2010	% Increase 1999-2010
Tewksbury	\$27,249	\$34,684	27.3%
Greater Lowell Region PMSA/Lowell-Billerica-Chelmsford, MA-NH NECTA	\$24,081	\$31,394	30.4%
Massachusetts	\$25,952	\$33,966	30.9%
United States	\$21,587	\$27,334	26.6%

Sources: 2000 U.S. Census; 2006-2010 American Community Survey

While median household and median family incomes are valuable indicators, they do not account for the distribution of household incomes in a community. Table 1.9 compares household income distributions in Tewksbury in 1999 and 2010. In 1999, approximately 4,343,

or 44 percent, earned less than the median household income of \$69,818, with 32.1 percent earning less than \$50,000 per year. The largest group of the Town’s households, 23.1 percent, earned between \$50,000 and \$74,999.

BETWEEN 1990 AND 2000, THE NUMBER OF HOUSEHOLDS IN TEWKSBURY WITH INCOMES OVER \$150,000 PER YEAR INCREASED BY 281 PERCENT.

In 2010, the median household income was \$84,149. The number of households making above the median household income decreased slightly in the last decade.

Approximately 52.5 percent, or 5,432, earned less than the median of \$84,149. Between 1999 and 2010, Tewksbury also experienced a significant increase in households making over \$100,000, with nearly 40 percent, or 4,123 households, at or above \$100,000 per year. The most significant increase was in households making above \$150,000, which increased 281 percent. Household income across all other categories decreased, except for those earning between \$15,000 and \$24,999, which increased by 31.6 percent.

Income Distribution for Households: 1999 and 2010

Income Category	1999		2010		Percent Change 2000-2010
	# of Households	Percent	# of Households	Percent	
Less than \$15,000	576	5.8%	552	5.3%	-4.2%
\$15,000-\$24,999	613	6.2%	807	7.8%	31.6%
\$25,000-\$34,999	728	7.3%	609	5.9%	-16.3%
\$35,000-\$49,999	1,276	12.8%	918	8.9%	-28.1%
\$50,000-\$74,999	2,299	23.1%	1,761	17.0%	-23.4%
\$75,000-\$99,999	1,987	20.0%	1,571	15.2%	-20.9%
\$100,000- \$149,999	2,037	20.5%	2,452	23.7%	20.4%
\$150,000 or more	439	4.4%	1,671	16.2%	280.6%
Total	9,955	100%	10,341	100%	3.9%

Source: 2000 U.S. Census; 2006-2010 American Community Survey

2 PUBLIC PARTICIPATION

In early 2011, the Planning Board initiated discussions regarding the process and approach for updating the Master Plan, and then entered into a contract with the Northern Middlesex Council of Governments (NMCOG) in June. Visioning Sessions were held addressing the topical areas of the Plan:

Visioning Session I: Land Use, Housing and Economic Development;

Visioning Session II: Transportation and Infrastructure; and

Visioning Session III: Natural and Cultural Resources, Open Space, and Recreation.

In addition to the Visioning Sessions, a forum for the business community was also held. In October 2014, a final summary public meeting was held in conjunction with RKG Associates, Inc. This meeting allowed citizen participants the opportunity to share community vision statements and confirmed the aspirations of the Master Plan.

From the October 15, 2014 Public Meeting

1. Sidewalks needed on:

- Main Street
- Whipple Street
- North Street
- South Street
- Shawsheen Street
- East Street
- Andover Street
- Livingstone Street
- Pleasant Street

2. Traffic lights needed at:

- Nelson-Archstone-Main

- Ocean State Job Lot
 - Salem and South Street
 - North and East Street
 - Pedestrian crosswalk signals all along Main
 - More police control of people in crosswalks
3. More LRTA routes for all of Tewksbury
 4. Bus Shelters for people waiting
 5. Neighborhood Schools (K-4)
 6. Crossing guards
 7. Senior Center to have their own small bus for their own use.
 8. Desired traffic calming measures:
 - 4 way stops
 - Truck restrictions
 - Roundabouts (small circle)
 9. Rezone Vs. Overlay
 10. Fire Headquarters
 11. Elementary schools
 12. ID Priority sidewalks
 13. Swimming pool
 14. Railroad to pathways
 15. Flex zoning:
 - Need for brick and mortar commercial and industrial buildings is no longer viable
 16. Encourage employing a staff person to promote the town
 17. Traffic:
 - Middle turning lane on Route 38
 - Better bike and pedestrian for entire town

- More sidewalks
 - Senior transportation
18. Encourage development of single family homes (and slow acceptance of multi-family homes)
 19. Re-zone land consistent with its current usage
 20. Minimize use of overlay districts
 - Note: this was not universally agreed
 21. Require access to Open Space in the course of new developments
 22. Improve timing of lights on Route 38
 23. Lobby state for sidewalks along Route 38
 24. Establish minimum standards for property maintenance
 25. Enforce residential ordinances

3 EXISTING CONDITIONS

3.1 LAND USE AND ZONING

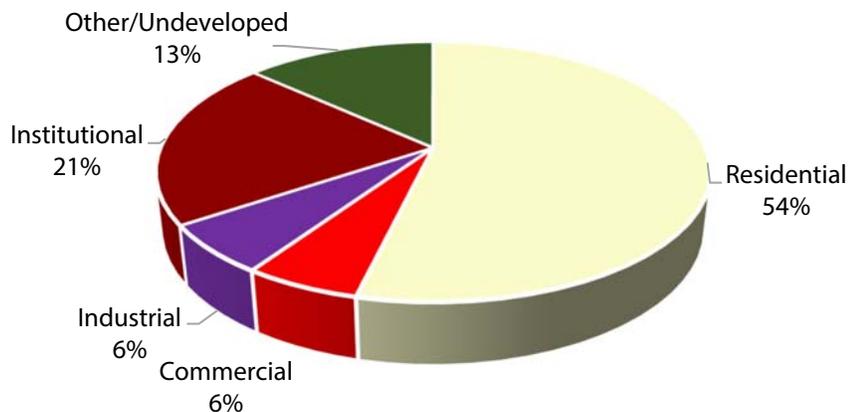
Land use refers to the physical arrangement of a community's residential, commercial, industrial and institutional development, along with its transportation network, infrastructure and vacant land. Examining spatial development patterns, rates of change, and trends can provide insight into how Tewksbury evolved under varying social, economic and environmental conditions. Understanding land use change within a community is a key aspect of the overall Master Plan, and forms the basis for discussion regarding future direction.

Local governments use zoning as a means for regulating the amount and location of development. Zoning is a tool that local officials may use to address the goals set forth in the Master Plan.

Land Use Patterns

Tax parcel data from 2012 shows that more than half of existing parcels are used for residential purposes. As shown in the chart and detailed table below, institutional land makes up 21 percent of existing parcels, and roughly 6 percent of parcels are used for commercial and industrial uses each. (See also, Map 3.1, Land Use Pattern)

Fig. 3.1 2012 Existing Land Uses



Source: 2012 Tewksbury Assessor Tax Parcel Database

Table 3.1. Existing Tewksbury Land Uses (2012)

Class of Use	Acres	% Total Acreage
Residential		
Single-family dwellings	5,491	46.5%
Two-family dwellings	319	2.7%
Three-family dwellings	26	0.2%
Condominiums	307	2.6%
Mobile homes	17	0.1%
Buildings with 4 to 8 units	13	0.1%
Buildings with more than 8 units	55	0.5%
Rooming and boarding houses	1	--
Total Residential	6,229	52.7%
Commercial		
Hotels, motels and nursing homes	30	0.3%
Storage warehouses and distribution facilities	73	0.6%
Retail trade (restaurants, shopping center/malls, department stores, etc.)	245	2.1%
Auto-related uses	57	0.5%
Banks, general and medical offices	75	0.6%
Indoor and outdoor recreation facilities	194	1.6%
Miscellaneous	8	0.1%
Total Commercial	682	5.8%
Industrial		
Manufacturing, R&D	504	4.3%
Public Utilities	217	1.8%
Total Industrial	721	6.1%
Exempt/Institutional		
Colleges, churches, 121A corporation, Housing Authority, Charitable Organization	262	2.2%
Municipal	1,573	13.3%
State Property	772	6.5%
U.S. Government Property	5	0.1%
Total Exempt	2,612	22.1%
Other		
Chapter 61, 61A, 61B	30	0.3%
Agricultural	7	0.1%
Mixed Use	94	0.8%
Undeveloped	1,437	12.2%
Total Other	1,568	13.3%
Grand Total	11,812	100%

Source: Tewksbury Assessor Tax Parcel Database

Residential Land Uses

As shown in Table 3.1, 53.7 percent of the town's land is used for residential purposes, with 46.5 percent used for single-family homes. A majority of the homes with Tewksbury are single-family detached dwellings in tract subdivisions. An additional 6.2 percent is occupied by other residential uses, including two-family homes, condominiums, apartments, and mobile homes.

Indicative of the town's development patterns, most of Tewksbury's oldest homes are located in the northwest, west and central sections of the town. A number of eighteenth and early- to mid-nineteenth century residences can be found on River Road, Main Street, East Street, Whipple Road, South Street, Shawsheen Street, and Rogers Street. Until the 1940s, the residential growth in Tewksbury occurred mainly along these roadways, with the exception of South Tewksbury between Main, South and Brown Streets and the Wilmington town line, where very small house lots were laid out during the 1920s.

Following World War II, subdivisions were constructed on agricultural lands and by the 1950s, substantial residential development could be found along Chandler Street and Foster Road. By 1960, large tracts of land in the areas of Kendall Road, Pennacook Road, Meredith Drive, William G Drive and Cardigan Road, Whipple Road and Rogers Street were converted to residential subdivisions. The rate of single-family residential development began to stabilize in the mid-1970s.

Commercial Land Uses

Commercial uses make up 5.8 percent of the total land area in town, according to the Assessor's database. Tewksbury has a diverse commercial base comprised of retail, hotels, restaurants, financial services, and professional and personal service establishments. Most of the town's commercial establishments lie along Route 38 (Main Street). Much of the commercial development along the Main Street corridor is in the form of the classic suburban strip mall. Other pockets of commercial development can be found along Route 133 near the I-495 interchange, on East Street near the Andover line, and on River Road.

Industrial Land Uses

In 2012, approximately 722 acres of the town's tax parcels contained industrial uses, principally comprised of manufacturing, R&D, and public utilities. Many of these establishments are located along Route 133, North Street/International Place, and East Street. Between 1999 and 2005, the amount of land used for industrial purposes declined by over 10 percent, while the amount of commercially developed land increased by 25 percent. This is a change from previous land use trends observed during the 1980s and 1990s. More extensive information regarding industrial and commercial development in Tewksbury can be found in the Economic Development section of this document.

Institutional Land Uses

Tewksbury has a traditional group of institutional land uses consisting government, charitable, religious and educational properties which occupy 22.1 percent of the town's tax parcel acreage. The Town owns 1,573 acres of land or 13.3 percent of the acreage included in the town's tax parcels. The Commonwealth of Massachusetts owns 772 acres or 6.5 percent of the town's tax parcel acreage. Tewksbury State Hospital, located off East Street, occupies much of this land. Charitable, non-profit, educational and religious entities own 262 acres, while the federal government owns 5 acres.

Zoning

Tewksbury regulates development through zoning, subdivision control, and health regulations. Tewksbury's zoning framework includes twelve conventional use zoning districts and eleven overlay districts. A **use district** is a geographic area delineated on a zoning map and designated for specific land uses. An **overlay district**, also delineated on a zoning map, may encourage or limit certain uses within one or more districts, depending on the purposes of the overlay. The Town has created eight overlay districts since completion of the 2003 Master Plan.

Each zoning district has dimensional and use requirements, and many uses require a special permit, i.e., an approval granted at the discretion of either the Zoning Board of Appeals or the Planning Board. The Planning Board exercises control over activities and uses that require site plan review. Table 3.2 identifies each zoning district and describes its intended use(s). (See also, Map 3.2., Zoning)

Table 3.2. Current Zoning Districts and Intended Uses

Land Use	Zoning District	Intended Uses
Residential	Residence 40 District (R40)	Single-family residences
	Multiple Family District (MFD)	Development of multiple family dwellings
	Multiple Family Dwelling/55 (MFD/55)	Multiple family dwelling units for individuals over age 55 years
	Community Development District	Alternative housing for elderly residents; specifically targeted for Independent Living Facilities, Assisted Living/Long-term Care
Municipal	Municipal District (MN)	Public uses owned and managed by the Town
	Park District (P)	Municipal Park Land
Commercial/Office	Commercial District (COM)	Retail, professional and personal services
	Limited Business District (LB)	Neighborhood scale retail and personal services
	Transitional District (TR)	Small scale retail and restaurants
Industrial / R&D	Heavy Industrial(HI)	Multiple commercial and industrial uses including manufacturing, warehouses, and major commercial projects
	Office Research District (OR)	R&D, manufacturing of equipment, laboratory facilities
Agricultural	Farming District (FA)	Agriculture

Table 3.3 reports the area of each zoning district in acres. Approximately 73 percent of the town is zoned for residential use, with 70 percent specifically zoned for single family residences. Commercial and industrial zoning districts cover approximately 20 percent of the town. The municipal district represents 3.4 percent of the town. It is comprised of lands use for municipal purposes, such as schools, town offices, and public safety facilities.

Table 3.3. Zoning District Classifications

Zoning District	Acres	Percentage
Residence 40 District (R40)	9,447.46	70.6%
Multiple Family District (MFD)	373.53	2.8%
Multiple Family Dwelling/55 (MFD/55)	---	---
Community Development District (CDD)	66.23	0.5%
Municipal District (MN)	448.76	3.4%
Park District (P)	125.96	0.9%
Commercial District (COM)	603.61	4.5%
Limited Business District (LB)	9.26	0.1%
Heavy Industrial(HI)	1,521.52	11.4%
Office Research District (OR)	474.71	3.6%
Farming District (FA)	293.27	2.2%
Transitional District (TR)	14.16	0.1%
Total	13,378.47	100%

A description of each existing zoning district and overlay district can be found in Appendix 6.1.

3.2 TRANSPORTATION

Road Network

The roadway network in Tewksbury provides local access within town and to surrounding communities. Interstate 495 (I-495) and Interstate 93 (I-93) are primary highways connecting Tewksbury to Boston and other large regional employment centers. State Route 38 and Route 133 are major roads that connect Tewksbury with neighboring Lowell, Andover, and Billerica. The other roads in Tewksbury connect to the primary highways, major roads and local residences, businesses, and industry centers. Tewksbury's roadway network is shown in Map 3.3.

Primary Highways. Interstate 495 is approximately 2.5 miles running generally east-west in the northern corner of Tewksbury from the border with Lowell to the border with Andover. There are two full access interchanges on I-495, one at the intersection with Route 38, and the second at the intersection with Route 133. Additionally, there is full access provided at Woburn Street, just outside Tewksbury. Interstate 93 generally travels north-south on the

eastern edge of Tewksbury but does not have an interchange within Tewksbury itself. The nearest access point is off East Street in Andover where a full access interchange is provided to I-93.

Major Roads. There are two state routes that run through Tewksbury, Route 38 (Main Street) and Route 133 (Andover Street). Route 38/Main Street carries the highest volume of vehicles in Tewksbury, with the 2012 average daily trips (ADT) close to 33,000. Bisecting the town and controlled by MassDOT, Route 38 carries regional traffic and provides access to local residences and businesses. Route 133 is under local jurisdiction and connects Lowell to Andover in the northern section of Tewksbury.

Bridge Conditions. Bridges are inspected and rated on a scale of zero to 100 to evaluate their conditions for safety and usability and to determine if maintenance or replacement is necessary. Low scoring bridges are classified as structurally deficient or functionally obsolete. Tewksbury currently has one bridge that is structurally deficient and two that are functionally obsolete according to MassDOT inspections presented in the Northern Middlesex Regional Transportation Plan (NMRTP).

A structurally deficient bridge is not necessarily unsafe, but it needs to be repaired before more deterioration takes place. The Mill Street bridge over the Shawsheen River was built in 1998 scored an AASHTO rating for 59.9, is under town jurisdiction and is considered structurally deficient.

A functionally obsolete bridge is structurally sound but does not meet current design standards for the levels of traffic carried by the bridge. The I-495 Northbound and Southbound bridges over Route 38 (Main Street) were both built in 1961, are owned by MassDOT and scored an AASHTO rating of 79.3 and 79.6 respectively. These overpasses were built in 1961 and they do not meet the current bridge standards (NMRPT).

Roadway Conditions. As show in in Table 3.4, 25 percent of regional roads are in poor condition and only seven percent are in excellent condition. Roadway conditions can be affected by usage, weather, and maintenance.

As a major arterial bisecting the town, Main Street (Route 38) experiences traffic congestion during peak periods. The NMCOG Route 38 Transportation Study summarizes the delay and level-of-service (LOS)

experienced by roadway users at key intersections during the weekday morning and afternoon peak hours in Table 3.5. In a suburban environment like Tewksbury, LOS D is generally considered acceptable. At LOS D, the signalized intersection has the ability to handle all the traffic, but a driver will experience delay between 35 and 55 seconds due to queued vehicles at the intersection. During the weekday morning peak hour, there are three

Condition	Percentage*
Excellent	7%
Good	35%
Fair	33%
Poor	25%

Source: Northern Middlesex Regional Transportation Plan 2012

intersections that experience a LOS D or lower, and seven intersections during the weekday afternoon peak hour. Weekend data is not available, but congestion related to weekend shopping trips was noted as a community concern.

Location	AM Peak Hour		PM Peak Hour	
	Control Delay	LOS	Control Delay (s)	LOS
Route 38 and I-495 SB Ramps	29.8	C	47.7	D
Route 38 and I-495 NB Ramps	47	D	39.7	D
Route 38 and Old Main Street	13	B	7.1	A
Route 38 and Walmart Plaza	4.8	A	13	B
Route 38 and Astle/Pike Street	18.9	B	45.7	D
Route 38 and Pleasant Street	26.5	C	39.8	D
Route 38 and Chandler Street	11.4	B	15.3	B
Route 38 and Victor Drive	11.7	B	11.4	B
Route 38 and Post Office Drive	7.2	A	10.1	B
Route 38 and Livingston Street	16.8	B	40	D
Route 38 and Shawsheen Street	54.5	D	72.4	E
Route 38 and South Street	60.7	E	68.8	E

Source: Route 38 Transportation Study

Roadway Capacity. Traffic volumes grew 1.12 percent annually in Tewksbury between 2004 and 2011. During the same time period, the NMCOG region as a whole experienced an overall growth of 3.92 percent, or an annual growth rate of 0.53 percent. These are shown in Table 3.6. Tewksbury's growth was higher than the region, but fairly common for a suburban community. Unchecked traffic growth over a long period of time can lead to congestion issues along a corridor.

Year	Volume
2004	82,430
2011	88,968
Total Growth	7.93
Annual Growth	1.12

Source: NMCOG Traffic Report

Parking. Currently, there are no residential parking permit programs, metered parking spots or public parking lots. The parking for commercial properties in Tewksbury is primarily provided on private property. On-street parking is limited in the town center due to space constraints on Route 38. However, off-street parking is provided by adjacent businesses. Off-street parking is generally specific to a land use or business. Commuter parking is provided at the nearby commuter rail stations and park and ride lots.

Circulation

Travel Patterns. According to Journey to Work data, twenty percent of residents work in Tewksbury, nine percent in Boston, six percent in Wilmington and five percent in Lowell. In addition to the residents of Tewksbury, eighteen percent live in Lowell, four percent in Dracut and four percent in Haverhill. The top ten results of the Journey to Work data are provided in Table 3.7.

People Who Live in Tewksbury		People Who Work in Tewksbury	
Percent	Work In:	Percent	Live In:
20%	Tewksbury	20%	Tewksbury
9%	Boston	18%	Lowell
6%	Wilmington	4%	Dracut
5%	Lowell	4%	Haverhill
5%	Billerica	3%	Billerica
5%	Burlington	3%	Methuen
4%	Woburn	3%	Lawrence
3%	Andover	3%	Wilmington
2%	Chelmsford	2%	Boston
2%	Cambridge	2%	Andover
39%	Other	33%	Other

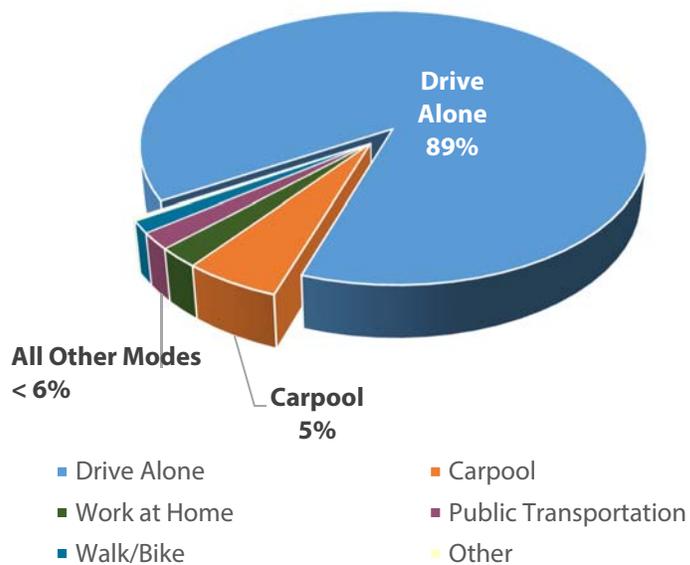
Source: 2010 US Census

Figure 3.2 shows that 94 percent of workers drive alone or carpool while only 1.4 percent walk or bike; 1.9 percent use public transportation; and, 2.3 percent work from home.

Commuter time for Tewksbury residents was compiled in the Northern Middlesex Regional Transportation Plan (NMRTP) with data from U.S. Census Bureau 2005-2009 American Community Survey. The data show that:

- 23 percent have less than a 15-minute commute
- 33 percent have a 15 to 30-minute commute
- 24 percent have a 30 to 45-minute commute
- 10 percent have a 45 to 60-minute commute
- 11 percent have more than a 60-minute commute

Figure 3.2. Mode of Travel to Work



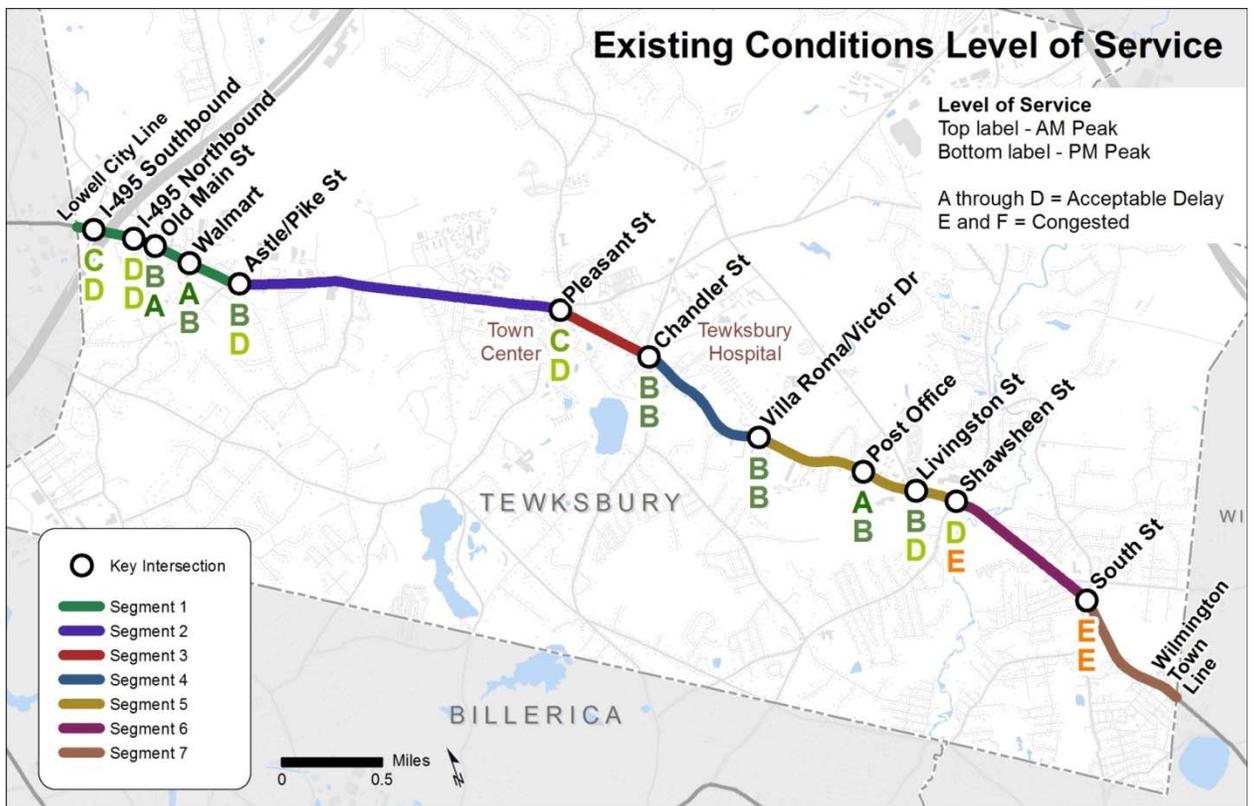
Traffic Safety and Operations. From 2006-2008, NMRTP reported that there were 1,956 crashes in the 293 roadway miles in Tewksbury. This is a rate of 2.2 crashes per roadway-mile,

which is lower than the regional average of 2.7 crashes per roadway mile. (For more information on crashes, see the Appendix.

Road Safety Audits (RSA) are a collaboration between MassDOT, engineering consultants and town offices with the goal of identifying improvements for troubled intersections. In 2010, a RSA was completed at the intersection of East Street and Livingston Street. Improvements to the intersections included new sidewalks, crosswalks and traffic signals that were constructed as a result of the RSA findings.

Route 38 Level of Service (LOS). The Route 38 Transportation Study evaluated the effective speed along Route 38 between Lowell and Wilmington during the weekday morning and afternoon peak hours. A level-of-service (LOS) A represented free-flow conditions and LOS E or F representing a congested segment. The section between Lowell and the I-495 southbound ramps operated at LOS F in the northbound condition under both peak periods and the southbound direction operated at LOS E during only the weekday morning. The southbound section between Livingston and Shawsheen was shown to operate at LOS F during the weekday morning and afternoon peak hours. In general, the arterial operated at a LOS B for the majority of other roadway segments as seen in Figure 3.3. However, the study did not analyze the Saturday midday peak hour when the major retail locations require access and traffic congestion has been reported as an issue.

Figure 3.3.: Existing Conditions and LOS



There are currently some roadway improvement projects underway in Tewksbury. Route 38 between the Lowell town line and Astle Road will be re-surfaced with new striping to improve roadway operations. No capacity to the roadway will be added as part of the project. River Road was re-constructed two years ago which connects to Andover and the Lowell town lines. In general, the Town Engineer indicates many roads in Tewksbury have horizontal curves that can cause sight distance issues at driveways.

Public Transportation

Bus. Bus options are provided by Lowell Regional Transit Authority (LRTA) and the MBTA Commuter rail. Within Tewksbury the LRTA provides fixed route and paratransit service. LRTA Route 11 runs along Route 133 and Route 12 runs along Route 38 (Main Street), with part of the route being East Street to the State Hospital and back to Main St at Livingston Street. A portion of Route 3 passes through Tewksbury, providing connections to Lowell and the North Billerica MBTA Station and Route 2 terminates at the Stadium Plaza shopping center. The frequency and hours of operation for the Route 11 and Route 12, which are the primary routes provided in Tewksbury, are provided in Table 3.8.

Table 3.8. LRTA Bus Service Frequencies

Route No.	Route Name	Weekday Peak	Weekday Off-Peak	Saturday	Outbound Trips	Inbound Trips	Start	End
11	IRS/ Route 133	60 min.	120 min.	None	4	4	6:00 AM	4:55 PM
12	Tewksbury/ Route 38	60 min.	60 min.	--	11	11	6:45 AM	6:00 PM
12	Tewksbury/ Route 38	--	--	120	5	5	7:00 AM	4:30 PM

Source: NM RTP

Between 2006 and 2010, Route 11 average monthly ridership decreased 9.6 percent from 1,195 to 736. Route 12 decreased 0.76 percent from 4,557 to 4,417.

Commuter Rail. Train service is not provided within Tewksbury, but residents can drive to stations in Lowell, Billerica, or Wilmington, and Wilmington is also accessible by bus. The MBTA Lowell line stops at Billerica and provides 31 inbound and 27 outbound trains during the weekday and eight inbound and outbound during the weekend. The MBTA Haverhill Line stops at Wilmington/North Wilmington at provide 13 inbound 14 outbound during the weekday and 6 inbound and outbound trains during the weekend. NM RTP reported that commuter rail parking lots near Tewksbury are between 66 and 78 percent full.

Other Modes. LRTA provides demand responsive and prescheduled van service, known as “Road Runner” to eligible clients in Tewksbury. Trips are booked by calling Road Runner

two days in advance. The service is available for shopping, social and recreational trips, however the trip may be denied on busy days due to limited seating availability. Individuals with disabilities and medical trips take priority over all other trip requests. Tewksbury senior service operates Monday through Saturday for in-town trips. Out of town trips to Chelmsford, Lowell and Billerica are available Monday through Friday. Medical trips to Wilmington are available on weekdays.

WITHIN THE COMMERCIAL CORRIDORS OF TOWN, PARKING LOTS AND DEVELOPMENTS ARE NOT INTERCONNECTED AND THIS FORCES SHOPPERS TO DRIVE BETWEEN BUSINESSES . . . THE LACK OF CONNECTIONS BETWEEN NEIGHBORING RESIDENCES OR SHOPPING CENTERS MAKES WALKING UNSAFE.

Pedestrian & Bicycle Network

Within the commercial corridors of town, parking lots and developments are not interconnected and this forces shoppers to drive between businesses. The residential zoning policies within town promote open-space conservation, which results in preserved open-space but also a disconnected roadway network that creates inefficient routes between neighborhoods. The lack of connections between neighboring residences or shopping centers makes walking unsafe.

There is currently no dedicated bicycle infrastructure in Tewksbury. However, the Metropolitan Area Planning Council (MAPC) awarded the Tewksbury Rail Trails committee a \$7,500 grant in 2011. The grant money is the basis for the Bicycle and Pedestrian Advisory Committee promoting active transportation within town. Working with Community Preservation Act (CPA) funds, the Tewksbury Rail Trails Committee has started working on initial plans for a trail along the abandoned rail corridor that runs adjacent to Route 38 (Main Street). The rail trail has the potential to be the spine of a new bicycle network, planning for low-stress connections that will enhance the usage of the trail.

Additionally, there are two regional trails planned: the Bay Circuit Trail and Concord River Greenway. The Bay Circuit trail is envisioned as an outer emerald necklace, connecting the communities between the I-95 and I-495 loop. There is a proposed segment of the trail that would connect Bedford to Andover through Billerica and Tewksbury. The Concord River Greenway is another connection to the Bay Circuit Trail that would potentially run through Lowell and along the Concord River in the northern section of Tewksbury. These trail connections provide Tewksbury residents' access to a network that spans from Duxbury on the South Shore to Newbury on the North Shore.

3.3 HOUSING

Characteristics of Existing Housing

Table 3.9 illustrates the total number of housing units, by housing type, for 2000 and 2010. In 2000, there were 10,171 housing units in Tewksbury. Single-family homes represented the largest percentage of homes, accounting for 76.5 percent of all housing units. Single unit, attached homes were the second most prevalent at 9.8 percent of the housing stock, followed by 3 to 19 unit complexes at 6.7 percent.

By 2010, the Town's housing stock continued to diversify and grew by 588 units, or 5.8 percent overall. While single-family homes remain the most prevalent housing type, at 73.1 percent, the increase in the number of multi-family housing complexes of 20 units or more from 3.2 percent to 5.6 percent was greater than that of single family homes over the ten-year period – 1 percent increase for 1-unit attached units versus an 82.9 percent increase for 20 or more units. Multi-family dwellings (3+ units) increased across the board with an additional 353 units over the ten-year time period. Many of the mobile homes in Tewksbury are located adjacent to Long Pond and were counted by the 2010 U.S. Census. The units in this development are accessible from the Town of Billerica off of Oak Street.

Table 3.9. Housing Units by Type: 2000 and 2010

Number of Units per Structure	2000		2010		Percent Change 2000-2010
	Number	Percent	Number	Percent	
1-unit, detached	7,780	76.5%	7,860	73.1%	1.0%
1-unit, attached	998	9.8%	1,034	9.6%	3.6%
2 units	232	2.3%	272	2.5%	17.2%
3 to 19 units	681	6.7%	763	7.1%	12.0%
20 or more units	327	3.2%	598	5.6%	82.9%
Mobile home	153	1.5%	232	2.2%	51.6%
Total Housing Units	10,171	100.0%	10,759	100.0%	5.8%

Sources: 2000 U.S. Census; 2006-2010 American Community Survey

Housing Tenure

Table 3.10 compares housing tenure figures in 2000 and 2010. In 2000, 8,877 housing units in Tewksbury were owner-occupied (89.1 percent) and 1,087 (10.9 percent) were renter-occupied. Ten years later, Tewksbury had an additional 314 owner-occupied units for a total of 9,191 units. This represents a 3.5 percent growth. Additionally, 214 renter-occupied units were added to the market for a total of 1,301 units. This change represents an increase of 19.7 percent in renter-occupied units and boosts the ratio of renter versus ownership units.

Although the Town is primarily comprised of owner-occupied units, growth in renter occupied units outpaced units that are owned outright for the 10-year period.

Table 3.10. Housing Tenure: 2000 and 2010

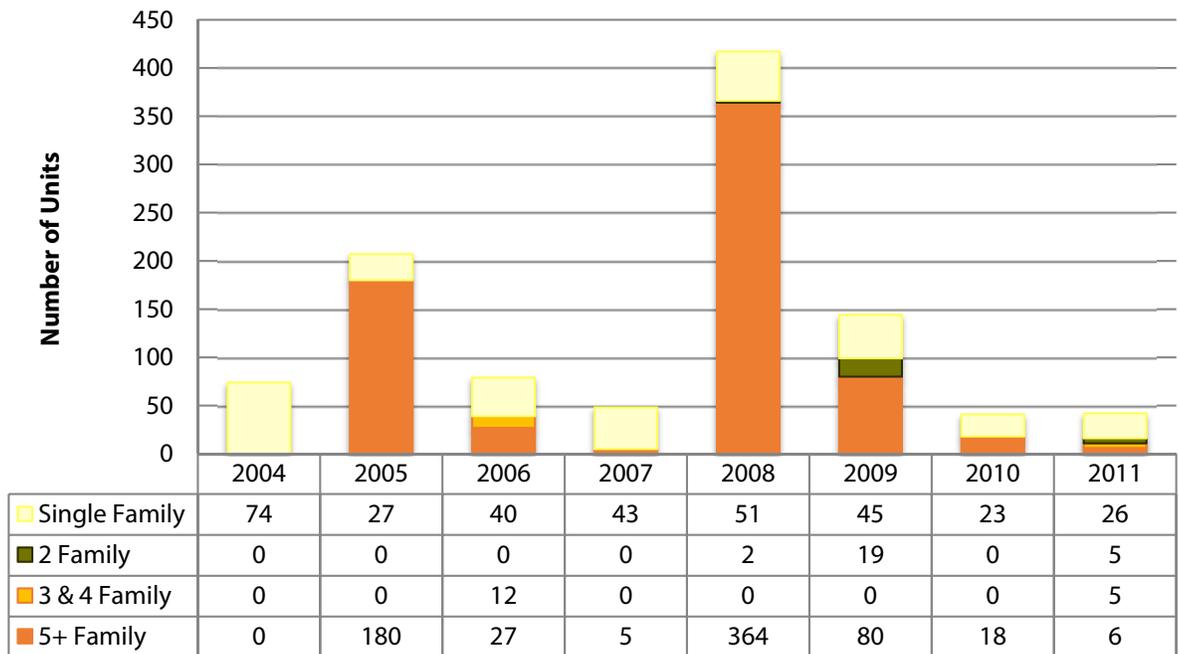
Tenure	2000		2010		Percent Change 2000 – 2010
	Units	Percentage	Units	Percentage	
Owner-Occupied	8,877	89.1%	9,191	87.6%	3.5%
Renter-Occupied	1,087	10.9%	1,301	12.4%	19.7%
Occupied Housing Units	9,964	100.0%	10,492	100.0%	5.3%

Source: 2010 U.S. Census

New Residential Development

Table 3.11 provides the number of residential units built for a variety of housing types between 2004 and 2011. In this time period, there were 1,052 housing units built in Tewksbury. The number of units built between 2006 and 2008 declined annually but rose again and peaked in 2008, when 417 units were built – including 364 mixed-income apartments at the Lodge at Ames Pond. Over the past three years, the number of issued permits slowly declined again, rising only slightly (by one unit) in 2011 with 42 units. As expected, the number of units built in 2009 was significantly lower than in previous years – a trend that corresponds to the economic recession and decline in the real estate market. Over the past eight years, 680 of the 1,052 buildings constructed were 5+ family structures, or 64.6 percent. This is compared to 329 single family units, or 31.2 percent of the total.

Table 3.11. Residential Units Built by Housing Type: 2004 through 2011



Source: Tewksbury Building Department (2009-2011) & MassBenchmark (2004-2008)

Table 3.12 provides the average valuation per unit for the time period between 2002 and 2011. There have been significant fluctuations, as seen in 2005 and 2008, but after 2008, the average valuation began increasing again and has remained somewhat steady despite continued growth in multi-family building permits being issued.

Table 3.12. Residential Permits Issued and Units Built in Tewksbury: 2002 through 2011

Year	Total Building Permits	Total Units Built	Total Valuation	Average Valuation Per Unit
2002	43	43	\$6,058,456	\$140,894
2003	64	64	\$8,588,104	\$134,189
2004	74	74	\$11,280,846	\$152,444
2005	29	207	\$19,462,363	\$94,021
2006	45	79	\$11,473,835	\$145,238
2007	44	48	\$7,800,202	\$162,504
2008	65	417	\$40,101,737	\$96,167
2009	67	144	\$18,840,045	\$130,834
2010	41	41	\$7,082,080	\$172,734
2011	42	42	\$6,958,040	\$165,668

Source: Tewksbury Building Department (2009-2011) & MassBenchmark (2004-2008)

Table 3.13 compares the median selling prices of homes in Tewksbury to the other eight communities in the NMCOG region. According to the results of this analysis, Tewksbury's total median sales figure for 2011 (\$275,000) is the closest to the state average of \$273,500. It rivals Chelmsford, Billerica and Tyngsborough, but is still well above the NMCOG average of \$204,434. Single-family home median sales in Tewksbury (\$295,450) are slightly above most communities in the region except for Chelmsford (\$310,000), Dunstable (\$407,500) and Westford (\$434,400). Median sale prices for condominiums across the region are significantly lower at \$179,602.

Table 3.13. Comparison of Median Selling Prices in Tewksbury to the NMCOG Region: 2011

Community	Single Family – Median Sales	Number of SF Sales	Condos – Median Sales	Number of Condo Sales	Total Median Sales	Total Number of Sales
Billerica	\$286,000	253	\$232,950	40	\$279,600	346
Chelmsford	\$310,950	256	\$195,000	113	\$275,500	415
Dracut	\$223,000	204	\$148,900	71	\$210,000	335
Dunstable	\$407,500	19	\$0	0	\$340,000	27
Lowell	\$182,750	400	\$115,000	221	\$165,000	939
Pepperell	\$278,000	66	\$97,000	7	\$255,500	93
Tewksbury	\$295,450	192	\$229,000	81	\$275,000	327
Tyngsborough	\$295,000	76	\$209,900	51	\$263,750	150

Community	Single Family – Median Sales	Number of SF Sales	Condos – Median Sales	Number of Condo Sales	Total Median Sales	Total Number of Sales
Westford	\$434,400	168	\$282,500	74	\$375,000	297
NMCOG	\$274,603	1,634	\$179,602	658	\$204,434	2,929
Massachusetts	\$286,000	39,103	\$270,000	15,119	\$273,500	72,430

Source: The Warren Group, 2012

Housing Affordability

Public officials generally agree on a definition of ‘affordable’ housing as housing that costs no more than 30 percent of a low- or moderate-income household’s total income and that is deed restricted to protect affordability over time, thus eligible for the Chapter 40B Subsidized Housing Inventory. Households that spend between 30 percent and 50 percent of their annual incomes on housing and related costs (including basic utilities and fuels) are said to be ‘moderately’ burdened while those spending more than half of their incomes are considered ‘severely’ burdened.

Housing Cost Burden

Table 3.14 shows estimated monthly housing costs for homeowners as a percentage of annual household income in 2010. Approximately 26.9 percent of households with a mortgage and 65.6 percent without a mortgage were estimated to pay less than 20 percent of their annual household incomes on housing-related costs. Those paying between 20 percent and 29 percent of their income accounted an estimated 34.4 percent of households with a mortgage and 14.5 percent of households without a mortgage, respectively. However, 3,010 households in Tewksbury, almost one-third (28.7 percent) of all households, had moderate to severe **housing cost burden**, i.e., they paid more than 30 percent of their monthly income for housing. This increased from 2000, when 24.2 percent of homeowners were considered burdened by their housing costs.

Table 3.13. Monthly Housing Costs as a Percentage of Annual Household Income: 2010

	Total	Less than 20%		20%-29%		30% or more		Not Computed
	Households	#	%	#	%	#	%	
Households with a mortgage	6,701	1,802	26.9%	2,306	34.4%	2,561	38.2%	32
Households without a mortgage	2,345	1,538	65.6%	340	14.5%	449	19.1%	18

Source: 2006-2010 American Community Survey

For Tewksbury’s renters, the situation is more difficult. In 2000, 36.3 percent of renters were burdened by their housing costs. However, in 2010, an estimated 48.8 percent - almost half of the renting households in Town – were paying 30 percent or more of their income on housing

costs. Table 3.14 reports the rent as a percentage of income in Tewksbury. In total, an estimated 3,642 households (homeowners and renters), or 34.7 percent, reported that in 2010 they were burdened by their housing costs.

Table 3.14. Gross Rent as a Percentage of Household Income: 2010

Rent as a Percent of Income	Number of Renting Households	Percent of Renting Households
Less than 10%	9	0.7%
10% to 19%	247	19.1%
20% to 29%	350	27.0%
30% to 49%	231	17.8%
50% or more	401	31.0%
Not computed	57	4.4%
Total	1,295	100.0%

Source: 2006-2010 American Community Survey

Fair Market Rents (FMRs) are primarily used to determine payment standard amounts and maximum rents for Section 8 and other federal housing programs. Each year, the U.S. Department of Housing and Urban Development (HUD) annually estimates FMRs for 530 metropolitan areas and 2,045 nonmetropolitan county FMR areas.

As shown in Table 3.15, the fair market rent for a 1-bedroom apartment in the Lowell, MA HUD Metro Fair Market Rent Area (which Tewksbury is a part of) was \$861 per month. Unfortunately, this number actually decreased, causing problems with some of the Chapter 40B developments in Tewksbury. When the FMR is reduced but the Section 8 voucher stipend remains constant, renters need to find a way to fill the gap. For instance, in 2012, the current rent at Lodge at Ames Pond for a one-bedroom apartment was \$1,099. However, the FMR is \$861. The tenant would have to find a way to cover the difference in what they receive from their Section 8 voucher to remain in their apartment or be forced to move.

Table 3.15. Fair Market Rent for Lowell, MA HUD Metro FMR Area for 2012

	Efficiency	1-Bedroom	2-Bedroom	3-Bedroom	4-Bedroom
Final FY 2012 Fair Market Rent	\$720	\$861	\$1,107	\$1,322	\$1,450

Source: FY2012 Lowell, MA HUD Metro FMR Area, HUD Fair Market Rent Documentation System, effective October, 1, 2011

Existing Subsidized Housing Stock

The Department of Housing and Community Development (DHCD) regularly reports the housing developments in a community that count toward its 10 percent affordability goal. This information summarizes individual projects and includes project names, housing type (rental versus homeownership), total subsidized housing inventory (SHI) units, affordability expiration, subsidizing agency, and whether or not the development was built using a

Comprehensive Permit. Table 3.16 represents housing developments included in Tewksbury's Chapter 40B SHI Report as of 2016, according to the Town.

Units are added and subtracted from an SHI throughout the cycle of their approval and construction. A unit is added to an SHI once it has received a Comprehensive Permit. Ultimately the Town has to document that a building permit has been issued and then that certificate of occupancy has been received for that unit to remain on the SHI.

Table 3.16. Tewksbury Subsidized Housing Inventory as of April 2012

Project Name	Address	Type	Total SHI Units	Affordability Expires	Subsidizing Agency
Robert Flucker Heights	Delaney Drive	Rental	50	Perpetuity	HUD
	Pondview Lane	Rental	8	Perpetuity	DHCD
	Carnation Drive	Rental	40	Perpetuity	DHCD
	Carnation Drive	Rental	40	Perpetuity	DHCD
	Saunders Circle	Rental	60	Perpetuity	DHCD
	Roy Way	Rental	8	Perpetuity	DHCD
	Pondview Lane	Rental	8	Perpetuity	DHCD
	Water St. and Patriot Road	Rental	2	Perpetuity	DHCD
	23 Dirlam Lane/6 Independence Avenue	Rental	2	Perpetuity	DHCD
	Pondview Lane	Rental	13	Perpetuity	DHCD
Gettysburg Common		Ownership	10	Perpetuity	DHCD
Merrimac Meadows	Merrimac Drive	Ownership	86	Perpetuity	DHCD
Orchard Park	Orchard Street	Ownership /Rental	6/2	2043	DHCD
Sullivan Place	11 Old Boston Road	Rental	77	Perpetuity	DHCD
Sheriden Development	Cinnamon Circle	Ownership	8		DHCD
Wamesit Villages Limited Partnership	540 Main Street	Ownership	6	2051	DHCD
DMR Group Home	Confidential	Rental	67	N/A	DDS
Rogers Common	42 Rogers Street	Rental	20	2036	DHCD
DMH Group Home	Confidential	Rental	8	N/A	DMH
Andover Estates	1582 and 1596 Andover Street	Ownership	5	Perpetuity	MassHousing
Shawsheen Woods	1177 Shawsheen Road	Ownership	4	Perpetuity	MassHousing
Lodge at Ames Pond	Ames Pond Drive	Rental	364	Perpetuity	MassHousing

Project Name	Address	Type	Total SHI Units	Affordability Expires	Subsidizing Agency
Village Green	Villa Roma Drive	Rental	56	Perpetuity	MassHousing
Maple Court	79 Maple Road	Ownership	1	Perpetuity	MassHousing
Fahey Place	1360 Main Street	Rental	26	Perpetuity	MassHousing
Highland Avenue	Highland Avenue and Lowell Street	Ownership	2	Perpetuity	DHCD
Livingston Place	788 Livingston Street	Ownership	2	Perpetuity	MassHousing
Roberts Reach	770 Livingston Street	Ownership	4	Perpetuity	MassHousing
Tewksbury Housing Authority	Saunders Circle	Rental	32	2042	HUD 202
Total			1,017		

Affordable Housing Organizations and Services

- **Tewksbury Local Housing Partnership.** The Tewksbury Local Housing Partnership (Partnership) was incorporated by the Board of Selectmen to study the need for affordable housing and to recommend procedures for the implementation of Tewksbury’s Affordable Housing policy. The Partnership acts as the Town’s initial contact with developers of proposed affordable residential housing projects which are site-specific and for which the developer has indicated an intention to request an increase in allowed density or other variances in return for said provision of affordable housing.
- **Tewksbury Housing Authority.** The Tewksbury Housing Authority (THA), established in 1967, is the local body responsible for the expenditure of State and Federal housing grants. The Authority currently owns and manages 190 units of housing for the elderly and disabled, 18 units of family rental housing and 24 units of housing for people with special needs. An additional 110 family units are administrated in partnership with local landlords and THA. The THA’s housing programs are subsidized and regulated by the Commonwealth and HUD. The THA is a MassHousing certified Chapter 40B monitoring agent and serves Tewksbury and surrounding communities in managing and tracking their affordable housing units.
- **Tewksbury Affordable Housing Trust Fund.** Chapter 105 of the Acts of 2003 established a separate fund for the purpose of creating or preserving affordable housing by the Town of Tewksbury.
- **Community Preservation Committee.** In 2006, Tewksbury passed Chapter 14.04 to adopt the Community Preservation Act. This legislation allows communities to impose a surcharge on annual property tax bills and use the funds to preserve open space and historic resources, and create affordable housing. Tewksbury’s Community Preservation

Committee (CPC) allocates a minimum of 10 percent of the estimated revenue each year towards Affordable Housing initiatives.

3.4 ECONOMIC DEVELOPMENT

A comparison of the income data from the 2000 U.S. Census and the 2006-2010 American Community Survey can be found in the key demographics section in Chapter 1, Introduction.

Municipal Taxation and Spending

Table 3.17 below compares Tewksbury's FY 2015 tax rates with the rates of other communities in the region. As shown, Tewksbury has the region's fourth-highest residential tax rate and third-highest commercial, industrial, and personal property tax rates.

Table 3.17. Tax Rates Compared to Communities in the Greater Lowell Region, FY2015

Community	Residential	Open Space	Commercial	Industrial	Personal Property
Billerica	\$14.04	\$0.00	\$32.67	\$32.67	\$32.67
Chelmsford	\$18.70	\$0.00	\$18.70	\$18.70	\$18.70
Dracut	\$14.93	\$0.00	\$14.93	\$14.93	\$14.93
Dunstable	\$16.73	\$0.00	\$16.73	\$16.73	\$16.73
Lowell	\$15.48	\$0.00	\$32.46	\$32.46	\$32.46
Pepperell	\$15.95	\$0.00	\$15.95	\$15.95	\$15.95
Tewksbury	\$16.37	\$0.00	\$27.62	\$27.62	\$27.62
Tyngsborough	\$16.96	\$0.00	\$16.96	\$16.96	\$16.96
Westford	\$16.24	\$0.00	\$16.44	\$16.44	\$16.24

Source: Massachusetts Department of Revenue, Division of Local Services

A total of \$71,444,252 in property taxes was levied in Tewksbury in FY2015. The majority of the town's property tax revenue was obtained from residential properties, which had a total assessed value of over \$3 billion. Commercial properties were the second-largest revenue source at nearly \$347 million, followed by industrial properties \$195 million and personal property at \$4.5 million. Table 3.18 details the FY 2015 tax classification data for Tewksbury.

Table 3.18. Fiscal Year 2015 Tax Classification

Tax Classification	Assessed Values	Tax Levy	Tax Rate (\$ per \$1000 valuation)
Residential	\$3,174,313,439	\$51,963,511	16.4
Open Space	\$0	\$0	---
Commercial	\$346,909,486	\$9,581,640	27.6
Industrial	\$195,098,045	\$5,388,608	27.6
Personal Property	\$163,305,340	\$4,510,493	27.6
Total	\$3,879,626,310	\$71,444,252	

Source: Massachusetts Department of Revenue, Division of Local Services

In FY 2015, Tewksbury's eight largest taxpayers included Raytheon, Demoulas Supermarkets, National Grid, 495 Network Center, Highwood Holdings, BCIA 1925 Andover Street, Ames Pond LLC, and ThermoFisher.

Labor Force

The labor force figures for Tewksbury have not changed that much since 2002. According to the seasonally unadjusted labor force figures developed by the Executive Office of Labor and Workforce Development, the total labor force for Tewksbury in October 2002 was 16,970, only 60 workers greater than the October 2014 figure of 16,910. Within the overall labor force, the number of Tewksbury residents employed actually increased from 16,091 in October 2002 to 16,106 in October 2014. Based upon the larger workforce numbers, the unemployment rate in October 2002 was 5 percent, as compared to the 5.1 percent figure in October 2014.

Places of Employment

Though the data produced by the American Community Survey is not as in-depth as data available in the decennial census, important conclusions can be drawn regarding places of employment for Tewksbury residents. As shown in Table 3.19, the majority of Tewksbury residents (72.7 percent or 10,295) worked in Middlesex County in 2010, and of the minority that worked outside of the county in that year (23.4 percent or 3,314), 16.7 percent or 552 of the residents worked outside of Massachusetts.

Table 3.19 Places of Work for Tewksbury Residents in 2013

Place of Work	Estimated Number of Workers
Total	15,236
Worked in state of residence	14,689
Worked in county of residence	10,969
Worked outside county of residence	3,720
Worked outside state of residence	547

Source: American Community Survey (2009-2014)

Employment by Industry

Tewksbury residents are employed in numerous industries and occupations. Table 3.20 displays the primary industries for 2000, 2010 and 2013. Between 2000 and 2010, over 1000 jobs were lost within the community. Between 2010 and 2013, most of those jobs were recovered, bringing employment back to where it was in 2000.

The greatest number of Tewksbury residents has consistently been employed in the educational services, health care, and social assistance industries. This industry continues to grow, and in 2013 employed 3,444 residents. Manufacturing employs the second largest

number of residents, though employment in this industry has decreased from 2000 and 2010, reflecting a regional and national trend. Since 2000 the greatest number of employment losses occurred in wholesale trade, finance and insurance, and real estate.

Table 3.20. Primary Employment Industries for Tewksbury Residents in 2000, 2010 and 2013

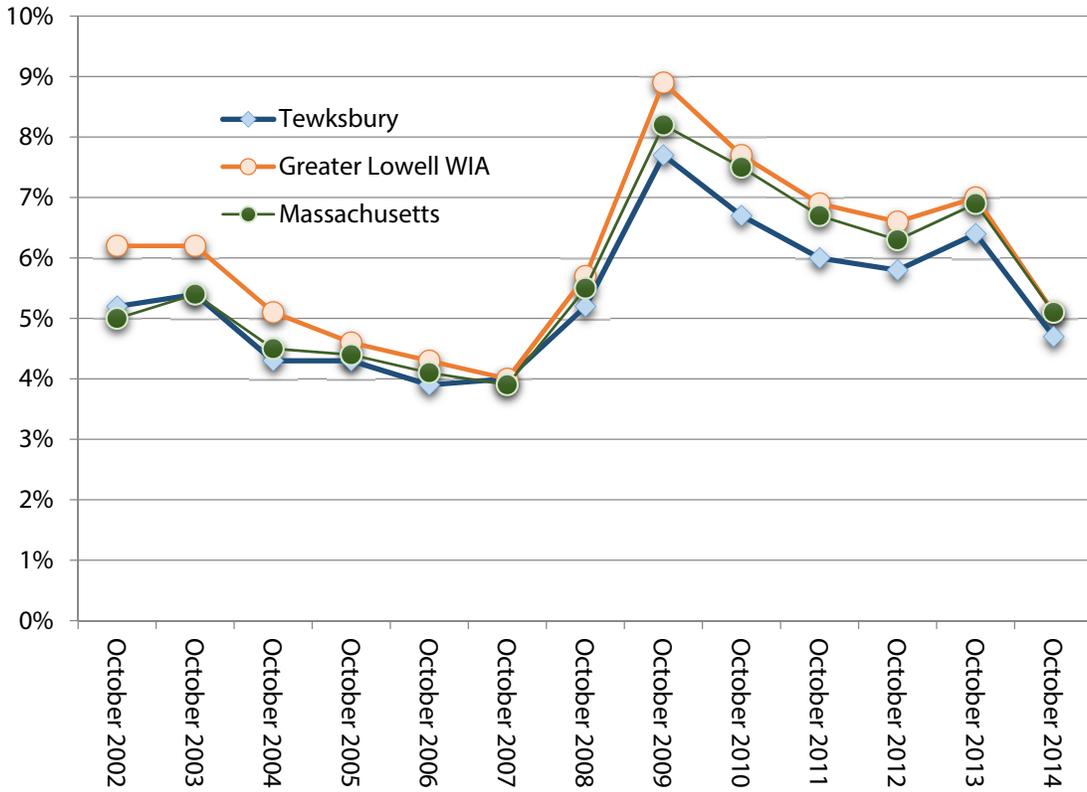
INDUSTRY	2000	2010	2013	Percent Change 2000-2013
Agriculture, forestry, fishing and hunting, and mining	28	35	24	12.9%
Construction	1,168	1079	1,319	-21.6%
Manufacturing	2,620	1847	2,054	-62.8%
Wholesale trade	768	357	286	2.3%
Retail trade	1,717	1417	1,756	-3.7%
Transportation and warehousing, and utilities	768	641	740	4.5%
Information	598	570	625	-14.4%
Finance and insurance, and real estate and rental and leasing	1,128	1167	966	11.3%
Professional, scientific, and management, and administrative and waste management services	1,772	2241	1,973	18.4%
Educational services, and health care and social assistance	2,909	3054	3,444	0.1%
Arts, entertainment, and recreation, and accommodation and food services	832	622	833	22.5%
Other services, except public administration	604	549	740	14.7%
Public administration	699	921	802	-14.3%
Total All Industries	15,611	14,500	15,562	-0.3%

Source: U.S Census 2000, American Community Survey (2006-2010 and 2009-2013)

Unemployment Rates

The unemployment rate in Tewksbury has rebounded considerably from its peak in 2009 when it hit 7.7 percent. In October 2014, the unemployment rate for Tewksbury was 4.7 percent, which was lower than the Greater Lowell area rate and the rate for the Commonwealth overall. Since 2002, the unemployment rate for Tewksbury has been consistently lower than that of other Greater Lowell communities, and with the exception of October 2002, it has generally been lower than that of the Commonwealth, as shown in Figure 3.4.

Figure 3.4. Historical Unemployment Rates



Employment Base

Tewksbury added fifty-seven establishments from 2002 to 2013. The number of establishments in Tewksbury has been fairly consistent from 2002 to 2013, with a peak of 872 establishments in 2011. This trend has continued into the second quarter of 2014, with 866 business establishments in Tewksbury.

The Executive Office of Labor and Workforce Development (EOWLD) publishes a listing of the largest employers in the Greater Lowell Workforce Investment Area. Table 3.21 includes the Tewksbury employers found on the list, which span a wide range of industries. The town’s largest employer is Tewksbury Hospital. Tewksbury is also home to the headquarters of Market Basket, a large regional supermarket chain; Raytheon Integrated Defense, a major defense contractor; and ThermoFisher, an electronics manufacturing company. According to the state’s database, there are nineteen firms in town that employ one hundred or more employees.

Table 3.21. Major Employers in Tewksbury in 2014		
Company	Employees	Industry
Tewksbury Hospital	1,000-4,999	Medical hospital
Raytheon Integrated Systems	Unavailable	Defense contractor
Market Basket	500-999	Supermarket chain
Thermo Fisher	400-500	Electronics manufacturing
Merrill Corporation	250-499	Consulting services
Walmart Supercenter	250-499	Department store
Atamian Volkswagen Honda	100-249	Automotive dealer
Blaire House	100-249	Medical services
Corning Life Sciences	100-249	Medical equipment
Cracker Barrel	100-249	Restaurant
Tewksbury Inn/Holiday Inn	100-249	Hotel
Holt and Bugbie	100-249	Construction materials
Home Depot	100-249	Home improvement store
Kmart	100-249	Department store
Moody, Famiglietti & Andronico	100-249	Accounting
National Grid	100-249	Utility
Tewksbury High School	100-249	Education
Well Pet LLC	100-249	Animal food manufacturing
Worldwide Technical Services	100-240	Consulting services
Source: Executive Office of Labor and Workforce Development, using data provided by InfoGroup		

Industry Composition

Tewksbury's diverse spectrum of industries ranges from construction to retail trade to health care and social assistance. Between 2002 (Q2) and 2014 (Q2), the total number of establishments increased from 775 in 2002 to 866 in 2014, or by 11.7 percent. Within the goods-producing domain, the total number of establishments decreased from 175 in 2002 to 150 in 2014, or by 14.3 percent. Both Construction and Manufacturing decreased by 11.1 percent and 23.1 percent respectively.

In the service-providing domain, the total number of establishments increased from 600 in 2002 to 716 in 2014, or by 19.3 percent. Among those industries that experienced growth: Education and Health Services (139.1 percent), Public Administration (40 percent), Information (33.3 percent), Leisure and Hospitality (20.8 percent), Professional and Business Services (5.8 percent), and Other Services (3.7 percent).

Several industries in the service-providing domain experienced decreases in the number of establishments, including Financial Activities (-10.7 percent) and Trade, Transportation and Utilities (-0.6 percent). Within the Financial Activities industry, Real Estate and Rental and Leasing establishments decreased by 20 percent or 6 firms. The changes in industry

composition largely reflect the changes in the region moving from a goods-producing domain to a service-providing domain. Outlined Table 3.22 is a summary of the changes in Tewksbury's industry composition from 2002 Q2 to 2014 Q2.

Number of Establishments	2002 (Q2)	2014 (Q2)	
Goods-Producing Domain	175	150	-14.3
Construction	135	120	-11.1
Manufacturing	39	30*	-23.1
<i>NONDUR - Non Durable Goods Manufacturing</i>	7	5	-28.6
Service-Providing Domain	600	716	19.3
Trade, Transportation and Utilities	165	164	-0.6
<i>Wholesale Trade</i>	48	46	-4.2
<i>Retail Trade</i>	87	88	1.1
<i>Transportation and Warehousing</i>	27	27	0
Information	9	12	33.3
Financial Activities	56	50	-10.7
<i>Finance and Insurance</i>	26	26	0
<i>Real Estate and Rental and Leasing</i>	30	24	-20.0
Professional and Business Services	137	145	5.8
<i>Professional and Technical Services</i>	87	98	12.6
<i>Administrative and Waste Services</i>	48	43	-10.4
Education and Health Services	64	153	139.1
<i>Health Care and Social Assistance</i>	54	136	151.9
Leisure and Hospitality	77	93	20.8
<i>Arts, Entertainment, and Recreation</i>	11	12	9.1
<i>Accommodation and Food Services</i>	66	81	22.7
Other Services	82	85	3.7
Public Administration	10	14	40.0
Total All Industries	775	866	11.7%

Source: Executive Office of Labor and Workforce Development, ES-202 Reports

Location Quotients. Location quotients (LQ) can be useful tools for identifying cluster industries within a community. Location quotients compare the concentration of individual industries within a community with those same industries within a larger reference area, such as a county or metro region. Location quotient analysis focuses upon the strengths of a local economy as a precursor to attracting similar industries to the community. When a location quotient is greater than 1.0, it means that the particular industry is more significant locally than in the larger geographic area. In Tewksbury, five out of the nine primary industry sectors have significant location quotients for average monthly employment, especially Construction

and Manufacturing. These are among the town's strongest sectors despite recent decreases in total number of establishments.

Wages by Industry

The wages provided by industry in Tewksbury contribute a great deal to the local economy. Between 2002 (Q2) and 2014 (Q2), the total number of establishments in all industries increased from 775 in 2002 to 866 in 2014, or by 11.7 percent. However, the average monthly employment decreased from 16,068 in 2002 to 15,342 in 2014, or by 4.5 percent. During this same period, the total wages paid in all industries increased by 33.7 percent from \$195,696,175 in 2002 to \$261,659,072 in 2014. The average weekly wages increased from \$937 in 2002 to \$1,312 in 2014, or by 40 percent.

Within the Goods-Producing Domain, the total number of establishments decreased by 14.3 percent from 175 establishments in 2002 to 150 establishments in 2014. This employment sector is comprised largely of the construction and manufacturing industries. The average monthly employment also decreased from 3,919 in 2002 to 3,439 in 2014, or by 12.2 percent. As shown in Table 3.23, the total wages in this employment sector increased significantly, notwithstanding the decrease in the number of establishments, from \$74,672,918 in 2002 to \$112,157,036 in 2014, or by 50.2 percent. The average weekly wages also increased significantly from \$1,466 in 2002 to \$2,509 in 2014 or by 71.1 percent. Within the construction industry, total wages increased by 28.1 percent between 2002 and 2014, while average weekly wages increased by 18 percent. Similarly, in the manufacturing industry, it is estimated that the total wages increased by 54.4 percent between 2002 and 2014 and the average weekly wages increased by 13.6 percent. Estimates were developed due to the suppression of the manufacturing industry information in 2014.

Table 3.23. Total Wages and Average Weekly Wages By Industry: 2002 (Q2) and 2014 (Q2)

	Total Wages (Q3)		Percent	Average Weekly		Percent
Total, All Industries	\$195,696,175	\$261,659,072	33.7	\$937	\$1,312	40.0
Goods-Producing Domain	\$74,672,918	\$112,157,036	50.2	\$1,466	\$2,509	71.1
Construction	\$11,803,777	\$15,116,387	28.1	\$884	\$1,043	18.0
Manufacturing	\$62,865,541	\$97,040,649*	54.4*	\$1,673	\$1,900*	13.6*
• Non-Durable Goods	\$3,815,526	\$1,750,961	-54.1	\$1,011	\$1,161	14.8
Service-Providing Domain	\$121,023,257	\$149,502,036	23.5	\$766	\$966	26.1
Trade, Transportation and Utilities	\$25,582,229	\$30,191,677	18.0	\$632	\$695	10.0
• Utilities	\$897,447	\$840,850	-6.3	\$1,523	\$2,396	57.3
• Wholesale Trade	\$10,769,960	\$11,999,118	11.4	\$1,086	\$1,435	32.1
• Retail Trade	\$12,027,929	\$13,626,111	13.3	\$447	\$467	4.5

	Total Wages (Q3)		Percent	Average Weekly		Percent
• Transportation and Warehousing	\$1,886,893	\$3,725,598	97.4	\$607	\$673	10.9
Information	\$9,684,588	\$2,851,865	-70.6	\$1,754	\$1,875	-6.9
Financial Activities	\$8,707,731	\$4,196,712	-51.8	\$800	\$1,045	30.6
• Finance and Insurance	\$6,380,802	\$2,672,746	-58.1	\$790	\$1,088	37.7
• Real Estate and Rental and Leasing	\$2,326,929	\$1,523,966	-34.5	\$829	\$969	16.9
Professional and Business Services	\$37,944,998	\$59,075,225	55.7	\$1,123	\$1,893	68.6
• Professional and Technical Services	\$28,319,229	\$46,466,751	64.1	\$1,450	\$2,592	78.8
• Administrative and Waste Services	\$5,189,197	\$3,779,624	27.2	\$741	\$848	14.4
Education and Health Services	\$24,188,723	\$34,179,886	41.3	\$681	\$861	26.4
• Health Care & Social Assistance	\$16,267,028	\$26,247,752	61.4	\$607	\$870	43.3
Leisure and Hospitality	\$5,243,896	\$7,780,201	48.4	\$267	\$349	30.7
• Arts, Entertainment, and Recreation	\$595,573	\$896,232	50.5	\$250	\$431	72.4
• Accommodation & Food Services	\$4,648,323	\$6,883,969	48.1	\$269	\$341	26.8
Other Services	\$5,877,515	\$5,196,029	-11.6	\$732	\$674	-7.9
Public Administration	\$3,793,576	\$6,030,441	59.0	\$940	\$1,244	32.3

Source: Executive Office of Labor and Workforce Development, ES-202 reports

Note: * Estimates for manufacturing in 2014 Q2 – approximately 30 establishments and 2,324 employees.

Within the Service-Providing Domain, the total number of establishments increased from 600 in 2002 to 716 in 2014, or by 19.3 percent. The average monthly employment decreased by 2 percent from 12,149 in 2002 to 11,902 in 2014. The total wages increased by 23.5 percent from \$ 121,023,257 in 2002 to \$ 149,502,036 in 2014, which was slightly less than half of the wage increase in the Goods-Producing Domain. The average weekly wages increased by 26.1 percent from \$766 in 2002 to \$966 in 2014. The wage levels in the Service-Providing Domain, compared to the Goods-Producing Domain, ranged from 52.3 percent in 2002 to 38.5 percent in 2014.

In analyzing the industry sectors within the Service-Providing Domain, it became clear that each industry sector had different experiences from 2002 to 2014 as outlined below:

- The Trade, Transportation and Utilities industry sector had a similar number of establishments in 2002 and 2014 and a 7.3 percent decrease in employment, yet

- experienced an 18 percent increase in total wages and a 10 percent increase in average weekly wages.
- Within the Information industry sector, the number of establishments increased from 9 to 12 firms and average monthly employment increased by 263.2 percent. Yet, total wages and the average weekly wage decreased by 70.6 percent and 6.9 percent respectively.
 - The Financial Activities industry sector experienced a 10.7 percent decrease in the number of establishments and a 63.1 percent decrease in average monthly employment. As a result, total wages decreased by 51.8 percent, but average weekly wages increased by 30.6 percent. Within this industry sector, Finance and Insurance (-58.1 percent) and Real Estate and Rental and Leasing (-34.5 percent) also had decreases in total wages and increases in average weekly wages.
 - Within the Professional and Business Services industry sector, eight additional firms were added between 2002 and 2014, yet the average monthly employment decreased by 7.6 percent. Both total wages (55.7 percent) and the average weekly wage (68.6 percent) increased, attaining some of the highest wage levels in the Service-Providing Domain.
 - The number of establishments within the Education and Health Services industry sector more than doubled from 64 establishments in 2002 to 153 establishments in 2014. Average monthly employment only increased by 11.6 percent, but total wages increased by 41.3 percent and average weekly wages increased by 26.4 percent.
 - Within the Leisure and Hospitality industry sector, the number of establishments increased by 20.8 percent and the average monthly employment increased by 13.5 percent. Total wages and average weekly wages increased by 48.4 percent and 30.7 percent respectively.
 - The number of establishments in Other Services increased by three firms, but lost 4 percent in average monthly employment. Both wages and average weekly wages decreased by 11.6 percent and 7.9 percent respectively.
 - Four additional establishments were added to the Public Administration industry sector resulting in a 20.3 percent increase in average monthly employment. Total wages increased by 59 percent and average weekly wages increased by 32.3 percent.

3.5 NATURAL AND CULTURAL RESOURCES

Natural resources are the materials, conditions and processes that compose an ecosystem, such as woodlands, aquifers, riparian corridors, wildlife habitats and weather systems. Natural resources provide the foundation for the development of cultural resources, which are human products, such as tools, structures, districts and institutions, of great significance, and which commonly play a central role in the tapestry of community life.

Water Resources

Tewksbury has a complex and dynamic system of natural water resources, as shown on Map 3.4. The town lies within portions of three watersheds – Concord, Merrimack and Shawsheen – and four watershed basins – Concord, Ipswich, Merrimack and Shawsheen. Tewksbury’s water resources are vulnerable to decisions made in neighboring municipalities. It is important to consider the distinctions between the town’s ecological and political boundaries, especially within the context of a master plan.

The quality of **surface and public drinking water** is influenced by the natural ecology, hydrology and geomorphology of the land area they drain, and also by the land use patterns resulting from human activities within their perspective basins and watersheds. Tewksbury is located in the uplands between the Concord and Merrimack Rivers, and the town’s total area is covered by approximately 730 acres of open water, rivers and streams.

The **Merrimack River** provides Tewksbury with its entire water supply.¹ The Town operates a water treatment plant along the River, with a capacity of seven million gallons per day (gpd). Currently, the plant currently treats an average of 2.2 million gpd. Water from the River is stored by the Town in four storage tanks: a new 5 million gallon tank, a 1 million gallon tank, and two 500,000 gallon tanks. Nearly the entire town (98 percent) is served by the public water system. The Merrimack River’s water quality and flow are monitored by the Environmental Protection Agency (EPA), USGS and the Merrimack River Watershed Council. According to these agencies, water quality in the portion of the river south of Manchester, New Hampshire faces several environmental threats: an increase in surrounding impervious surfaces, non-point source pollution from stormwater run-off, and combined sewer overflows (CSOs).

The **Shawsheen River** flows southeast to northeast in Tewksbury, draining the eastern part of town, and extends through three floodplain meadows. The River has been listed by the Massachusetts Department of Environmental Protection (DEP) as being impaired by pathogens due to high concentrations of fecal coliform bacteria resulting from poorly treated sewage and run-off. One of the most significant initiatives to restore the river and its

¹ However, Tewksbury State Hospital does not use the Town’s water supply. It has its own drinking water from groundwater wells. An overlay district helps to protect the aquifer.

surroundings has been the *Shawsheen River 5-Year Watershed Action Plan: 2003-2008*, which has addressed a number of pressing issues, such as water quality improvement, restoration of natural flow and improvement of public access.

Tewksbury has several **brooks, ponds, and streams**. Trull Brook, which flows from the Great Swamp, is the largest tributary of the Merrimack River located in Tewksbury. The town's other brooks are as follows: Content Brook, originating in Billerica; Heath Brook, originating in the wetlands of South-Central Tewksbury; Meadow Brook (known as Strong Water Brook after it crosses East Street), flowing from Ames Pond; Marshall Brook, originating in the wetlands near Long Pond, and Darby Brook, originating at Round Pond. The Town of Tewksbury contains four ponds. Long Pond and Round Pond are classified as Great Ponds, meaning that they cover ten (10) or more acres and are natural. Both ponds are publicly owned, although Round Pond has no public access and access to Long Pond is limited. Ames Pond is Tewksbury's largest pond, covering eight-one (81) acres, and is privately owned. The pond is impounded by an old but recently reconstructed dam. The town also has a seasonal pond called Mud Pond. In addition to ponds, Tewksbury has a number of vernal pools, i.e., unique, periodically dry habitats for species that rely on fish-resistant breeding areas for their survival. The Massachusetts Natural Heritage and Endangered Species Program officially recognizes eight vernal pools and there is the potential for over ninety (90) others to be certified in the future.

Wetlands are one of Tewksbury's most critical water resources and comprise over 20 percent of the town's area. In general, wetlands are essential for water storage, flood control, wildlife habitat and the proper recharging and discharging of groundwater. Several years ago, the Town adopted a local Wetlands Protection Bylaw to enhance G.L. c.131, § 40, the Massachusetts Wetlands Protection Act, by strengthening areas of jurisdiction and setback. The most prevalent type of wetland found in Tewksbury is the deciduous wooded swamp, comprising approximately 1,589 acres, and which includes species such as red maple, ash-leaved maple, cottonwood, elm, spice bush and skunk cabbage. The Great Swamp is the town's largest contiguous wetland system, occupying the large, undeveloped area between North Street, Main Street and I-495. The riparian borders along the Shawsheen River and Strong Water Brook include sections of deep marsh and swamp wetlands, particularly in the area north of Mud Pond and east of the Shawsheen River. Areas south and east Tewksbury have experienced substantial flooding, septic system failures and nutrient loading resulting from development in close proximity to wetlands.

There are four major **groundwater** aquifers in Tewksbury. The largest aquifer in Tewksbury is the eastern aquifer, located below the area east of Shawsheen Street. This aquifer has two branches that are bisected by Main Street; one branch parallels Strong Water Brook and the other Heath Brook and Whipple Road. Encapsulated in bedrock and glacial till, significant portions of the eastern aquifer are classified as medium yield (100-300 gallons per minute [gpm]) with some small, high yield pockets (300+ gpm). A smaller aquifer lies beneath Trull

Brook, near the Trull Brook and Longmeadow Golf Courses in the northwest part of town. There is also a small, high yield aquifer located south of Ames Pond near the Great Swamp. As mentioned previously, the Merrimack River provides the town with its entire water supply, and so there is no need to depend on the aquifers for the drinking water supply. The land areas over and near groundwater are called aquifer recharge areas, since rainwater seeps through the soil in these places and replenishes, or “recharges,” the groundwater supply.

There are 1,617 acres of **floodplain** in Tewksbury, according to the FEMA FIRM maps. Substantial development exists in Tewksbury’s floodplains, which have altered natural drainage and sedimentation patterns and increased the likelihood of flooding. This is especially the case in the Shawsheen River floodplain. There are eight repetitive flood loss structures located along the Shawsheen River within the Town of Tewksbury and in the Devonshire Road area. As of May 2013, twenty-four (24) claims were paid under the National Flood Insurance Program which totaled \$187,619. The following locations have been identified as having recurring flooding and/or drainage problems:

- Bridge Street and South Street;
- Shawsheen Street and Mohawk Street;
- East Street near Strong Water Brook;
- Pinnacle Street;
- Shawsheen Street near Main Street/Route 38;
- Brown Street at Whipple Road;
- Pond Street; and
- Bonnie Lane.

River Road sustained considerable damage in the floods of March 2010 and is being reconstructed through funding received from MassDOT and MEMA.

The Flood Plain (Overlay) District imposes special requirements on development within the 100-year flood plain. All development in the district, including structural and non-structural development, whether permitted by right or special permit, must comply with G.L. c. 131, s. 40 (Wetlands Protection Act). The boundaries of the Flood Plain District, including all special flood hazard areas, are defined and depicted in the recently updated Tewksbury Flood Insurance Rate Map issued by FEMA, dated June 4, 2010. Currently, the development of new structures in Tewksbury’s Flood Plain District is prohibited by the Wetlands Protection Bylaw. The bylaw requires buffer strips to protect resource areas from encroaching development, as well as approval and abutter notification for public utilities within floodplain boundaries. The bylaw also restricts residential and commercial use in floodplains to provide

for the health and safety of landowners and qualify residents for the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program.

The existing **sewer system** consists of over roughly 877,000 linear feet of sewers (166 miles) of public sewers and 46 pumping stations. The earliest sanitary sewer system was constructed in August 1973, and additions to the sewer system have been constructed in intervals. Almost every house and commercial structure in Tewksbury has access to the Town's sewer system (though not all are necessarily connected to it). Sewage from Tewksbury is transmitted to the Greater Lowell Wastewater Utility for treatment.

Geology, Soil and Terrain

Tewksbury's terrain is composed of slightly rolling lowland, varying from 85 to 200 feet above sea level; the one exception is Ames Hill, a drumlin rising to 363 feet above sea level. The town's landscape was initially carved by glacial activity during the most recent ice age, and continues to be shaped by natural hydrologic processes, as well as by human activities. Drumlins and glacial till are located in Tewksbury's northwest section and flat glacial outwash is located in the southeast part of town. Tewksbury's predominantly sandy/gravelly soil and kettle hole ponds were caused by glacial retreat.

Biodiversity

Tewksbury is located within the transitional zone of the New England forests. Most wetland areas are dominated by red maple. Tewksbury's freshwater meadows are home to reeds, woodgrass, wild millet, spike rush, and sedge. The town also has several endangered plant species.

Hundreds of animal species can be found in Tewksbury, some living throughout the town and others living in only a few special habitats. Overall, almost fifty (50) bird, twenty-three (23) fish, twenty-three (23) mammalian, fifteen (15) reptilian and fifteen (15) amphibian species have been observed in Tewksbury, as well as an undocumented number of invertebrate species.

Wildlife typical of suburban areas can be found in Tewksbury, such as deer, coyotes, small rodents, foxes, rabbits, opossums, raccoons, fishers, chipmunks, and squirrels. Reptiles and amphibians, such as frogs, snakes and turtles, as well as water dependent mammals, including beavers and muskrats are common. A comprehensive list can be found in Appendix 6.4.

Pollution, Public Health, and Natural Resource Degradation

EPA's National Priorities List includes one Superfund site in Tewksbury: the Sutton Brook Disposal Area, also referred to as Rocco's Landfill. The landfill covers about 50 acres, and a small portion of the site extends into neighboring Wilmington. Within a four-mile radius of

the site are several sources of drinking water, and located about 300 yards south of the landfill is an unnamed pond, used seasonally for ice-skating. The site includes three source areas: a 50-acre landfill, an area of buried drums and contaminated drums associated with the drum disposal area. Actively involved in monitoring the site are the Town of Tewksbury, the DEP and the EPA. Site investigations have revealed the presence of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and polychlorinated biphenyls (PCBs), as well as inorganic elements in on- and off-site groundwater, surface water, sediment and soil.

According to the Massachusetts Department of Environmental Protection Bureau of Waste Prevention, there are no operating landfills in Tewksbury at the present time. There are two (2) active composting sites, according to the Bureau of Waste Prevention. One for municipal purposes located at 999 Whipple Road and the other for commercial purposes located at 1079 South Street. There are five (5) inactive/closed landfills, as listed below in Table 3.24.

Table 3.24. Inactive Landfills

ID	Type	Status	Operation	Site	Location	Owner
SL0295.001	MSW	Inactive	1957-1988	Rocco’s Landfill	1069 South Street	Private
SL0295.002	MSW	Inactive	1955-1957	Tewksbury Landfill	Martha Avenue	Municipal
SL0295.003	MSW	Inactive	Unknown	Tewksbury Stump Dump	Pine Street	Private
SL0295.004	MSW	Inactive	Unknown	Tewksbury Metals Dump	Off East Street Road	Private
SL0295.005	MSW	Inactive	Unknown-1985	Tewksbury Hospital Landfill	Maple and Livingston Streets	State

Source: Massachusetts Department of Environmental Protection, Bureau of Waste Prevention.

Cultural Resources

Cultural resources are the historic buildings and their settings, outbuildings, archaeological remnants and features, landscapes, places, and institutions that contribute to a community’s sense of place, including the vestiges of the town’s agricultural past, such as its remaining barns, stonewalls, and greenhouses. Tewksbury’s historical architectural and landscape character is epitomized by the Town Common, Town Hall, Tewksbury State Hospital and a number of Victorian-era homes, among other sites. The *Open Space and Recreation Plan 2009 Update* identifies close to 60 historic buildings and landmarks in Tewksbury. The extent of the Town’s historic resources is also documented in recent historic survey work completed by the Historical Commission. Overall, 9 percent of the town’s total housing stock was constructed prior to 1939. Historically significant structures, places or buildings are listed in the Massachusetts Cultural Resources Information System (MACRIS). These historic resources are organized under five categories: buildings, areas, structures, objects and burial grounds.

Many private efforts are underway to protect and restore individual historic homes and churches in Tewksbury and there are also several government-supported historic preservation initiatives. The Tewksbury State Hospital is listed on the National Register of Historic Places, and also on the State Register of Historic Places along with the Cyrus Battles House. Though a listing in either of these registers does not protect buildings from alteration or demolition, it can potentially give investors an opportunity to finance historic preservation initiatives through tax credits. Many of the town's effort in the area of historic preservation are funded through the Community Preservation Act. Table 3.25 lists the major historical sites in Tewksbury.

Table 3.25. Major Historical Sites

Property Name	Location	Date Constructed
Abram Mace House	12 Clark Road	1780
Benjamin Burtt Homestead	1304 South Street	1800
Brown Homestead	1202 Main Street	1800
Captain Trull Monument	Corner of River and Trull Roads	N/A
Centre Burial Ground	East Street	c. 1850
Chandler House	1269 Main Street	1777
Clark House	912 Shawsheen Street	1780
Davis Carter House	1574 Main Street	1780
Dunn House	687 Shawsheen Street	N/A
Foster School	Main Street	1894
Gerald Carrigg House	574 Chandler Street	N/A
J. Carter House	142 Carter Street	N/A
Jefferson Soap Factory Site	Main Street	N/A
Livingston Homestead	518 Kendall Road	N/A
Maillet Farmhouse	728 Whipple Road	1800
Melvin Rogers Home	272 Whipple Road	N/A
Oblate Novitiate	Chandler Street	1883
Old Railroad Bridge Ruins	Shawsheen River South of Shawsheen St.	N/A
Olive Roberts Farmhouse	360 North Billerica Road	N/A
P. Livingston House	166 French Street	N/A
Paul O'Laughlin House	721 Shawsheen Street	N/A
Powder Mill Explosion Site	N/A	1900
Preston Homestead	107 Pleasant Street	1775
Rev. Spaulding Homestead	60 East Street	1736
Robert Rauseo House	682 Chandler Street	N/A
Saw Mill Site	Shawsheen Street	c. 1736
Shawsheen Cemetery	Corner of Main and Shawsheen Streets	c. 1714
Tewksbury State Hospital	East Street	1854
The Crosby Canning Factory	922 Whipple Road	N/A
The G. French Homestead	27 Carter Street	c. 1800
Widow Bailey House	219 River Road	1800
World Wars Monument	Main Street	N/A

Source: Tewksbury Historical Commission

The Tewksbury Historical Commission and the Tewksbury Historical Society engage in various projects to help safeguard and promote stewardship of the town's historical resources. The town has a Demolition Delay Bylaw, which was adopted in 1995, and which gives allows the Historical Commission to delay the proposed demolitions of historic structures, while exploring demolition alternatives, such as seeking out a person or entity willing to purchase, preserve or restore the building or structure.

Cultural Organizations

Tewksbury is currently home to several cultural organizations that help to build a strong local sense of community. The organizations serve a variety of purposes, ranging from gardening to quilt-making to historic preservation. The Tewksbury Cultural Council is funded through the Massachusetts Cultural Council and the town. The Council awards grant funding to local artists and organizations that contribute to the town's cultural community. (See Appendix for a list of Tewksbury's major cultural organizations.)

Scenic Resources

Tewksbury's rivers, brooks and other surface water bodies are vital scenic resources. Among these, the Shawsheen River is one of the least recognized. Though the river often provides a naturally appealing setting, it is commonly hidden from view by development along its banks. Ames Hill, with its views of the Boston skyline, is an especially significant resource, as is Trull Brook, with the impressive views of the Merrimack River and nearby golf course from its banks. Past community meetings have identified other important resources, such as picturesque portions of East Street, the Livingston Street recreation area and mature trees along older roads, among others.

Public Art

Tewksbury is home to an unusual collection of public art created by internationally renowned sculptor Mico Kaufman. Located in a highly visible area of the Town Center, the "Water" sculpture of Anne Sullivan and Helen Keller occupies an important place in the hearts of local residents. Other significant Kaufman sculptures in Tewksbury include "Touching Souls," located at the Methodist Church on the corner of Main and South Streets; "Muster," located at the South Fire Station; "Wamesit Indian," located on Main Street in Wamesit and the "Veteran's Memorial," located in front of Town Hall.

3.6 OPEN SPACE & RECREATION

Although the Town of Tewksbury is a mature suburb and largely developed, a substantial amount of land has been set aside for open space and recreation. The 2009 Tewksbury Open Space and Recreation Plan identified 1,418.9 acres of land as being permanently protected. Since 2009, over four hundred acres have been added to the open space inventory, therefore,

there are now 1,810.12 acres of dedicated open space in the community. The State owns fourteen (14) permanently protected parcels, totaling 608.16 acres, and the Town owns 364 parcels totaling 1,124.65 acres. There are twenty-two (22) parcels that are protected by conservation restrictions, totaling 741.32 acres. Ten of these parcels with a combined total of about 400 acres are within the grounds of the Tewksbury State Hospital and are owned by the State but are preserved by state legislation and under the management and control of the Town's Conservation Commission. In total, 58.31 acres that are privately held but permanently restricted via deed restriction or conservation restriction. There are two parcels, totaling 211.08 acres, on the State Hospital grounds which are governed by a conservation restriction but were classified as having limited or no protection in the 2009 Open Space Plan. Another 927.28 acres of privately held lands are undeveloped and have limited or no protection. There are no water protection districts or APRs in Tewksbury.

Table 3.26 below summarizes the Tewksbury Open Space Inventory by Ownership regardless of level of protection. The data shows that the town's open space inventory now contains 3,256.16 acres, compared to 3,076.02 acres in 2009, an increase of approximately 180 acres. A more detailed description of many of the individual properties can be found in the town's 2009 Open Space and Recreation Plan, however there have been some changes in ownership, use or level of protection since 2009. Map 3.5 shows that town's publicly and privately held open space and recreation parcels

Table 3.26. Open Space Land Inventory by Ownership (in Acres)

Ownership	Acres
Commonwealth of Massachusetts	688.40
Town of Tewksbury	1,534.07
Chapter 61A	29.10
Private Deed Restriction/Conservation restrictions	58.31
Institutional and Other Private	927.28
Other	19.00
Total	3,256.16

Open Space by Type

Permanently protected open space includes lands dedicated to conservation and wildlife habitat by state agencies, non-profit organizations, and the Town, as well privately-owned land under a conservation restriction (CR). A CR is a voluntary and legally binding document through which a land owner agrees to limit the use of his or her property for the purpose of protecting the conservation value of the land. The owner receives an immediate tax deduction and the grantee, usually a non-profit or municipal entity, receives assurance that the land will not be developed. There are eighteen town or state owned parcels that have CRs, three privately owned parcels with CRs, and three privately owned parcels that are permanently protected via deed restrictions. Collectively, these parcels total 762.83 acres. All of the CRs are under the jurisdiction and management of the Town's Conservation Commission.

Approximately 1,773.33 acres, or 13.1 percent of the town’s overall land area, is permanently protected and owned by the State or the Town. According to the records obtained from the Assessor’s Office, there is no permanently protected land owned by the federal government.

State Lands. The Commonwealth of Massachusetts owns fourteen parcels comprising 608.16 acres. Tewksbury State Hospital is the largest holding, consisting of several parcels comprising 750+/- acres (400 +/- permanently protected acres), including the hospital grounds, open fields and forested land.

Town Lands. The Town owns 364 parcels of protected land, comprising 1,124.65 acres. These lands include Conservation Commission properties and parkland. The parcels are dispersed throughout town and offer open space, conservation and passive/active recreation opportunities for the residents of the community. The largest town-owned parcel is vacant land located off Trull Avenue, which consists of approximately 121.50 acres. The most recent permanently protected open space obtained by the Town include two parcels totaling 31.63 acres, which were transferred to the town as part of the approval for the Ames Run Subdivision and accepted at the May 2, 2011 town meeting, under section 7370 of the zoning regulations.

Private Lands. There are six parcels totaling 58.31 acres under private ownership, three of which are governed by deed restrictions and three via conservation restrictions. Table 3.27 summarizes the level of protection and ownership of the permanently protected parcels.

Table 3.27. Permanently Protected Lands in Tewksbury

Ownership	Parcels	Acreage
Commonwealth of Massachusetts	14	608.16
Town of Tewksbury	364	1,124.65
Private Deed Restriction/ Conservation restrictions	6	58.31
Other	1	19
Total	385	1,810.12

Unprotected/Limited Protection Lands

Unprotected lands of conservation and recreation interest include those that are held as open space or historic parcels, or used as recreation land, but do not have permanent protection. Limited protection open space includes land covered by revocable restrictions against development or change in use. The long term viability of these parcels as open space, unless under a tax classification such as Chapter 61A is beyond any governmental control.

Publicly-owned Unprotected/Limited Protection Lands

Unprotected/limited protection public lands include lands that are held as open space or used as recreation land, but do not have permanent protection. As shown in Table 3.28 below, there are twenty-seven (27) parcels of unprotected/limited protection publicly-owned lands within

the community, comprising a total of 700.74 acres. Of these parcels, eighteen (18) are owned by the Town of Tewksbury and nine (9) are owned by the state. School properties comprise 166.16 acres of the town-owned land.

Table 3.28. Unprotected/Limited Protection Public Lands

Ownership	Number Of Parcels	Acreage
Commonwealth of Massachusetts	7	80.24
Town of Tewksbury	26	509.25
Total	33	589.49

Private Unprotected/Limited Protection Lands

As show in Table 3.29, there are 167 parcels of privately-owned land with limited or no protection. Collectively, these parcels comprise 956.38 acres.

Table 3.29. Unprotected/Limited Protection Private Lands within the Town

Ownership	Number of Parcels	Acreage
Chapter 61A	3	29.10
Church/cemetery land	4	116.55
Other Private	160	810.73
Total	167	956.38

Recreation Programs

Tewksbury eliminated the Park and Recreation Department in 2009. The duties formally assigned to that department have been reassigned to three other departments. The Department of Public Works handles grounds maintenance of the town's park and recreation facilities, excluding facilities associated with the schools. (The school facilities are maintained by the school staff.). Field scheduling is handled by the Town Manager's office, and programming is through the Community Services Office of the public schools.

The Town has nine public parks encompassing approximately 145.04 acres. Most of them include sports fields. Livingston Street Park is the most popular and it includes 35+/- acres of land that offers a variety of uses. Livingston Street Park was recently renovated with CPA funds and accommodates 12 athletic fields, basketball and tennis courts and a playground for children. Nearly all organized recreation activities take place at the Livingston Street and East Street sites. In addition to athletic facilities, the town offers recreational trails at the town's water supply land and land adjacent to Melvin Rogers Park.

Melvin Rogers Park, Foster Park, Mechanics Park and the Melrose Avenue lot are largely unused unknown to the general public. Melvin Rogers Park and Foster Park present

significant recreation potential. Mahoney Park provides access to Long Pond and small canoe launch area.

Tewksbury remains an active, sports-oriented community, and the Town works to provide facilities and programs for its residents. In spite of recent budgetary challenges, the Town manages to provide programs for residents of all ages by partnering with private sports organizations, using volunteers wisely, and working collaboratively with non-profits. The town's public recreation facilities are described in Table 3.30 below.

Table 3.30. Public Recreation Facilities (Excluding Schools)

Name	Location	Facilities	Area In Acres
Town Common	Main/Pleasant/Town Hall Rd.	Bandstand	0.10
East Street Fields	Chandler Street	3 baseball fields	15.45
Foster Park	Heath Street	Not in use	23.00
Livingston Street	Livingston Street	ball fields, 2 football fields, 1 soccer field, 3 tennis courts, 2 basketball courts, tot lot, skateboard park. cricket pad, and 2 lacrosse fields	33.8
Melrose Avenue	Melrose Avenue	Not in use	0.06
Melvin Rogers Park	Rogers Street	Not in use	27.50
Frasca Field	North Street	Soccer fields, baseball field	40.00
Mechanics Park	Van Buren Road	Not in use	2.48
Mahoney Park	Whipple Road	Long Pond access path and canoe launch	1.10

The seven public schools all have athletic facilities, fields and/or playgrounds. Table 3.31 details the specific recreational resources that are available at each school.

Table 3.31. School-Based Recreational Resources

Name	Location	Facilities	Area In Acres
Ryan School	135 Pleasant Street	2 multi-purpose fields, 1 football field and football practice field	23.13
Dewing School	1475 Andover Street	1 ball field, 1 multi-purpose field, playground	18.88
Heath Brook School	199 Shawsheen Street	1 baseball field, 1 basketball court, playground	17.36
North Street School	133 North Street	1 basketball court, ball field, playground	16.00
Trahan School	30 Salem Road	1 baseball field, playground	5.53
Tewksbury High School	320 Pleasant Street	1 baseball field, 1 softball field, 1 soccer field, 1 field hockey, track, field house, and 5 tennis courts	52.10
Tewksbury Middle School	90 Victor Drive	2 baseball fields, 1 soccer field, 1 multi-purpose field	20.31

*Area does not include the school buildings themselves

Council on Aging

The Tewksbury Council on Aging, located at the Town’s Senior Center at 175 Chandler Street offers recreational programs designed for the elderly population in Town. Educational programs are offered as well as activities ranging from yoga to aerobics. The Council also sponsors day and bus trips, adult day care, and walking groups. More complete information can be found on the Town’s website.

Bay Circuit Greenway

Tewksbury is one of fifty communities located along the Bay Circuit Greenway. The Bay Circuit, also known as the outer Emerald Necklace, was envisioned in 1929 as a 100-mile long “green beltway”, extending from Plum Island on the north shore, to Kingston Bay on the south shore. The goal of the project was to create a series of parks and conservation lands linked by trails, waterways and scenic drives. Since the development of the original concept, the plan has been modified to accommodate current land use and development patterns. As now envisioned, the potential network of parks and open spaces will preserve a swath of cultural and natural resources surrounding greater Boston.

The Bay Circuit Trail and the Merrimack River Trail traverses the northern portion of Tewksbury, south of the Merrimack River and north of River Road. The Bay Circuit Trail has two possible routes, depending on the season. In winter, skiers and walkers are allowed to continue parallel to the river on the Trull Brook Golf Course and behind St. Mary’s Cemetery, to the public river trail through Tewksbury and Lowell. In other seasons the golf course is closed to non-golf use and people are encouraged to use Merrimack River Trail. The network of trails extends approximately 4 miles. The Bay Circuit Alliance has proposed additional trails that would traverse the southern portion of Town through the State Hospital lands and Livingston Park. Implementation of the proposed trail will require property acquisitions or easements.

Local Capacity

Tewksbury has several organizations that work to preserve open space and natural resources within the community. Its town departments, boards and commissions work together to ensure that these resources are protected for future generations, as described below:

- The **Tewksbury Conservation Commission** administers the Massachusetts Wetland Protection Act and the local wetlands bylaw. The Commission also acquires and holds property on behalf of the Town in order to protect land and water resources. The Commission has one staff person who administers the permitting process and oversees day-to-day activities.
- The **Planning Board** is responsible for implementing the Town’s Zoning Bylaw and working with developers to ensure that important conservation land and natural

resources are protected during the development process. The Community Development Director oversees the administrative functions for the Planning Board.

- **Community Preservation Committee** is charged with the administration of the Community Preservation Act which may help fund eligible purchases of open space for permanent protection. The Committee uses the 2009 Open Space and Recreation Plan (OSRP) as a guide in the allocation of funds for open space.
- The **Tewksbury Department of Public Works** has the responsibility for the day to day grounds maintenance of the Town's park and recreation facilities, not including those under the auspices of the School Department which maintains its own facilities.

Open Space and Recreation Planning Efforts

Tewksbury's most recent Open Space and Recreation Plan which was completed in 2009 established the following ten goals:

- Preserve and protect the rivers, brooks, ponds, wetlands, and floodplain in Tewksbury;
- Preserve and protect the Town's natural resources and outstanding natural features for future generations;
- Provide accessible, well-balanced recreation opportunities for all Town residents;
- Ensure adequate maintenance of conservation areas, open spaces and recreation facilities in the interest of protecting the Town's investment and reducing long-term costs;
- Educate the town's residents regarding the importance of open space and recreation areas to the town's quality of life - encourage enjoyment, use, and stewardship;
- Preserve important historical and archaeological sites;
- Enhance and protect the scenic and aesthetic character of the Town;
- Work with regional, federal and state agencies, and non-profit organizations to develop a trail network linking open spaces within Tewksbury, as well as establishing linkages to other trail facilities located in adjoining communities;
- Protect the Merrimack River as the Town's water supply; and
- Promote efforts to preserve and protect open spaces

These goals depend upon a coherent strategy for open space acquisition, land management and stewardship, along with dedicated funding.

As discussed in previous sections of the Master Plan, the Community Preservation Act (CPA) provides an important source of funding for Open Space Preservation, Historic Preservation and Affordable Housing through a surcharge on the property tax. The money is kept in a

separate CPA account by the Town. Each category (Open Space, Historic Preservation and Affordable Housing) must receive a minimum of 10 percent of the CPA funds available each year. The remaining 70 percent may be allocated for any one of the three categories, as Town Meeting sees fit.

3.7 SERVICES & FACILITIES

Town Government

Tewksbury was incorporated in 1734. Throughout its history, the town has governed itself under a combination of general and special laws. Today, Tewksbury operates under a Special Act Charter (Chapter 275 of the Acts of 1986), which assigns the Town's chief executive powers to an elected five-member Board of Selectmen and a Town Manager appointed by the Selectmen. Other elected and appointed officers such as the Town Clerk, Planning Board and Board of Assessors share some executive-branch responsibilities, but the Board of Selectmen and the Town Manager control most policies, personnel and financial management. The town also has a number of volunteer committees that perform a public service. As would be expected for a town of Tewksbury's size, many local government functions are overseen by professional department heads, e.g., Director of Public Works, Community Development Director and Finance Director, all of whom report to the Town Manager. The town's legislative body is an open town meeting that convenes annually.

Town Finances

Tewksbury relies on revenues from several sources to pay for municipal and school services. Figure 3.5 shows that in FY 2014 and FY 2015, the majority of revenue was generated by the tax levy (\$68 million in FY 2014 and \$71 million in FY 2015). Local receipts comprised the second largest source of revenue, while State aid was the third-largest source and it was level funded in FY 2014 and FY 2015. Between FY 2014 and FY 2015, total revenues increased from \$111,920,283 to 119,657,931. Public education accounted for the largest portion of all municipal expenditures in Tewksbury in FY 2014, at 65 percent. Public safety accounted for the second-largest portion of expenditures at 10.0 percent of the total, followed by employee benefits, pension benefits, general government, public works and debt service, with each representing 4 percent of the overall expenditures, as shown in Figure 3.6.

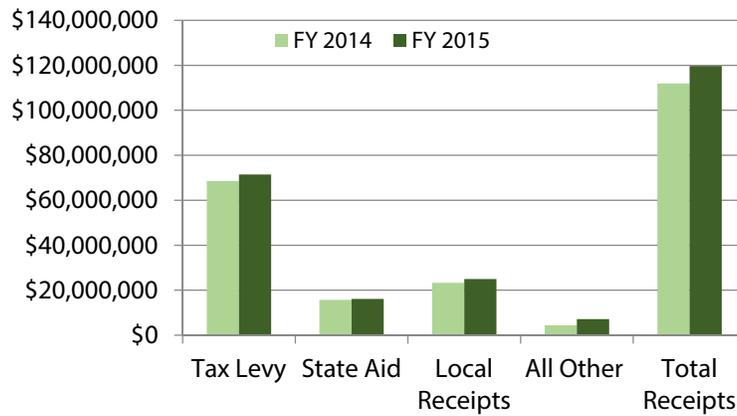
Municipal Buildings

Below is an inventory and brief description of Tewksbury’s municipal buildings.

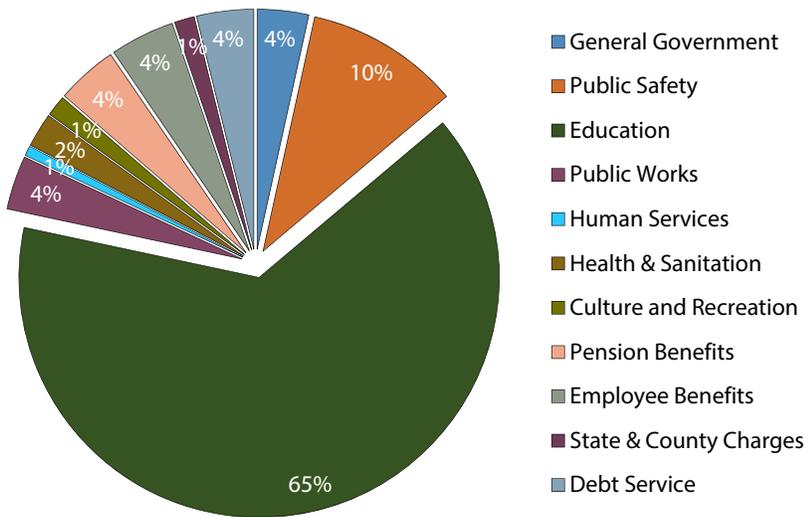
Town Hall. 1009 Main Street. Tewksbury Town Hall is currently undergoing a \$7.5 million renovations project was completed in November 2015. The improvements include new additions, heating/ cooling, and a new elevator.

Town Hall Annex. 11 Town Hall Avenue. The Town Hall Annex is headquarters for the Accounting /Finance Department, Assessor's Office, Computer Services Department, and the Town Treasurer/Collector. It was built in 1967, a net 5,978 square feet and subtle signs of deferred maintenance is most noticeable in the ceiling which displays exposed wires, mold stains and missing panels. This building is centrally located and the triadic relationship with the fire station and town hall is an efficient use of space.

Figure 3.4. Municipal Revenue Sources-FY 2014 and FY 2015



Municipal Expenditures FY 2014



Revenue and Expenditures Source: Tewksbury Department of Finance

Schools

The School Department occupies seven buildings in Tewksbury, including four elementary schools, two middle schools, and one high school, as well as an administration building. Below is an inventory and brief description of each school site.

Loella F. Dewing Elementary School. 1469 Andover Street. Loella F. Dewing Elementary was built in 1970 on a 20.38-acre lot. The building itself is 65,356 square feet and currently services thirty six teachers and 503 pre-kindergarten to second-grade students. Numerically consistent with the area, Dewing Elementary has lost an average of 23 students a year over the past ten years. MassDOT's daily traffic count for Andover Street is 18,694 vehicles (2013).

Heath Brook Elementary School. 199 Shawsheen Street. Enrollment currently sits at 378 kindergarten to second grade students with an additional thirty-eight regular employees. Built in 1957, the 53,981 square foot facility has not received any major renovations (internal or external) since.

Trahan Elementary School. 30 Salem Road. Louise Davy Trahan Elementary has 113 third and 128 fourth graders currently enrolled alongside forty full time workers. Trahan's enrollment has dropped 8.3 percent over the past five years, a significantly higher figure than any other public school.

North Street Elementary School. 133 North Street. Consistent with its peers, the head of Tewksbury's Maintenance Department also mentioned The school is 43,531 square feet with 154 third graders and 156 fourth graders and employs thirty four full time staff (faculty, administration, maintenance).

John F. Ryan Middle School. 135 Pleasant Street. The building is 28,736 square feet and houses seventy three employees and 615 students. Enrollment has dropped 3.8 percent over the last ten years and five percent over the last five, slightly lower than the mean.

John W. Wynn Middle School. 1 Griffin Road. This middle school was built in 2003. Over the past three years Wynn has lost an average of thirty-two students a year or nearly five percent of its enrollment. Wynn Middle School is 108,499 square feet with 338 seventh graders and 356 eighth graders (694 total), as well as sixty five teachers, janitorial and administrative staff.

Tewksbury Memorial High School. 320 Pleasant Street. Tewksbury's new high school was completed in 2012. The building stands on the site of the 1958 high school, which was demolished to make way for a new, \$65 million modern facility. Enrollment data over the past five years shows an average loss of 151 students per year. Presently Tewksbury High has 62 teachers and 985 students (16:1), in addition to 33 other full-time employees.

Center School Administration Offices. 139 Pleasant Street. The Administration office employs 21 people over 104,828 square feet which is more than enough space. This building is quite well-formed and deserves to be preserved for extended use in the future (built in 1940). The site was initially Center school, a pre-K facility that closed in 2011, now it is office space for the Superintendent of Schools, Student Services Director, Food Services Department and Human Resource Administrator. The sidewalk is well maintained and marked, parking is behind building, and its architectural style, frontage, setback, depth and spacing is congruent with the surrounding neighborhood.

Public Works and Public Safety

In Tewksbury, all traditional public works functions are consolidated into one Department of Public Works (DPW). The DPW maintains all public roads, parks and a cemetery, it manages the water system, the sewer system, sanitation and recycling services, and it handles miscellaneous transportation and equipment hauling. Below is an inventory of each site. Deficiencies to buildings themselves are further detailed in the Issues and Opportunities section of this report.

Public Works. 999 Whipple Road. The public works building contains the Building Department, Community Development Department, and Department of Public of Public Works, Engineering Division, Fleet Maintenance Division, Food Pantry, and the Highway / Forestry Division.

Police Headquarters. 918 Main Street. Built in 1996, the police headquarters is 19,407 square feet and is in excellent condition. There is a total of seventy-one employees and enough service cars to properly patrol the area. It is centrally located and easily accessible, resulting in no area going underserved. An alarming trend that should result in a targeted policing strategy is the uptick in violent crime over the past eight years. In particular, forcible rape has gone up an average of 12.6 percent since 2006, aggravated assault has gone up 21.6 percent and drug/narcotics violations have increased by 5.5 percent.

Central Fire Station. 21 Town Hall Avenue. The Fire Department has a total of fifty-five employees spread out among three fire stations. Central Fire Station is in the worst condition of the three to the extent that the Fire Chief believes the building has become a burden on the efficiency of his staff. A net of 8,236 square feet is not large enough to support the department's needs (training exercises/ everyday use) and the department could better serve the community if given adequate space. Despite these conditions, all of Tewksbury can be reached within an eight-minute response time by emergency medical personnel.

South Fire Station. 2342 Main Street. The South Fire Station is in the best condition of the three, which makes sense because it is only twelve years old. It is staffed by one full-time lieutenant and two firefighters with one fire truck and is 2,836 square feet.

North Fire Station. 830 North Street. North Fire Station needs many of the same basic upgrades as Central Station. It was built in 1975, absent of recent alterations and is 1,863 square feet. North Fire Station is staffed 24 hours a day by 1 lieutenant and 2 Firefighter/EMTs, additionally 1 fire truck and 1 ambulance operate out of the building.

Other Municipal Facilities

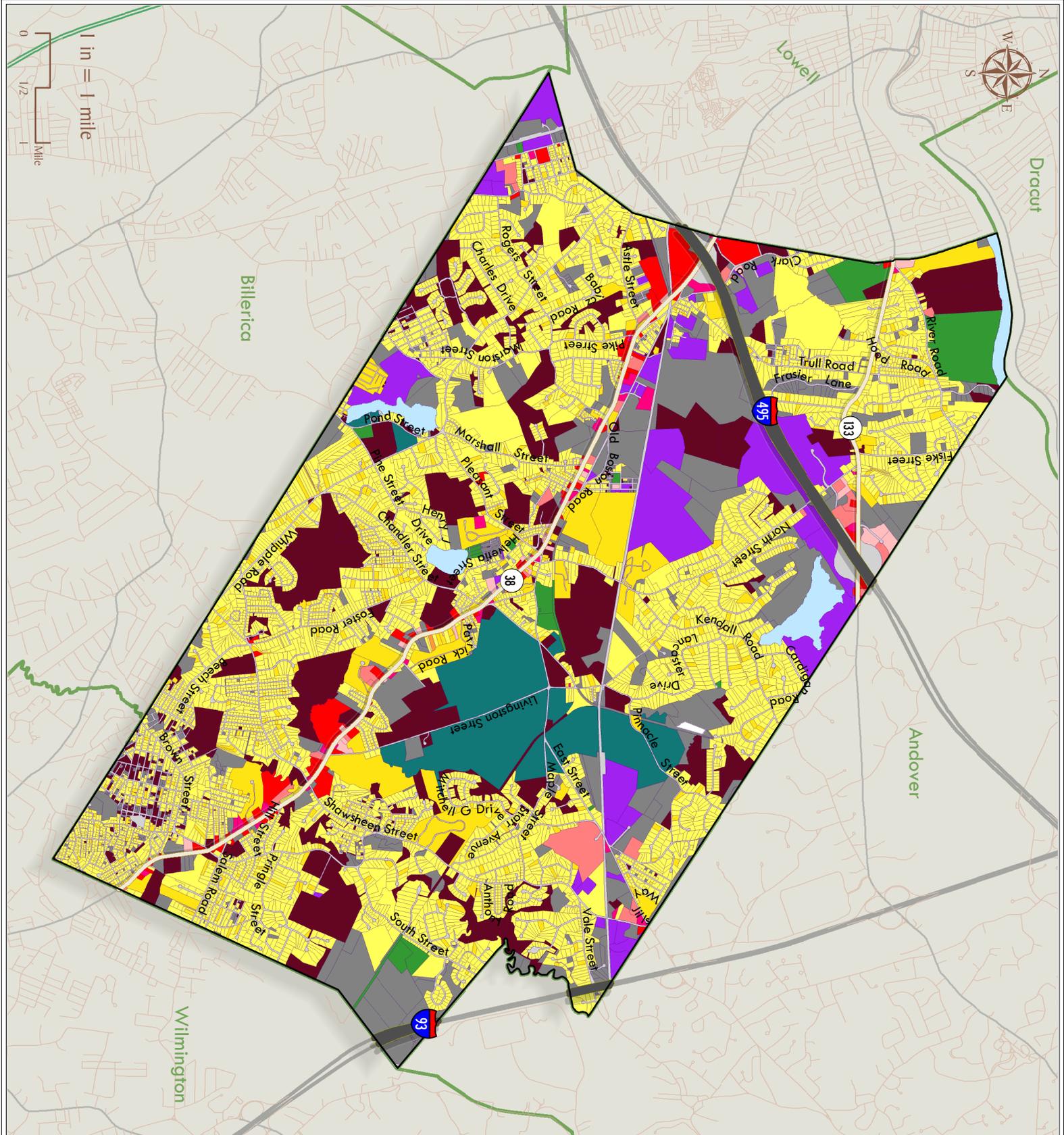
Tewksbury Recreation Center. 286 Livingston Street. The Tewksbury Public Schools Livingston Street Recreation Center was built in 1974 and is 4,480 square feet. The center is open Monday to Friday from 2:00 to 5:30 and is for Ryan Elementary and John Wynn Middle

School students. The Community Services staff (4 people) run the day to day operations which include; mentoring and peer leadership, homework assistance, and other recreational activities.

Water Treatment Facility. 71 Merrimack Drive. This facility is 13,623 square feet, built in 1986 and has 10 employees.

Public Library. 300 Chandler Street. Tewksbury Public Library was built in 1998 and remains a very impressive facility. Additionally, the building is a total of 32,176 square feet (2 floors) with 15 employees. The library has ample street-facing surface parking (86 spots; 32,000 square feet).

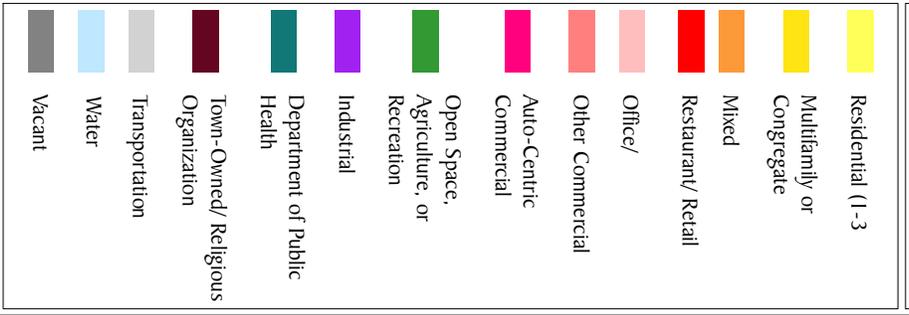
Senior Center. 175 Chandler Street. The Senior Center was constructed in 1979 and renovated and expanded approximately ten years ago. It is a 23,160 sq. ft. facility that provides a recreation/community center for Tewksbury's senior population. The building supports a number of programs and services such as educational seminars, health services, community programs, Meals on Wheels, income tax assistance, and social activities.



Map 3.1

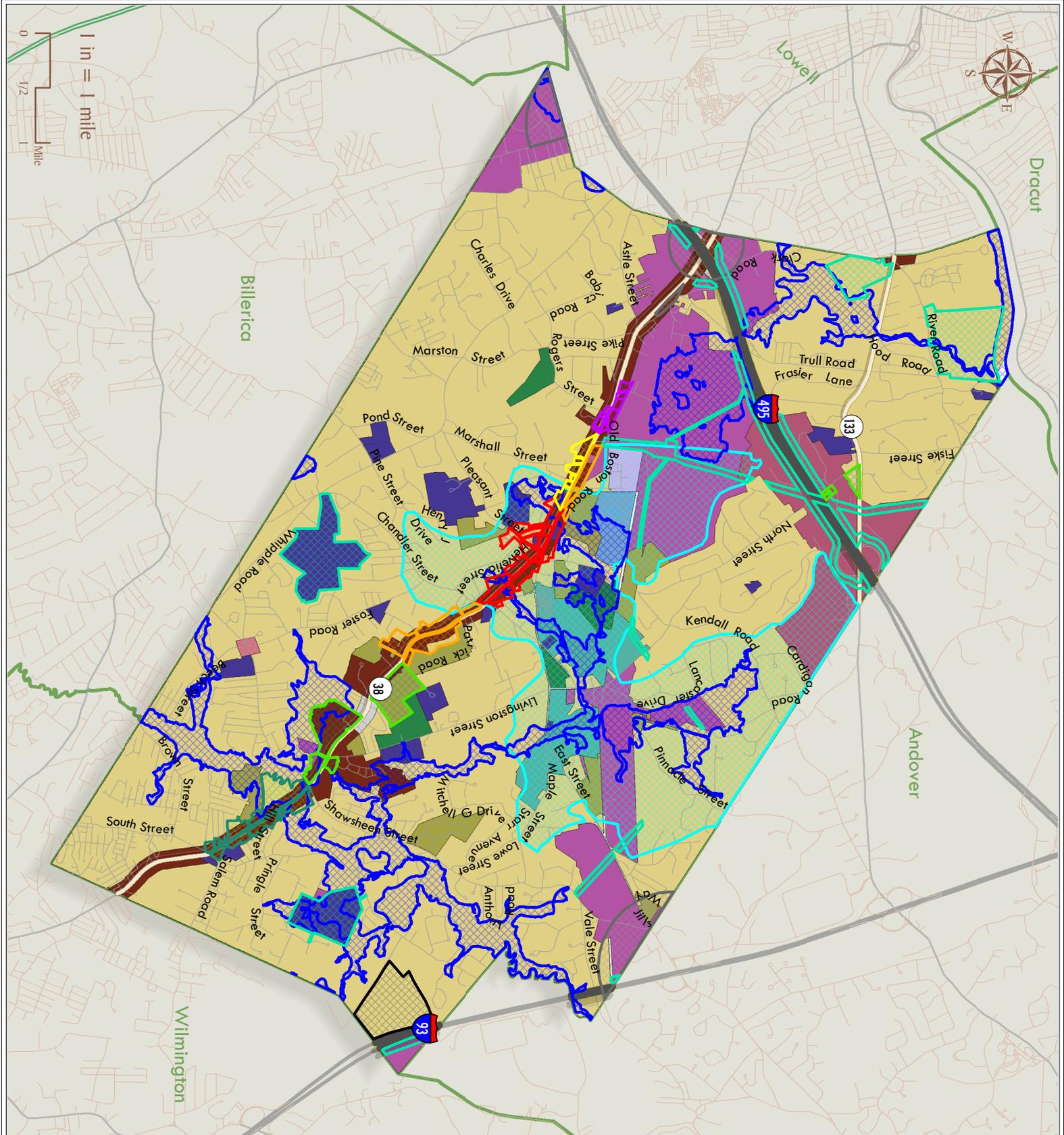
Land Use Patterns

Tewksbury Master Plan



This map is for general planning purposes only. The data used to create the map are not adequate for making legal or zoning boundary determinations or delineating natural resource areas. Exercise caution when interpreting the information on this map.

Date: 5/2/2016
 Source: MasSDOT, Town of Tewksbury.



Map 3.2

Existing Zoning

Tewksbury Master Plan

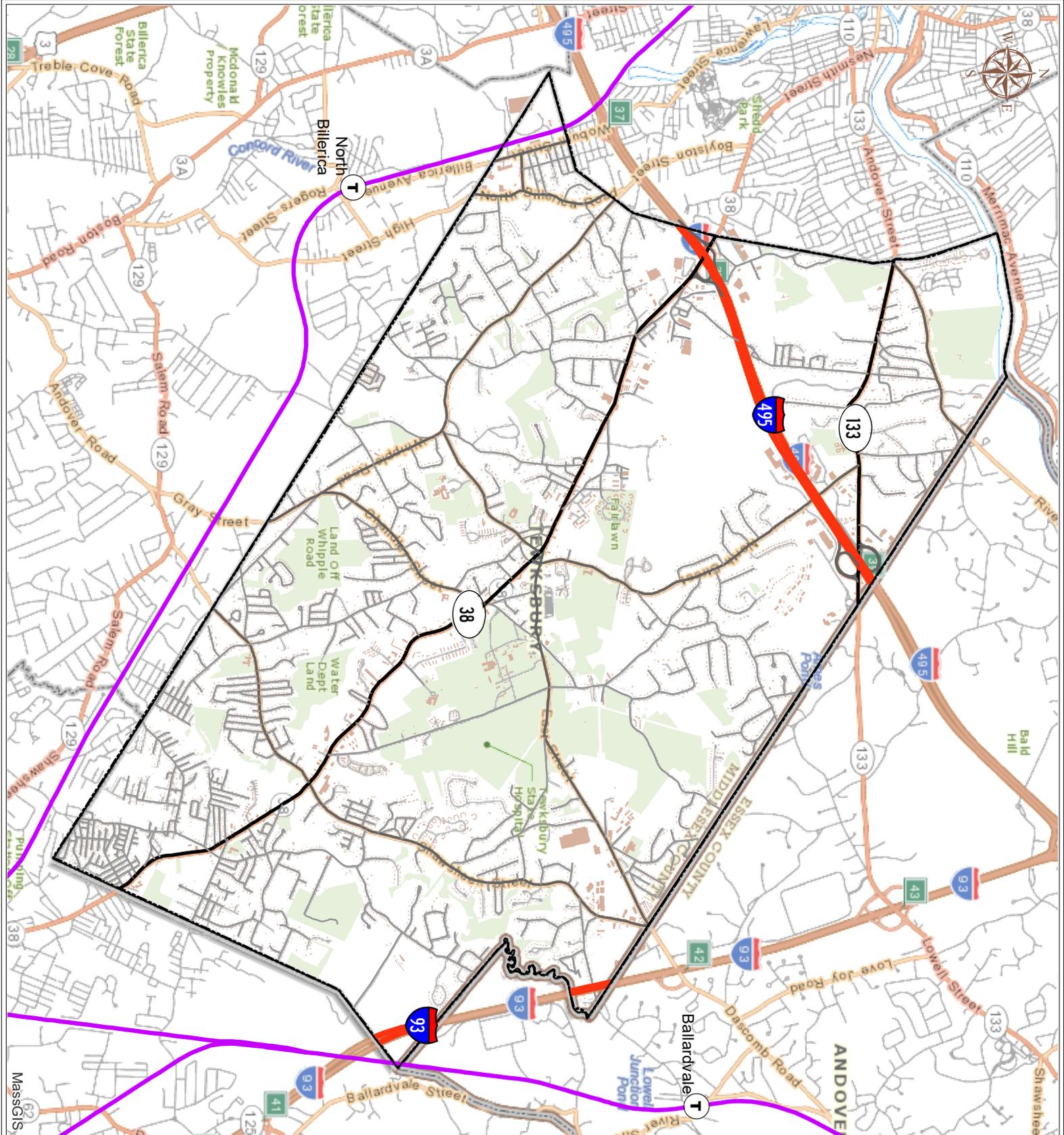
- Zoning Overlay Districts**
- Flood
 - Groundwater
 - Highway
 - Interstate
 - Medical Marijuana
 - Town
 - South
 - Community
 - Village Mixed-Village
 - Wireless Communications Facilities

- Zoning Districts**
- Residence 40
 - Multiple Family
 - Commercial
 - Limited Business
 - Office/Research
 - Farming
 - Park
 - Heavy Industrial 1
 - Heavy Industrial
 - Community Development
 - Municipal
 - Transitional



This map is for general planning purposes only. The data used to create the map are not adequate for making legal or zoning boundary determinations or delineating natural resource areas. Exercise caution when interpreting the information on this map.

Date: 5/2/2016
 Source: MASSDOT, Town of Tewksbury



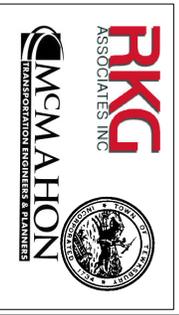
Map 3.3

Transportation

Tewksbury Master Plan

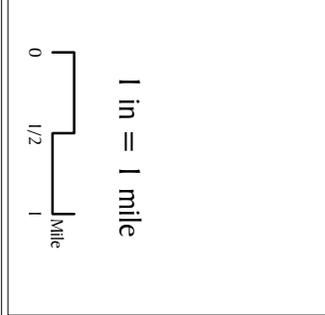
- Street Type**
- Principal
 - Minor
 - Collector
 - Local

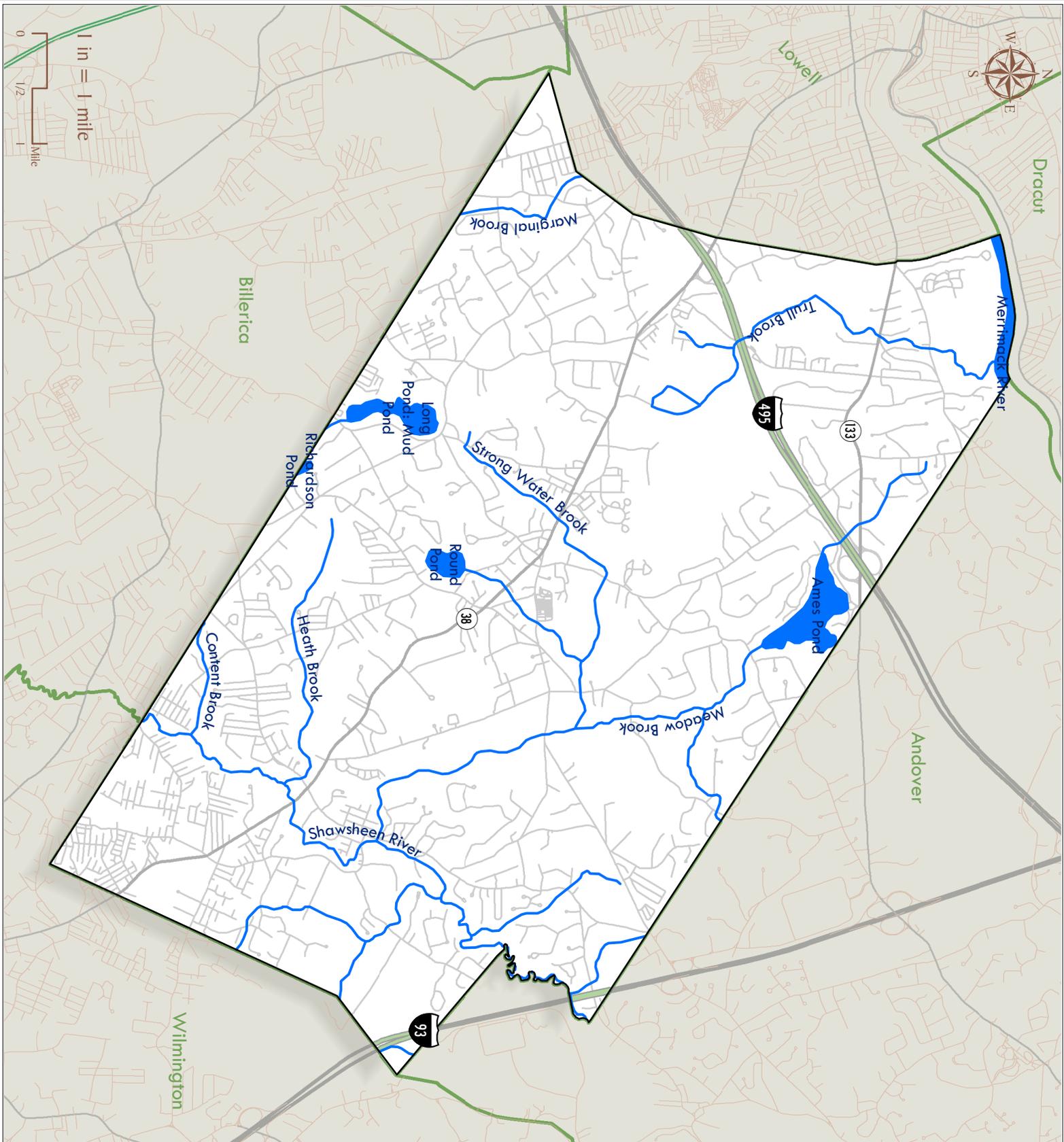
- MBTA Commuter Rail**
- T Station
 - Line



This map is for general planning purposes only. The data used to create the map are not adequate for making legal or zoning boundary determinations or delineating natural resource areas. Exercise caution when interpreting the information on this map.

Date: 5/2/2016
Source: MassDOT, MassGIS





Map 3.4

Water Resources

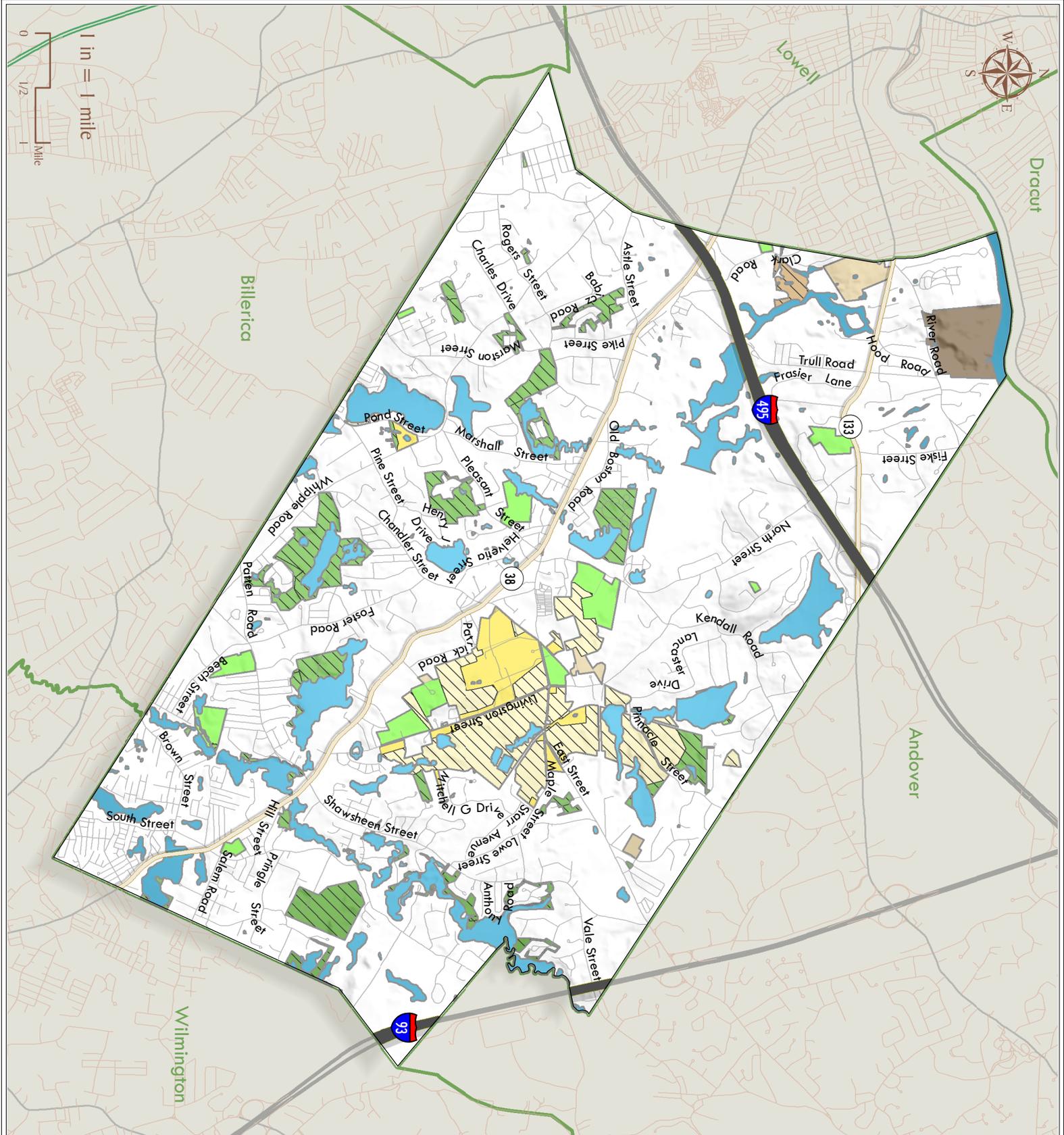
Tewksbury Master Plan

- Rivers/ Streams
- Lakes/ Reservoirs



This map is for general planning purposes only. The data used to create the map are not adequate for making legal or zoning, boundary, determinations or delineating natural resource areas. Exercise caution when interpreting the information on this map.

Date: 5/2/2016
 Source: MassDOT, Town of Tewksbury.



Map 3.5

Open Space & Recreation

Tewksbury Master Plan

Owner/Level of Protection

-  Private Owned, Limited
-  Private Owned, Protected
-  Private Owned, Unprotected
-  State Owned, Protected
-  State Owned, Unprotected
-  Town Owned, Limited
-  Town Owned, Protected
-  Water
-  Conservation Restriction





This map is for general planning purposes only. The data used to create the map are not adequate for making legal or zoning boundary determinations or delineating natural resource areas. Exercise caution when interpreting the information on this map.

Date: 5/2/2016
Source: MassDOT, USGS, MassDEP

4 KEY PLANNING ISSUES & RECOMMENDATIONS

4.1 LAND USE & ZONING

Issues and Opportunities

Administration Process. Land use and zoning applications currently come to the Planning Board without review by town staff for completeness. The Planning Board is interested in improving and modernizing its administrative procedures by updating forms and applications, and allowing electronic submittals by proponents. A certificate of completeness should be provided by the applicant and town staff for review of application completeness prior to distribution to ensure that all required documentation has been included.

Land Use for Target Development Areas. There are key parcels of land in Tewksbury that have been the subject of significant development proposals over the past few years, such as Lowell Junction and the site of the recent slots parlor proposal. The town's land use regulations may need to be revised to accommodate future needs.

Wetland Protection and Low Impact Development. Presently, the town's subdivision and zoning regulations do not permit low impact development techniques. The previous Master Plan contained an extensive discussion about the need to better protect wetland and water resource areas beyond the protective measures outlined in the town's Flood Plain Bylaw, local wetlands bylaw and the Groundwater Protection District bylaw. Low Impact Development is an approach to environmentally-friendly land use development, and includes landscaping and design techniques that maintain the natural, pre-development ability of a site to management stormwater.

Sign Regulations. The Town's sign regulations need to be revised and updated. Additional guidance for businesses is needed in terms of sign size, acceptable types of signs, materials, design, and placement.

Route 38 Comprehensive Zoning. The Town has established overlay districts along much of Route 38 in order to improve the quality of development and enhance the attractiveness of local business districts. However, zoning along the entire Route 38 corridor needs to be

revisited and updated. While the 2003 Master Plan promoted several distinct districts for Route 38, including one that has not yet been instituted (the Wamesit Commercial Area near the Route 38/I-495 interchange), overlay districts are not always the best or most effective way to address problems that lie, in large part, in deficiencies in the underlying zoning. There needs to be a reassessment of Tewksbury's land use goals and strategies for Route 38. It may be that the overlay mechanisms conceived in 2003 are still the best overall approach for revitalizing and improving the ambience of the small business areas along Route 38, but the underlying zoning needs to be reviewed carefully and modified, as needed, to prevent land use conflicts.

Route 38 Streetscapes and Design Guidelines. A land use concept was developed for the South Tewksbury area near, near South and Main Streets, which encourages local neighborhood style businesses with small, pedestrian-oriented retail and service centers. The development of design guidelines was recommended for this area, along with public investment in streetscape improvements and parking facilities. While the overlay bylaws along Route 38 provide design guidance for projects completed under the overlay bylaw provision, there is a need to add design standards and guidelines to the Zoning Bylaw for those commercial projects completed under base zoning. In addition, NMCOG's Route 38 Corridor Study has shown that access management also needs to be addressed along the corridor. Toward that end, the Town should develop an access management policy that could be applied along the town's major transportation corridors.

Industrial Land Use Conflicts. The Planning Board has identified land use conflicts along East Street where industrial uses abut residential neighborhoods. Initially, the industrial zoning along East Street was put in place as part of a plan for an industrial connector road between I-93 and I-495, however, the roadway was never built. This area serves as a gateway from the Dascomb/I-93 interchange in Andover, and the previous Master Plan recommended that the area be designated as a mixed-use district (retail, office, service and multi-family residential), with well-developed design guidelines, rigorous site plan process and review, and well-thought out signage and landscaping standards. Additional land use conflicts have been identified along North Street and Woburn Street. In 2015, the Town adopted a new zoning district for the Woburn Street area to help address these concerns.

Heavy Industrial District Zoning. This section of the Town's Zoning Bylaw needs to be updated and revised. The Planning Board should reconsider whether the mix of commercial uses allowed within the district is still appropriate. In addition, the Planning Board should consider establishing floor area ratios as a way of regulating density, and add more substantive consideration of design, and resultant project impacts on traffic, noise, and neighborhood quality of life. This could be accomplished by establishing design guidelines for industrial projects. The industrial uses allowed within the HI district should be updated to reflect today's industrial economy. The lack of adequate buffering between industrial and residential districts has been identified as a concern. The minimum lot size allowed within

the HI district is one acre. From a practical perspective, it is highly unlikely that an industrial project could be sited on a one-acre parcel while still meeting dimensional and buffering requirements. The Town should consider increasing the minimum lot size requirement for the HI district.

Light Industrial Zone. The previous Master Plan recommended that the Town create a Light Industrial Zone in areas now zoned HI and located in close proximity to residential neighborhoods. A range of light industrial and professional uses would be allowed, subject to extensive landscaping and buffering requirements. In addition transitional zones between light industrial and residential areas would be put in place, along with performance standards to minimize negative development impacts. This approach offers one possible avenue for addressing the land use conflicts that are outlined above.

Convenience Retail in Industrial Zoning Districts. The Town's zoning bylaw does not currently allow for convenience retail within the industrial district. Such services are beneficial to workers within an office or industrial facility, and would minimize the amount of traffic generated by employees trying to access such services. The Planning Board has been discussing potential zoning changes along the Woburn Street corridor to address this issue and should investigate similar changes in other areas of town.

Zoning for Open Space Residential Development. The Zoning Bylaw provides for an Open Space Residential Design (OSRD) Special Permit process that supplements the option for developers to submit a conventional subdivision plan. Open space is an important component of neighborhood design and even a small parcel of open space area can accommodate a neighborhood playground, pocket park, or community garden. The Town may want to consider encouraging OSRD by removing the special permit requirement and providing for OSRD by right.

Outdated or redundant references in the Zoning Bylaw. There are numerous references to an R80 district within the current zoning regulation, however it would appear that these references are a vestige of older versions of the Zoning Bylaw, as the R80 district does not appear on the zoning map and is not included on the table of uses. This should be corrected to avoid confusion in the future.

Design Standards. Overall, the Town's Zoning Bylaw needs to be improved to give more consideration to architectural design, environmental performance standards, and landscaping and aesthetics. The town could improve the visual quality of commercial and industrial development through the adoption of a design review process that addresses building massing, material and articulation, appropriate architecture to ensure compatibility with the surrounding area, and appropriate signage, lighting and landscaping. Design review could begin as an advisory review coordinated within the town's existing approval process, and could be activated for projects that meet a certain size threshold (e.g. 10,000 sf). Toward

these ends, the Community Development Director and Planning Board have begun drafting design standards that would apply to all commercial or industrial buildings.

Photovoltaic Use. Tewksbury has been certified as a Green Community by the Department of Energy Resources (DOER). The Planning Board has indicated an interest in developing land use policies that support energy efficiency and renewable energy, including the potential development of a solar farm at the former town landfill. The Town should focus on developing a photovoltaic zoning bylaw to encourage such initiatives. In addition, the Town could provide incentives within the Zoning Bylaw to encourage the development of LEED certified buildings and energy efficient lighting technologies.

By Right Uses in LB and OR. The Limited Business (LB) District regulations do not allow any business uses by right. While it is understood that the intent of this district is to encourage neighborhood-scale business development, the Planning Board should consider allowing some small-scale retail and personal service uses within the district. Similarly, the only uses allowed by right within the OR district are exempt uses. If it is the intent of the town to encourage businesses to locate in these areas, the permitting and approval process should be re-examined to determine if there are some uses that could be allowed by right, provided additional performance standards for projects located in these districts are incorporated into the Zoning Bylaw.

Recommendations

- 4.1.1 Conduct a zoning audit and a comprehensive review and update of Tewksbury's Zoning Bylaw.
- 4.1.2 Update development review and special permit forms and applications, and allowing for electronic submittals by proponents.
- 4.1.3 Review zoning for target development parcels in the Town and determine the most desired use for the properties in the future.
- 4.1.4 Consider implementing a Low Impact Development (LID) Bylaw.
- 4.1.5 Update the Town's sign bylaw to better guide business owners.
- 4.1.6 Revisit the Town's approach to zoning on Route 38 and consider supplementing or replacing the overlay framework with distinctive, workable base districts.
- 4.1.7 Establish well-developed buffering standards for all industrial areas, particularly along East Street.
- 4.1.8 Establish a light industrial zone for some of the areas currently zoned Heavy Industrial.

- 4.1.9 Consider allowing convenience retail and various personal and business services in industrially zoned districts, i.e., modernize the Town’s industrial district use regulations to meet contemporary standards for industrial and office parks.
- 4.1.10 Consider changing the OSRD special permit to an OSRD “by right” provision to encourage open space by design in new residential developments.
- 4.1.11 Consider creating design standards for site plan review to which the Planning Board can enforce. These may include architectural design, environmental performance standards, and landscaping and aesthetics.
- 4.1.12 Consider developing a photovoltaic zoning bylaw to encourage such initiatives.
- 4.1.13 Review uses allowed by right in the Limited Business District (LB) and the Office/Research District (OR).

4.2 TRANSPORTATION

Issues and Opportunities

Tewksbury is a suburban town with an auto-dominated transportation system, like most suburbs in the Greater Boston area. There are opportunities to improve roadway congestion and safety, but encouraging other ways to travel beyond private vehicles could reduce the burden on major roadways like Route 38. Tewksbury currently has large amounts of open space that could be connected through a network of dedicated pedestrian and bicycle infrastructure to provide connections that would promote transportation choice.

Roadway and Intersection Safety

- Safety issues have been documented with crash data, compared to regional averages, bridge inspections, and using input from town officials and the community.
- The intersections of Route 38 at the I-495 interchange, South Street, and Shawsheen Street have been identified by NMCOG and the community as having traffic safety concerns.
- The Mill Street Bridge is structurally deficient and the I-495 bridges over Route 38 (Main Street) are functionally obsolete. There are numerous ongoing safety issues that are related to roadway geometry, deficient sight distance, excessive speed, and conflicts at commercial driveways, particularly on Route 38.
- Salem Road at South Street is a stop controlled intersection that is one of the top 200 MassDOT crash locations. It is a candidate for a MassDOT Road Safety Audit to identify potential improvements.

- Future improvements should avoid widening of roadways and instead focus on other improvements such as sidewalks, bike facilities, and capacity improvements including signal timing and coordination.

From a land use perspective, commercial development directly affects traffic volumes and can contribute to safety issues. Especially where multiple curb cuts are present, vehicle conflicts can occur between through traffic and vehicles turning and entering. Figure 4.1 illustrates the principles of access management that should be applied to Route 38 and other major roadways with high traffic volumes.

Figure 4.1. Illustration of Access Management Approach for Commercial Development



Access Management refers to the coordination between roadway design and adjacent land development to ensure safe and efficient traffic operations on major arterials and intersections while providing adequate access to abutting land uses. Common techniques include:

- Driveway closure, consolidation, or relocation
- Restricted-movement designs for driveways
- Raised medians that prevent cross-roadway movements and focus turns to key intersections
- Adding auxiliary turn lanes
- Using roundabouts and mini-roundabouts to provide desired access

Source: MassDOT Project Development and Design Guide (2006)

A roadway or intersection improvement project to address safety needs for locations identified as high crash, congestion and safety issues and within NMCOC’s Route 38 Transportation Study, completed in February 2014, should be conceived and developed. The Town should actively work with MassDOT to improve these locations by promoting inclusion in the regional Transportation Improvement Program (TIP) or other means to address deficiencies.

- Route 38/I-495 Northbound ramps
- Route 38 and Astle/Pike Streets
- Route 38 and Livingston Street

- Route 38 and Shawsheen Street
- Route 38 and South Street
- Route 38 at Pleasant Street
- Route 38 at Capital Avenue

The town should continue to monitor safety issues as they arise at new locations.

Traffic Circulation

Traffic congestion continues to be an issue for some roadways and intersections in Tewksbury, particularly Route 38 and roadways providing access to I-495 and I-93. Along the Route 38 corridor, three intersections during the weekday morning and seven intersections during the weekday afternoon currently operate at a LOS D or lower. Improvements can be made to Route 38 by working with MassDOT and developers along the corridor. Intersection



improvements at Route 38 and I-495 could greatly improve safety and connectivity to the regional transportation network. The potential for a three-lane cross-section, with a center two-way left-turn lane should be studied as a potential capacity improvement along Route 38. The following locations are recommended:

- Main Street between Astle/Pike Street and 623 Main Street;
- Main Street between Marshall Street and Dewey Street;
- Main Street between North Street and Chandler Street; and
- Main Street between Chandler Street and Victor Drive

The town should coordinate with MassDOT and neighboring communities of Lowell and Wilmington on future improvements to Route 38. Interconnected driveways, limited curb access, and the strategic placement of curb cuts should be pursued for future development along Route 38.



Reducing conflicts between industrial zones and adjacent neighborhoods was a goal of the 2003 Master Plan and it remains a concern today. Residential neighborhoods can be subject to cut-through travel when motorists perceive the neighborhood routes as a way to avoid congestion on adjacent roadways and to save travel time. In these situations, traffic calming measures including vertical deflections (e.g. speed humps, speed tables) and horizontal shifts (e.g. chicanes, neighborhood traffic circles) can be effective means to deter cut-thru traffic and should be considered for implementation. Driver feedback signs, i.e. radar speed limit signs, can also be effective in traffic calming. Potential candidates for traffic calming measures include roadways with barriers to walking and biking, particularly near schools. These include Shawsheen Street at Foster Road/Beech Street; and Pleasant Street at Marshall Street and Whipple Road.



Examples of Interim and Permanent Pedestrian Crossing Treatments

Transportation Demand Management, Development Mitigation, and Parking

The primary causes of traffic congestion in Tewksbury are existing commuting patterns and major activity areas. Along with targeted traffic improvements to particular roadways and intersections, transportation demand management (TDM) is an instrument for mitigating traffic demand related to new development, for example along the Route 38 corridor, and a key recommendation of the NMCOG Route 38 Transportation Study. Generally speaking, TDM describes a wide variety of strategies that increase the overall efficiency of the transportation system by encouraging a shift away from single-occupancy vehicle trips to other modes like carpool, public transportation, walking, or biking, or by shifting car trips out of the peak travel periods. TDM strategies can be more cost-effective than capital investments in roadway capacity.

TDM strategies fall into four broad categories: 1) improved transportation options; 2) incentives to use alternative modes and reduce driving; 3) parking management; and 4) policy and institutional initiatives. Municipal governments are best situated to take a role in improving local infrastructure for walking and biking, roadway design, land use policies, and parking policies. Tewksbury also has a role in requiring new commercial development to implement employer-based TDM strategies.

Typically, transportation mitigation consists of a measure in proportion to the size of the development that is implemented by the developer, for example adding a traffic signal at the entrance of a new shopping center. Tewksbury should devise a mechanism to also allow transportation mitigation on a cumulative process, allowing developers to contribute toward a larger scale transportation improvement. This would allow for a more coordinated

approach to improving the entire transportation system rather than by individual intersections. Traffic impact studies should be required for new developments. These studies allow the public and town officials to understand and respond to additional demands on the transportation system, and provide a factual basis for decision making about potential improvements.

Non-roadway transportation demand management plans are typically employer driven or sponsored. Elements may include transit and vanpool subsidies, shower and locker facilities for bicyclists and walkers, on-site carsharing vehicle, employee shuttle/park and ride options, flexible/alternative work hours, and telecommuting. A town-wide program or ordinance should be explored and implemented that requires TDM plans for any new large-scale development. Successful TDM programs also reduce the need for parking.

The Junction Transportation Management Organization, Inc. (JTMO) as a consensus-oriented, nonprofit organization of private and public sector representatives working together to address transportation issues in the "Lowell Junction" area of Andover, Tewksbury and Wilmington. This organization can assist area employers in reducing the number of drive alone commuters, thereby improving roadway conditions and the environment.

Shared parking areas and a "park once" approach should be encouraged where practical, such as activity centers where parking is limited and not obvious from the street view and businesses have a shared customer base. Planning for the Tewksbury Town Center is an ideal location to explore shared parking and centralized municipal parking. Short-term parkers need access to parking close to their destination, while long-term parking can be somewhat further. Time limits and cost should be coordinated accordingly to encourage turnover of spaces that are in highest demand.

Complete Streets

The community has expressed a desire to generally improve "connectivity" within the community. Non-motorized modes like walking and bicycling can be a viable mode for shorter trips and they are key elements in the broader concept of "complete streets." The "complete streets" perspective is distinct from the conventional notion of streets that are designed exclusively for automobile travel. Instead, it encourages street design that responds to community context and is inclusive of users of all

Illustration of a Complete Neighborhood Street



Source: National Association of City Transportation Officials (NACTO) Urban Street Design Guide.

ages and abilities, and offers a variety of transportation options. The benefits of more complete streets are numerous: increased safety, health, accessibility, total transportation capacity, and economic competitiveness are among the most significant benefits. The town should engage the public in developing a complete streets policy that will ensure the entire rights of way are planned, designed, and operated to provide safe access for all users. Further information about the benefits of complete streets and guidance for developing policies is freely available from the National Complete Streets Coalition (www.completestreets.org). Complete street designs could be implemented on arterial and collector roads such as Main Street, Shawsheen Street, and Chandler Street.

Sidewalks

A town-wide sidewalk enhancement program was recommended in the 2003 Master Plan, and is recommended in this document in the context of providing a framework for identifying deficient pedestrian links, building new sidewalks, and prioritizing improvements of existing sidewalks. The enhancement program should be staged over a ten-year period to ease the associated budget and manpower requirements. In addition to a town-wide sidewalk enhancement program, the town should establish criteria for marking crosswalks. The Manual on Uniform Traffic Control Devices recommends that crosswalks should not be marked indiscriminately and that engineering judgment should be used to determine crosswalk locations with consideration given to vehicular and pedestrian volumes, vehicle speeds, crossing distances, roadway geometry and street lighting. Where the crosswalks connect to sidewalks, adequate ramps should be provided at the curb line in compliance with the Americans with Disabilities Act accessibility requirements.

In addition to pedestrian infrastructure, the town should initiate walking encouragement programs through the recreation and school departments. Examples of school walking initiatives include walking school buses, special events such as National Walk to School Day, mileage clubs and contests, and park and walk locations. The Safe Routes to School (SRTS) program should be explored for improvements near Victor Middle School, where future development is planned and opportunities for improved connectivity are available.

Bicycle Routes

Like walking, bicycle travel can be a viable mode for short commutes, access to services, and recreational trips. The town's roadways currently do not accommodate bicyclists and exclusive facilities do not exist. The town should work to provide bicycle accommodations for both the commuter cyclist and the recreational cyclist. The NMCOG Route 38 Transportation Study included recommendations for incorporating bicycle provisions in the corridor. This type of complete streets approach can be applied to other roadways in Tewksbury and combined with pedestrian improvements discussed in the sidewalk section.

Bicycle facilities could accommodate both commuter and recreational bicyclists by providing access to employment centers (Lowell, Wilmington, Billerica) and to existing and planned bicycle paths. Bicycle routes would ideally be placed on low-speed roads with low traffic volumes that allow cyclists to ride at a comfortable pace and not worry about conflicting motor vehicle traffic. For routes that are placed on roadways with high speeds or high motor-vehicle volumes, more separation should be provided between the bicyclists and motor vehicles. In the future, additional on-street and off-street connections should be explored to expand the access to the local and regional bicycle network such as the current Tewksbury Rail Trails Program, Bay Circuit Trail and Concord River Greenway.

In addition to infrastructure amenities, the town should consider biking encouragement programs through the recreation and school departments, as well as employer TDM programs. The school-related walking incentives cited in the previous section can be modified and applied to bicyclists.

Trails and Off-Road Paths

Off-road paths are used by pedestrians and bicyclists for recreation and commuting. They provide a low-stress route that is separated from motor-vehicle traffic and is safe for all ages and abilities. The town should investigate connections that can be made between neighborhoods that would reduce distances required for trips around town. Some of these connections may already exist on “paper streets” where a public right-of-way is present but a paved roadway does not exist. Tewksbury has many utility and rail corridors that already travel through town. These open stretches of land could be turned into trails by coordinating with utilities and railroad owners.

Public Transportation

Journey to Work data through the U.S. Census indicate that more than half of Tewksbury residents have a commute to work less than thirty minutes. However, less than two percent use public transportation, and those who do use it, have commute times in excess of one hour. The use of public transportation can assist in providing greater mobility for residents, and reduce reliance on private automobiles, thereby reducing congestion. The challenge is making public transportation an attractive option within Tewksbury.

In conjunction with sidewalk improvements pursued under the previous issue, the town should identify sidewalk improvements that improve access to LRTA bus stops. Improvements should be made in coordination with LRTA and consistent with ADA Standards for Transportation Facilities. Federal regulations under the Moving Ahead for Progress in the 21st Century (MAP-21) increases the emphasis on maintaining transit assets in a State of Good Repair. LRTA could partner with the town to implement transit enhancements, now known as “associated transit improvements” under MAP-21. These transit improvements include streetscape improvements on public rights-of-way, bicycle

accommodations at stations, and improved accessibility in compliance with the Americans with Disabilities Act (ADA). Pedestrian and bicycle improvements within a one-half mile of a transit stop (including bus stops) have a *de facto* functional relationship to public transportation. (Federal Register, volume 76, 161, August 19, 2011)². In other words, the pedestrian and bicycle improvements the town seeks to implement could be pursued through alternative funding mechanisms if the improvements could increase use of public transportation.

Gateways to Tewksbury

Roadways serve as the gateways to Tewksbury and offer an opportunity to welcome and to clearly convey the town's identity. Gateways were a focus of the 2003 Master Plan and remain important today. At moderate to high-volume roadways, the town should explore measures for establishing and improving gateways. Islands and roadside at these locations are candidates for landscaping and signage, such as the recent improvements on East Street. A gateway on the east side of I-495 and Route 38 ramps could remind drivers that they have exited a highway and are now driving through a town. The gateway would encourage drivers to lower their speeds and anticipate pedestrian and bicycle roadway users.

To ensure effective implementation, the town should engage local residents and businesses in creation of gateways and encourage their participation in upkeep. Additionally, depending on context, gateways can be enhanced through minimizing traffic demand of new development in the immediate vicinity.

Town Center

The Town Center is generally defined as the triangular area consisting of East Street, the Route 38 corridor and Chandler Street. It encompasses the municipal uses and commercial areas general along Main Street between the Police Department and the Public Library, extending along Pleasant Street toward the Ryan Elementary School and north along East Street to the Senior Center. The town should pursue strategies and improvements in the areas of circulation, traffic calming, streetscape improvements, parking, pedestrian connections, and encouragement of mixed use development. These elements will be addressed through the Town Center Master Plan process. With mixed use development encouraged, parking requirements within the Town Center may need to be reduced if shared parking or public transportation is available.

Funding for Transportation Improvements

The town should continue to establish clear priorities among projects on state roadways for future inclusion in the regional Transportation Improvement Program (TIP). Reconstruction

² <http://www.gpo.gov/fdsys/pkg/FR-2011-08-19/pdf/2011-21273.pdf>

of East Street is a recent success story with a need identified in the 2003 Master Plan, and funding secured through the TIP. Recent projects that are planned to be funded, or have been funded by the TIP are shown in Table 4.1.

Table 4.1. Transportation Improvement Projects

Project	Cost	Year
Resurfacing of Rt 38 from Town Line to Astle and Pike	\$ 2,061,000.00	2015
Mill St over Shawsheen River	\$ 2,167,284.00	2018
Whipple St Reconstruction	Not Identified	
East St Reconstruction	Not Identified	
LRTA - Tewksbury Saturday Service	\$ 51,444.00	2014
East St at Shawsheen St	\$ 1,829,813.00	2014
East St at Livingston St	\$ 743,547.00	2011
River Road Roadway Reconstruction	\$ 4,412,896.00	2010

The town's asset management system can be used to identify future additional projects to be added to the TIP as needs arise. In addition to the projects to be funded through the TIP, Chapter 90 money, provided by the state for town use, is used for roadway repairs and maintenance Tewksbury has created a capital plan for 2016 through 2020 for its Chapter 90 funding which is shown in Table 4.2. below.

Table 4.2. Chapter 90 Allocations

Project or Program	FY2016	FY2017	FY2018	FY2019	FY2020	Total
Pavement Management Preventative Maintenance	\$50,000	\$50,000	\$250,000	\$190,000	\$250,000	\$790,000
Pavement Management Reconstruction/ Resurfacing	\$919,000	\$1,050,000	\$395,000	\$370,000	\$570,000	\$3,304,000
Traffic Intersection Signal Improvement Projects	\$120,000	\$100,000	-	-	-	\$220,000
Sidewalks	-	-	-	-	-	-
Transportation Project Development/Design	\$40,000	-	-	\$25,000	-	\$65,000
Total	\$1,129,000	\$1,200,000	\$645,000	\$585,000	\$820,000	\$4,379,000

Federal and state grants for transportation improvements should be explored and pursued, in coordination with NMCOG. Tewksbury has begun to identify intersection realignments, roadway design projects and related transportation projects for consideration in the Regional Transportation Plan. Needs have been identified to NMCOG for consideration and ranked with ten being the highest priority and one being the lowest priority. The projects requested by Tewksbury to be placed on the Regional Transportation Plan are shown in Table 4.3 below.

Table 4.3. Regional Transportation Plan Proposed Projects

Project Name	Project Cost	Priority	Timeframe
River Road and Andover Street signalized intersection	\$1.2M	10	Immediate
Intersection improvements at South Street and Salem Road	\$1.2M	10	Immediate
Analysis, design, and reconstruction of Main Street	\$20M	9	Next Five Years
Repair and replacement of traffic control devices	\$0.8M	8	Next Five Years
Realignment of the intersection at Foster Road, Patten Road, Shawsheen Street, and Beech Street	\$1.5M	7	Next Five Years
Creation of Rail Trail on abandoned/discontinued railroad right-of-way	\$5M	6	Next Five Years
Realignment of the Maple Street and East Street intersection	\$1M	5	Next Five Years
Sidewalk Study	\$0.075M	4	6-10 Years
Realignment of intersection at Whipple Road and Chandler Street	\$1.5M	3	6-10 Years
<i>* Project Costs are shown in Millions of dollars.</i>			

Coordination should also continue to leverage transportation studies and data collection conducted by NMCOG.

Recommendations

- 4.2.1 Conduct a comprehensive inventory of town-wide pedestrian and bicycle network and address gaps in connectivity.
- 4.2.2 Adopt a Complete Streets policy where appropriate, that provides for a variety of transportation choices that meet the needs of all age groups, abilities, and preferences.
- 4.2.3 Develop and implement a long-term sidewalk enhancement program.
- 4.2.4 Encourage programs for walking and biking through the school and recreation departments and through employer TDM programs and the Junction TMO.
- 4.2.5 Develop walking and cycling paths that connect activity areas and link to alternative means of transportation.
- 4.2.6 Promote neighborhood trails. Develop subdivision regulations to provide new trails and improve access to existing by dedicating “paper streets” (i.e. public rights-of-way that are not roadways).
- 4.2.7 Identify potential locations for bike rack and pedestrian bench installations, and increase numbers of these amenities at key locations.
- 4.2.8 Identify roadways with sufficient width to stripe bike lanes; analyze these locations, and implement where appropriate.

- 4.2.9 Require new developments to provide links to pedestrian and bicycle accommodations.
- 4.2.10 Promote healthy travel (bicycle and walking) to and from all schools.
- 4.2.11 Require developers to include sidewalks and bike facilities in new development or pay into a fund for future pedestrian and bicycle accommodation.
- 4.2.12 Continue to support volunteer groups to advocate for off-road pedestrian and bicycle trails.
- 4.2.13 Identify jurisdiction and potential safety improvements for high-accident locations.
- 4.2.14 Coordinate with state on projects that involve high accident locations and lobby for specific improvements to address the accident patterns.
- 4.2.15 Identify high accident locations that are not part of ongoing project and initiate studies to identify potential safety improvements.
- 4.2.16 Work with MassDOT to conduct Roadway Safety Audits for high accident locations, particularly Salem Road at South Street. Implement corresponding actions in response to the findings.
- 4.2.17 Identify geometric and traffic control improvements to improve safety at high-accident locations and lobby for funding of these improvements.
- 4.2.18 Work with MassDOT to improve functionally obsolete bridges on I-495 within Tewksbury.
- 4.2.19 Coordinate with MassDOT, NMCOG, adjacent regional planning agencies, and adjacent municipal plans to establish and enhance connections between key regional destinations.
- 4.2.20 Solicit support from legislators as needed to prioritize and implement regional connectivity projects.
- 4.2.21 Identify gaps in connectivity between modes and implement improvements to improve overall connectivity, thereby providing the “last mile” link for intermodal trips.
- 4.2.22 Provide shelters, benches and bike racks at bus stops.
- 4.2.23 Promote existing public transportation service to the Route 38 commercial area.
- 4.2.24 Coordinate with LRTA to improve pedestrian and bicycle connections to bus stops through “associated transit enhancements” available through provisions of MAP-21.
- 4.2.25 Identify potential gateway locations based upon the side of road environment.

- 4.2.26 Initiate community/commercial participation to maintain gateways. For example, promote an “Adopt an Island” program that is supported by business or community groups.
- 4.2.27 Provide welcome signs at gateways. Consider alternative and creative materials for the signs, such as plantings.
- 4.2.28 Improve landscape and streetscape at gateway locations.
- 4.2.29 Establish clear sight lines at gateways.
- 4.2.30 Incorporate “Complete Streets” design, when feasible and consistent with other master plan goals.
- 4.2.31 Consider the transportation-land use connection for future development to manage traffic and parking demand.
- 4.2.32 Develop and implement a master sign program for aesthetic and consistent appearance.
- 4.2.33 Promote pedestrian scale signage, street lighting, and wayfinding when implementing streetscapes.
- 4.2.34 Pursue intersection improvements at Route 38 intersections noted in this document.
- 4.2.35 Pursue Route 38 improvements presented in the Route 38 Study in cooperation with MassDOT, such as regulating curb cuts and improved access management.
- 4.2.36 Review “complete streets” policies from other towns in MA and throughout the U.S. and develop a guidance document for use on local projects to allow multi-modal uses on roadways.
- 4.2.37 Minimize and strategically place curb cuts to minimize conflict points. Update the commercial zoning requirements to promote curb cut consolidation.
- 4.2.38 Sustain the local character of roadways by implementing traffic calming in appropriate locations. Use traffic calming techniques to discourage cut-through traffic on neighborhood streets.
- 4.2.39 Provide timely pavement management through the pavement management program created in 2014, and obtaining funding to “catch up” on deferred maintenance.
- 4.2.40 Consider drafting and funding a comprehensive town-wide Traffic Master Plan. The plan should include a detailed capital plan with a list of projects intended to reduce congestion at intersections and safety. Basic conceptual plans and order of magnitude cost estimates should be part of this plan which should seek public input to prioritize a list of projects.

- 4.2.41 Integrate traffic impact studies and peer reviews of the traffic studies for planned developments. For large scale developments, continue to implement peer reviews of traffic studies to be paid by developer to ensure accuracy and completeness of studies.
- 4.2.42 Create development thresholds and guidelines for traffic impact studies to standardize the permitting process.
- 4.2.43 Establish development impact fees or a mechanism by which developers could contribute toward a large-scale transportation improvement in lieu of providing specific infrastructure improvements.
- 4.2.44 Allow traffic mitigation at off-site locations such as development proposed in the Victor Drive area, where improved connectivity of land uses is possible.
- 4.2.45 Assess parking regulations and adopt policies that encourage shared parking where appropriate.
- 4.2.46 Review amending the Zoning Bylaw and Planning Board Subdivision Rules and Regulations where by commercial projects with no adjacent sidewalks or residential projects that opt for sidewalk waivers contribute to a fund to be used to expand the town wide pedestrian and bicycle system. Also review a potential subdivision regulation change that could provide incentives for development of bike paths to eventually join a real network.
- 4.2.47 Maintain pavement quality, and signage database created in 2014 and coordinate maintenance programs with the database.
- 4.2.48 Expand database into a complete asset management system that could include sidewalks, pavement markings, street lights and traffic signals.
- 4.2.49 Coordinate with NMCOG and MassDOT to investigate and pursue funding.
- 4.2.50 Lobby for projects to be prioritized and placed on TIP and assistance from MassDOT for state controlled roadways.
- 4.2.51 Prioritize use of limited local funding sources.
- 4.2.52 Seek other forms of grants to promote non-motorized forms of transportation.

4.3 HOUSING

Similar to the existing conditions of housing in Tewksbury, the following summary of issues, opportunities, and recommendations is derived from the Tewksbury Housing Production Plan for 2012-2016.

Issues and Opportunities

Population and Households

The Town's population in 2010 was 28,961. Between 2000 and 2010, Tewksbury grew by an additional 0.4 percent, or 110 people. Tewksbury's population represents 10.1 percent of the total population for the NMCOG region, slightly down from 10.3 percent in 2000.

Over the past ten years, households also increased at a much slower rate – increasing 5.3 percent from 9,964 households in 2000 to 10,492 in 2010. Growth rates are predicted to continue to follow this slower pace, with rates declining each year through 2035. Almost three-quarters, or 73.8 percent, of Tewksbury's 10,492 households were families. This is down slightly from 2000, when 77.2 percent of Tewksbury's households were families. Forty-six percent of households in Tewksbury have three or more people, with the largest percentage (35 percent) of households having three or four. Two-person households come in a close second at 32.4 percent of the total households in Tewksbury, and one-person households comprise 26.2 percent.

People in the 60+ age group (currently 21.1 percent of the population) are projected to increase by 2,000 residents to comprise 27.1 percent of the population in 2020. While the Town has been increasingly focused on developing elderly housing, there is still a shortage: the waitlist includes 434 people with a 1-2 year wait for local preference and 20 years for non-locals. By contrast, public school enrollment declined by -15 percent between 2006 and 2012. A future school enrollment study commissioned by the Tewksbury School District predicts that enrollment will continue to decline over the next eight years by -16 percent.

Income

Median household, family and per capita incomes have increased over the past 10 years: 20.5 percent for median household income; 25.4 percent for median family income; and 27.3 percent for per capita incomes. Approximately 45 percent of the households in Tewksbury are not making the median household income of \$84,149, with 33 percent of 3-person households at, or below, moderate income levels (80 percent of the area median income).

Poverty levels were at about 2.9 percent of the population, or 801 residents in Tewksbury in 2010. People ages 35-54 year olds represented the largest age group at 31.2 percent, however 22 percent of the residents in poverty are ages 75 and older. Overall, this represents 9.2 percent of the total seniors living in Tewksbury.

Housing Production, Sales and Costs

The majority (73.1 percent) of housing units in Tewksbury are single-family, detached homes which increased between 2000 and 2010 by only 80 units. However, there was a sharp increase in multi-family units during the last decade, especially 20 or more unit complexes, which

grew 82.9 percent to 598 units in 2010. This includes approximately 400 units on Tewksbury's Subsidized Housing Inventory. Eighty-seven percent of the housing in Town is owner-occupied, which increased by 3.5 percent in the past ten years. As with the growth in multi-family units, however, there was a more significant growth in renter-occupied which increased 19.7 percent, from 1,087 to 1,301 units in 2010.

The number of building permits issued between 2004 and 2011 fluctuated. While there was some growth in single family (31.2 percent increase), the majority of the growth was in 5+ family structures. In eight years, 680 of the 1,052 permits were issued for 5+ family structures – a 64.6 percent increase.

Residential sales in Tewksbury experienced a -35 percent decrease since 2005. Single-family homes decreased -24.7 percent and condominiums decreased -59 percent. However, there was an increase in other residential units (duplexes and multi-family) – between 2005 and 2011 there was a 1.8 percent increase in sales for these units.

Overall, there is a shortage of affordable rental units relative to need in Tewksbury. According to the Tewksbury Housing Authority, the waitlist for families is 509 with 61 of those dedicated to local preference applicants. The Housing Authority experiences 1-2 turnovers per year, which means that the local preference wait-time is at best 30 years, while the non-locals are unlikely ever to get this housing.

In 2010, 3,010 households in Tewksbury (28.7 percent of the total households) were considered at least moderately burdened by their housing costs – paying more than 30 percent of their income on mortgage or their rent. Renters are affected even more: 48.8 percent of renting households were burdened by their housing costs in 2010.

Local and State Affordability Goals for Housing Production. The following goals were developed by the Local Housing Partnership, and are not listed in any particular order:

- Preserve Tewksbury's existing housing affordability by providing a mix of residential types and home prices. This includes rentals for existing and future Tewksbury residents.
- Pursue workforce housing units and for a range of potential home-buyers and tenants.
- Encourage reuse and redevelopment of existing structures and infill development.
- Respect the architectural integrity of historic buildings and provide good access to community services and Town infrastructure.
- Update development review and permitting policies so they are fair, clear, and consistent.
- Coordinate the work of Town boards and departments with permitting responsibilities and the Tewksbury Housing Authority.

- Develop affordable housing that adheres to the State’s Sustainable Development Principles.
- Monitor progress of affordable housing production to meet annual production goals.
- Address the housing needs of veterans in the community and partner with local veterans’ organizations to identify possible housing sites.

As of June 2012, Tewksbury had 1,011 units of affordable housing listed on the Town’s Subsidized Housing Inventory (SHI), which is 9.36 percent of the Town’s year-round housing stock (10,803 units) as defined by the 2010 U.S. Census. The Town would need approximately 70 additional units of affordable housing to achieve the 10 percent affordability goal of 1,081 total units. A timeline was developed that estimates an additional 14 units per year would be required to achieve the 10 percent affordability goal by 2016. This would bring the total number of affordable housing units to 1,081.

The Massachusetts Department of Housing and Community Development (DHCD) also set an annual affordable housing production target of 0.5 percent or 1.0 percent growth in eligible units per year in order to be eligible for a temporary moratorium. NMCOG worked with the Town to create a timeline for achieving both 0.5 percent annual growth and 1.0 percent growth based on the existing 1,011 units. A 0.5 percent increase would mean an additional 54 units per year, while a 1.0 percent increase is 108 additional units per year. For 2012, only half of the units were calculated given the timing for submittal of this Housing Production Plan to DHCD. Therefore 27 units were projected to be created, which would result in 9.6 percent, or 1,038 affordable housing units. In 2013, with an additional 54 units, the Town would exceed its 10 percent goal with 10.1 percent, or 1,092 affordable housing units.

When calculating 1.0 percent annual growth, only half of the units were calculated for 2012. An additional 54 units would help Tewksbury achieve 9.9 percent affordability by the end of 2012. In 2013, the Town would be able to attain its 10 percent affordability goal after an additional 108 units are constructed, bringing the number of affordable units to 1,173 units, or 10.9 percent of the total units in Tewksbury. Although the housing market is somewhat uncertain, the following section outlines the goals and strategies that can help the Town achieve their 10 percent affordability goal.

Recommendations

Based on the work of the Tewksbury Local Housing Partnership, with assistance from NMCOG, the housing production plan lays out recommendations for this master plan that can be implemented by the Town, and by community and regional organizations, to increase and improve housing opportunities in Tewksbury.

- 4.3.1 Partner with other organizations for infill on Town-owned parcels upon completion of a comprehensive parcel inventory.

- 4.3.2 Reuse Town-owned residential buildings.
- 4.3.3 Encourage development of infill of private sector affordable housing.
- 4.3.4 Continue to be proactive in maintaining and protecting existing affordable housing units.
- 4.3.5 Consider preserving historic structures by taking advantage of the Town's Demolition Delay Bylaw to convert historic structures into affordable housing.
- 4.3.6 Promote programs that allow residents, especially those that are elderly and disabled, to remain in their homes.
- 4.3.7 Evaluate and revise existing development regulations and Comprehensive Permit Policy for fairness and efficiency.
- 4.3.8 Take advantage of Tewksbury Hospital services for residents with subacute and chronic medical diseases, traumatic brain injuries and other neurologic conditions.
- 4.3.9 Work cooperatively with developers and the state to establish some level of local preference in new affordable housing developments for persons living or working in Town.
- 4.3.10 Investigate the potential for adopting a Chapter 40R Overlay District.
- 4.3.11 Encourage development of more affordable rental housing.
- 4.3.12 Document the specific needs for veterans living in and around Tewksbury and construct affordable veterans housing units that meet those needs.
- 4.3.13 Make training and educational opportunities on affordable housing available for Town Board and Committee members and staff.
- 4.3.14 Increase public awareness of and support for affordable housing through increased outreach and public education.
- 4.3.15 Pursue the purchase of units and provide a subsidized buy-down on the purchase price to qualified first-time homebuyers.
- 4.3.16 Research additional alternative funding sources to subsidize new affordable housing units.
- 4.3.17 Investigate opportunities available under a Regional HOME Consortium to generate additional funding for housing.
- 4.3.18 Work with the Northern Middlesex Council of Governments to develop a Regional Housing Plan for the Greater Lowell Region.

- 4.3.19 Research and promote First-Time Homebuyer Program opportunities in the region and State to make existing homes more affordable.
- 4.3.20 Research and communicate Foreclosure Assistance Programs in the region and State to help homeowners avoid foreclosure.
- 4.3.21 Work with programs like the Common Ground Development Corporation, a subsidiary of Community Teamwork, Inc., to develop affordable housing projects.
- 4.3.22 Refer families who are, or in jeopardy of becoming, homeless to the HomeBASE Household Assistance program.

4.4 ECONOMIC DEVELOPMENT

Issues and Opportunities

The *Greater Lowell Comprehensive Economic Development Strategy* document was updated in 2013 under a Short-Term Planning Grant with the Economic Development Administration (EDA) of the U.S. Department of Commerce and reflects the input of numerous economic development stakeholders in terms of establishing a “blueprint” for successful economic development initiatives within the region. The CEDS document contains Priority Projects and Major Regional Projects that have an economic impact upon the regional economy. The Priority Projects were identified through an RFP process and were based on responses received from the local communities (including Tewksbury). The Priority Project List specifically for Tewksbury, which contains short-term (up to 18 months), intermediate (2-4 years) and long-term (5+ years) projects, is summarized below in Table 4.4.

Table 4.4. CEDS Priority Projects for Tewksbury

Project Name	Project Description	Total Cost	Timeframe
Water Treatment System Assessment and Upgrade	Condition assessment and facility upgrade	\$6,250,000	Short-term
Water Distribution System Improvements	Improve fire flow/reduce water line breaks	\$4,500,000	Short-term
Stormwater Improvement Plan	Develop plan to prevent local drainage problems and reduce flooding	\$1,400,000	Short-term
Update Town Master Plan	Update the 2003 Tewksbury Master Plan	\$62,000	Short-term
East Street Reconstruction-Phase 1	Drainage and roadway reconstruction from Jill's Way to railroad	\$990,000	Short-term
East Street Reconstruction-Phase 2	Drainage and roadway reconstruction from railroad to Maple Street	\$500,000	Short-term
Route 38 resurfacing	Resurfacing from I-495 to Pike and Astle	\$2,000,000	Short-term
Central Fire Station	Construction of a new fire station	\$9,000,000	Intermediate
Route 38 resurfacing, Phase 2	Resurfacing from Pike and Astle to Town Center	\$2,000,000	Intermediate
Lowell Junction	Design, permitting and construction of new interchange on I-93	\$150,000,000	Long-term

Source: *Greater Lowell Comprehensive Economic Development Strategy (CEDS), 2010-2013 Update*

In 2011, the *Regional Strategic Plan for Greater Lowell* was funded by the Executive Office of Housing and Economic Development (EOHED) as part of a state initiative to increase local and regional planning capacity in the areas of economic development, housing and resource protection. The Plan identified locations in each community where growth is appropriate based on zoning, infrastructure, access and environmental impacts. The document contains strategies for advancing housing initiatives, and economic development and job creation through cooperative efforts involving local, state and regional levels of government.

The economic development goals of the Regional Strategic Plan are as follows:

- Create a regional economic development framework that supports the efforts of private industry, local communities and agencies, educational institutions, federal and state agencies and private foundations to create jobs and improve the quality of life in the region;
- Create higher-skilled, higher wage jobs within industry clusters – biotech, nanotech, high technology, “green” industries, and emerging technology – to diversify the regional economy and focus on the global economy;
- Utilize a combination of economic development and redevelopment strategies that reflects the character of each community, and address infrastructure barriers (roads, wastewater capacity, telecommunications, etc.) to future economic growth; and
- Increase the supply of skilled workers for industry in the region through the integration of economic development and workforce development strategies.

NMCOG staff worked with the planners and community development personnel at the municipal level to develop a list of Priority Economic Development Areas for Tewksbury. The following sites were identified during this process:

- Lowell Junction area (Priority Development Site under Chapter 43D)
- East Street Corridor
- Five (5) overlay districts on Route 38, including the Town Center, Village Residential, South Village, Village Mixed-use and Community Village zoning areas.
- Route 133
- Woburn Street corridor

Recommendations

The following recommendations are intended to bring focus to the town’s economic development program over the next several years:

- 4.4.1 Give preference to reuse and redevelopment over the development of greenfields.

- 4.4.2 Identify and pursue additional redevelopment opportunities that further desired community character.
- 4.4.3 Strategically use incentives to aid in the redevelopment of underperforming or vacant business sites.
- 4.4.4 Continue to streamline the permitting process across town departments.
- 4.4.5 Continue to focus on creating a traditional downtown area in the Town Center.
- 4.4.6 Ensure land use planning and development regulations provide adequate opportunities to respond to market conditions.
- 4.4.7 Encourage businesses that create a diverse economic base, bring employment opportunities and grow the tax base.
- 4.4.8 Encourage and attract new innovative, technology-based and “green” business and industry, consistent with the town’s vision.
- 4.4.9 Promote and support the establishment, retention, and expansion of locally-owned businesses.
- 4.4.10 Support and actively participate in local and regional organizations that foster and promote economic development.
- 4.4.11 Continue to strengthen the town’s affiliation with relevant state agencies such as MOBD and MassEcon.
- 4.4.12 Facilitate efforts to link local businesses with Greater Lowell Workforce Investment Board, UMass Lowell, and Middlesex Community College, as means of addressing workforce development needs.
- 4.4.13 Support and expand opportunities for cultural activities and local arts.
- 4.4.14 Increase the involvement of the Town in the EDIP program and identify other state funding programs that can attract more private investment to the community.
- 4.4.15 Focus more attention on vacant and underutilized properties for reuse and redevelopment by listing these sites on the Town’s upgraded web page and including them on NMCOG’s web page.
- 4.4.16 Designate the Community Development Director as the town’s Permitting Ombudsman and build upon the current Development Cabinet to move projects through the permitting process more efficiently and effectively.
- 4.4.17 Work with the Economic Development Committee to target specific industries for recruitment. Utilize the Location Quotient (LQ) tools to determine the strengths of the

various subsectors of Tewksbury's industry and build upon it by attracting similar firms to the community so as to establish economic "clusters".

- 4.4.18 Work with NMCOG, the Greater Lowell Chamber of Commerce and Middlesex 3 on branding and cross marketing activities that will increase private investment in the community that could benefit Tewksbury's workforce and residents.
- 4.4.19 Develop an effective marketing program through the Economic Development Committee by partnering with local business leaders to serve as Ambassadors for the community.
- 4.4.20 Build upon the town's historical resources to establish the community as a destination location.
- 4.4.21 Develop a permitting checklist, flow chart and development handbook that can be accessed online by developers to ensure timely approvals.
- 4.4.22 Work with the Lowell Regional Transit Authority (LRTA) to re-examine public transit routes so that they better address the needs of businesses, consumers and workers in accessing Tewksbury's commercial and industrial locations.
- 4.4.23 Attract more diverse restaurants and businesses to provide Tewksbury residents with greater opportunities to purchase locally.
- 4.4.24 Develop a pedestrian and bike trail that will interconnect with the town's commercial centers and open space areas.
- 4.4.25 Utilize the services of the Greater Lowell Workforce Investment Board (GLWIB) to address the needs of employers and underemployed and unemployed workers.
- 4.4.26 Build upon the town's designation as a Green Community by targeting the growing Renewable Energy industries as prospective employers and tax payers.
- 4.4.27 Reexamine the potential development opportunities available at Lowell Junction/I-93 and within the various traffic corridors (Woburn Street, Route 133, East Street, Route 38) studied over the past five years.
- 4.4.28 Continue to address land use conflicts/zoning revisions along East Street, and pursue zoning changes to provide additional retail services along Woburn Street, to support the office and industrial uses located along the corridor.
- 4.4.29 Work with MassDOT and NMCOG to implement the traffic improvements, pedestrian improvements and access management measures outlined in the Route 38 Corridor Study.

- 4.4.30 Complete the Town Center Master Plan, review the existing Town Center Overlay Bylaw for consistency with the Master Plan, and develop a strategy for implementing the recommendations outlined in the Town Center Master Plan.
- 4.4.31 Address infrastructure issues that provide barriers to the development of commercial and industrial properties.

4.5 NATURAL AND CULTURAL RESOURCES

Issues and Opportunities

The existing roadway on Shawsheen Street at Heath Brook is prone to flooding during peak storm events due to its low elevation. This causes periodic closures of Shawsheen Street during peak storm events, restricting access for emergency vehicles and causing significant increases in response times. Additionally, closure of this roadway has a significant impact to residential and commercial traffic and to abutting communities, as the roadway is often used as a connector between Route 129 in Billerica and I-93. The town is proposing reclamation of the existing roadway and sidewalk. Fill material will be installed and graded to raise the final roadway grade to at least Elevation 86.0. If this project is implemented, it will be an improvement over the existing conditions due to the fact that the roadway grade will be raised to the 100-year flood elevation level. The estimated cost for this project is \$400,000.

During peak storm events, the Shawsheen River crests and overtops South Street and back feeds into Sutton Brook, causing flow to exceed its hydraulic capabilities further down South Street. As a result, the overtopping of this intersection causes full isolation of several residential units lying between Bridge Street and Sutton Brook. The adjacent Shawsheen River has a 100-year flood elevation of 85.0 which can overtop the existing roadway (existing elevation of approximately 83.9). The flood elevation of the upper Sutton Brook is about 77.0 feet, so back-feeding by the Shawsheen River at elevation 85.0 can have a significant impact. Past flooding events have closed off the northern end of South Street, with a flood event in June 1998 requiring National Guard vehicles to shuttle residents to and from their homes. This event affected approximately 500 residents. In addition, the closing of this intersection causes significant traffic re-routing, thereby delaying emergency response from the South Street Fire Station and impacting commerce. The Town is proposing to raise the roadway to an elevation of 85.0+ over a distance of several hundred feet. It is estimated that this project will cost \$400,000.

Pinnacle Street is a residential road which serves as access to the Town of Andover and to Route 93. The roadway accommodates local traffic and feeds many residential homes in both towns. An existing culvert was constructed with concrete block and stone set on top of a single barrel 65" X 40" corrugated metal arch pipe. In recent years, during intense storm events, flooding has occurred due to an undersized culvert, which exacerbates upstream

flooding conditions, surcharging into abutting residential properties and occasionally overtopping the road. Up-gradient forested areas also contribute debris and branches, which can quickly accumulate during storm events to block the relatively small-sized culvert. The Town is proposing to install a 5' x 6' box culvert to mitigate this situation. Flooding conditions can necessitate closing of the roadway, limiting emergency service access to residential homes in Tewksbury. The detours also create additional traffic impairments for commuters in the area. Construction of the culvert is estimated to cost \$50,000.

Sewer System

A review of the sewer system performed by the Town indicates that extensive infiltration and inflows (I/I) are occurring. Due to the increasing wastewater conveyance and treatment costs, this infiltration and inflow has created a financial burden on the Town and its residents. Infiltration and inflow problems are more evident in high groundwater months and rain/wet weather events, during which flooding occurs. The sewer collection systems within flood prone areas are hit the hardest, with excessive flows during these events. The I/I influences are partly attributed to leaky pipe joints and manholes in high groundwater and flood prone areas. Significant flow increases are well documented in spring/flood prone months and baseline I/I is also evident entering the system in wet areas of the Town.

The Town has initiated a project to flood proof the existing sewer manhole structures located within the 100-year flood plain. Sewer piping in this area will be tested and sealed due to the degradation of the joints caused by flooding conditions. Sewer manhole structures will be assessed on a case-by-case basis and the appropriate waterproofing technology will be selected based on manhole field conditions. If this project is implemented, it is expected to reduce the effects of infiltration and inflow by roughly 75 percent to 80 percent in the treated areas, greatly reducing the conveyance and treatment costs. It will provide protection of existing sewer infrastructure during 100-year flood events. The cost estimate for this project is \$517,400.

Pollution

Wildlife once thrived in Tewksbury's rivers. As noted in Edward W. Pride's book, *Tewksbury: A Short History*, every year between 1743 and 1830, the annual town meeting selected fish wardens or "fish cares," charged with ensuring that "fish have free passage up and down those streams where they usually pass to spawn." According to Pride, the fish cares were no longer selected after Lowell was founded because subsequent manufacturing practices in that community polluted the rivers and led to fish kills. Today, point and nonpoint source pollution in Tewksbury must be managed to protect public health, wildlife habitat and natural resources.

Non-point Source Pollution. Non-point source pollution, from widespread sources which impact the environment through stormwater runoff entering surface water bodies and

ground water continues to be an issue in most communities, including Tewksbury. Sources of pollution include the following:

- Fertilizer, herbicides, and insecticides from lawns and farmland;
- Oil, grease and toxic chemicals from transportation sources, roadways, fueling stations, and parking lot runoff;
- Sediment from improperly managed construction sites or eroding stream banks; and
- Pathogens and nutrients from livestock, pet waste and failing septic systems.

These sources of pollution are more difficult to control than point source pollution. They are best addressed through proper land management and agricultural practices, effective maintenance of motor vehicles, zoning and erosion control bylaws, and homeowner education. The town is also working to address this issue through its ongoing sewer program, Phase II Stormwater Management Plan and through its participation in the Northern Middlesex Stormwater Collaborative.

Long Pond Water Quality. Tewksbury's Long Pond has had an extended history of poor water quality, and has consequently been used infrequently by town residents. Several environmental studies/assessments have been conducted on the pond, the most recent being the Long Pond Environmental Status Assessment, completed in 2008. The purpose of this assessment was to establish an updated water quality baseline for the pond and offer guidance regarding potential remediation activities. Work is currently underway in response to the assessment with an ultimate goal of transforming the pond into a significant community and recreational asset.

Other Issues

Ames Pond Recreation Facilities. There have been several comments that the area around Ames Pond should be considered for active recreation opportunities. This would be the area south of Interstate 495, North Street, the pond itself, and Lowell Street. However, the Town does not own or otherwise control Ames Pond or the land around it.

Rocco's Landfill Cleanup. The cleanup plan for this site is currently being implemented. Additional drum burial and disposal areas were discovered in the adjacent Wilmington Disposal Area, which covers one hundred seventeen (117) acres and also extends into neighboring Wilmington. More than two hundred (200) drums were found buried in the ground, with a majority of them in various stages of decomposition. One of the test pits identified high levels of VOCs and SVOCs, as well as heavy metals. Parts of this site have been used for livestock farming, mountain biking and hunting, among other activities. This site was listed by the EPA as a Superfund Short Term Cleanup (i.e., Removal) project, and initial work was completed in 2001 and final capping will be completed by 2017.

Historical and Cultural Assets. Since its establishment in 1854, the Tewksbury State Hospital's title and mission have evolved over time. Originally used as a state almshouse, the facility became the Tewksbury State hospital in 1900, the Massachusetts State Infirmary in 1909, and the Tewksbury State Hospital and Infirmary in 1938. The facility served needy patients requiring shelter and treatment, especially during the years following the panic of 1857 and during the Great Depression, and was equipped to treat chronic and contagious diseases, which it did for a significant part of the 20th century. Anne Sullivan, Helen Keller's teacher, was a nineteenth century client at the facility before transferring to a school for the blind. The hospital is still serving the health needs of area residents and remains an important part of the community.

Currently, the Massachusetts Public Health Museum is housed in the Old Administration Building, constructed in 1894. The building, located on East Street, was designed by Boston architect John A. Fox in the Queen Anne style, and is a three and a half story, red brick structure with a slate roof with bridge-end chimneys, roof dormers and a copper-clad clock tower. The building's construction reflects efforts during the late nineteenth century to replace wood frame buildings on the campus with masonry structures. The original building was enlarged with the addition of lateral wings around 1920, and with a one story, rear addition around 1930.

The Town may wish to consider providing direction to the existing historical committee on priorities for other older homes and historical artifacts in the area.

Recommendations

- 4.5.1 Reclamation of the existing roadway and sidewalk on Shawsheen Street at Heath Brook.
- 4.5.2 Raise South Street where Shawsheen River crests to an elevation of 85.0+ over a distance of several hundred feet.
- 4.5.3 Install a 5' x 6' box culvert to mitigate existing failing culvert on Pinnacle Street.
- 4.5.4 Examine Sewer infiltration and inflow costs expenditures and flood proof the existing sewer manhole structures located within the 100-year floodplain.
- 4.5.5 Mitigate point and non-point pollution through proper land management and agricultural practices, effective maintenance of motor vehicles, zoning and erosion control bylaws, and homeowner education.
- 4.5.6 Continue work on assessment for Long Pond's water quality with the ultimate goal of transforming the pond into a significant community and recreational asset.
- 4.5.7 Consider Ames pond for further recreation and economic opportunities.

- 4.5.8 Finalize any remaining cleanup on Rocco's Landfill site so that the full site, to the extent possible, can be utilized by the community.
- 4.5.9 Provide direction to the existing historical committee on priorities for other older homes and historical artifacts in the area.

4.6 OPEN SPACE AND RECREATION

Issues and Opportunities

There are 167 parcels that constitute a significant amount of unprotected privately-owned parcels within the town. There are only three (3) parcels totaling 29.10 acres in the Chapter 61A tax abatement programs. Should the landowners decide to sell or develop these parcels, the town will have an opportunity to exercise its right of first refusal, or alternatively, it may elect to assign this right to a non-profit conservation organization or the Commonwealth. A landowner who has property classified in Chapter 61A must notify the chief elected official, as well as the Board of Assessors, Planning Board, Conservation Commission, and State Forester, when all or a portion of land is being sold or converted to a disqualifying use. Only seven (7) parcels, or 145.65 acres, of privately owned land has limited protection, while 160 parcels, or 810.73 acres of land, are not protected or the level of protection is unknown.

The Longmeadow Golf Course with 52.20 acres, Trull Brook Golf Course with 128.77 and Tewksbury Country Club with 30.98 are all privately owned, however, they have no protection, according to Assessor records. In fact, there are no Chapter 61B lands in the town; these are private lands that are in recreation use. Additionally, there are a number of parcels that are privately owned as part of Cluster Developments and Open Space Residential Designs (OSRD) but have not been properly conveyed over to the Town for the purposes of conservation or open space use. In this case, the Town should exercise the requirements outlined in Section 7370 of the Zoning Bylaw in order to have the un-subdivided parcels properly conveyed to the Town in the future.

Recommendations

- 4.6.1 Create an open space preservation and enhancement of services master plan for the Town.
- 4.6.2 With the amount of family entertainment and recreation already in town, consider marketing the town as a recreation destination, and further maintaining and enhancing existing assets.

4.7 SERVICES AND FACILITIES

Issues and Opportunities

Schools

School enrollment has been in decline since 2004. According to historic and projected figures Tewksbury will witness an average annual -2.9 percent change in enrollment from 2004-2024. Issues per school are as follows:

Loella Dewing Elementary School: According to the school's maintenance head the school is in need of a new roof and piping deterioration repairs. Sidewalks along Andover Street are poorly maintained and only five and a half feet wide with a three-foot buffer between oncoming traffic.

Heath Brook Elementary School: Heath Brook is in need of a new roof and possesses extensive piping deterioration. Beautification upgrades should be considered there is noticeable signs of deferred maintenance; patchy, dead grass, cracked asphalt, and eroding sidewalks.

Trahan Elementary School: A new roof is also needed seeing as it has not been updated since its original construction in 1952, according to the head of maintenance. The structure is a typical 1950s modernist school-house that has held-up well considering its age, and the building's 42,130 square feet of floor space adequately serves its purpose. Sidewalks are well defined and maintained however the chain-link fence in front of the school could use an enhancement or removal.

North Street Elementary School: North Street as in need of a new roof which has not been addressed since it was built in 1960. Unlike the other schools, the North Street School is much more pedestrian friendly, with sidewalks and cross walks that are well maintained and well marked.

John Ryan Middle School: Despite being constructed in 1998, the John Ryan Middle School needs a new roof, according to the school department's head of maintenance.

John Wynn Middle School: No infrastructural improvements are necessary for Wynn Middle School, as it was built in 2003. It is difficult to walk/ bike safely due the facility being setback 1,500 feet from Main Street. From 2010 to 2012 six pedestrians/cyclists have been struck by an automobile within a 3,000 foot radius of the school between the hours of 2:28-4:53 PM (MassDOT Crash Data).

Municipal/Service Buildings

Issues and opportunities for municipal and social service buildings are as follows. For purposes of this review, only facilities with evident improvement needs are listed below.

Town Hall: Tewksbury recently completed a \$7.5 million renovations project for its historic Town Hall. It is well suited for the functions it serves, but the land around it would benefit from landscaping improvements specifically for the Town Common, as well as sidewalks, park benches, and wayfinding.

Town Hall Annex: In total twenty employees work here and there appears to be an appropriate amount of space for them to do their jobs effectively. Many staff members report inconsistencies with the heating/ cooling systems.

Public Works: The interior of the public works building has narrow hallways and low ceilings and any user can sense that its function has outgrown its form (18,600 square feet/ 50 employees). Externally the building has long surpassed its original shelf-life (built in 1960). Departments that have direct access with the public, such as Community Development, have been relocated to the Town Hall.

Senior Center: There is mold and water damage stemming from the original roof which needs to be replaced.

Central Fire Station: Of Tewksbury's three fire stations, the Central Fire Station is in the worst condition to the extent that the Fire Chief believes it has become a burden on staff. At 8,236 square feet of floor space, the Central Station is too small to support the department's needs (training exercises/ everyday use).

North Fire Station: North Fire Station needs many of the same basic upgrades as Central Station. It was built in 1975, absent of recent alterations and is 1,863 square feet.

Recommendations

- 4.7.1 Work with the School Committee to prioritize funding allocations for school improvements, potential redistricting, or consolidation due to decreasing enrollment.
- 4.7.2 Ensure landscaping and urban design of Town Hall fits with the context of surrounding buildings.
- 4.7.3 Repair HVAC systems in the Town Hall Annex.
- 4.7.4 Consider renovating Public Works building.
- 4.7.5 Repair mold and water damage at the Senior Center.
- 4.7.6 Construct a new Central Fire Station.
- 4.7.7 Make enhancements to North First Station.

5 IMPLEMENTATION PROGRAM

For most master plans, town officials and residents aspire for a plan that will be more useful than a report that simply “sits on a shelf.” Ultimately, the success of any plan depends on its feasibility and a town’s ability to balance near-term interests with long-term needs. The role of an implementation program is to provide balance by bringing all of the key recommendations into focus and organizing them into a plan of action.

For Tewksbury and most towns, the master plan implementation program contemplates a ten-year schedule of actions, but many of the recommendations are actually ongoing tasks that are already underway. The schedule can be altered if the Town needs to respond to unforeseen opportunities, but the overall sequence of actions implies that some steps have a higher priority than others, and some steps need to occur sooner rather than later.

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.1.1	Conduct a zoning audit and a comprehensive review and update of Tewksbury's Zoning Bylaw.	1	N	DCD	ZBC, TM, PB	\$60,000	Town	Existing appropriation
4.1.11	Consider design standards for site plan review which the Planning Board can enforce. These may include architectural design, environmental performance standards, and landscaping and aesthetics.	1	N	DCD	PB	\$25,000	Existing staff or urban design consultant	Appropriation required if Town hires a consultant. Budget will depend on scope of design guidelines, e.g., business districts only, or business and industrial districts.
4.1.13	Review uses allowed by right in the Limited Business District (LB) and the Office/Research District (OR).	1	N	ZBC	PB, EDC	No new funding required	Existing staff or volunteers	
4.1.2	Update development review and special permit forms and applications, and allowing for electronic submittals by proponents.	1	N	DCD		No new funding required	Existing staff	
4.2.11	Require developers to include sidewalks and bike facilities in new development or pay into a fund for future pedestrian and bicycle accommodation.	1	N	DCD, DPW	PB	No new funding required	Existing staff	Town needs a pedestrian & bicycle improvements plan and budget in order to determine appropriate fees to be paid by developers.
4.2.13	Identify jurisdiction and potential safety improvements for high-accident locations.	1	N	ED, PD	DPW		Existing staff	
4.2.27	Provide welcome signs at gateways. Consider alternative and creative materials for the signs, such as plantings.	1	N	DPW	DCD, EDC	\$25,000-\$30,000	Existing staff for labor; Town funds for signage and landscaping improvements	Town should hire a branding consultant to develop a unified signage program for

³ Timeline Symbols: N, near-term; M, moderate-term; O, ongoing tasks; L, long-term.

⁴ Lead and Support Symbols: DCD, Department of Community Development; ZBC, Zoning Bylaw Committee; TM, Town Manager; PB, Planning Board; EDC, Economic Development Committee; DPW, Department of Public Works; ED, Engineering Department; PD, Police Department; FD, Fire Department; LHP, Local Housing Partnership; NMCOG, Northern Middlesex Council of Governments; LHP, Local Housing Partnership; TCC, Town Center Committee; COA, Council on Aging; HD, Health Department; TPS, Tewksbury Public Schools; TPL, Tewksbury Public Library; BPAC, Bicycle & Pedestrian Advisory Committee; CC, Conservation Commission.

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
								gateways and wayfinding purposes
4.2.28	Improve landscape and streetscape at gateway locations.	3	O	DPW		Included in previous item	Existing staff for planning and assessment; Town funds for improvements	
4.3.18	Work with the NMCOG to develop a Regional Housing Plan for the Greater Lowell Region.	1	N	LHP, PB	NMCOG	TBD \$15,000 for budgetary purposes	Town contribution, but amount depends on number of participating communities	
4.2.29	Establish clear sight lines at gateways.	1	N	DPW		No new funding required	Existing staff	
4.4.10	Support and actively participate in local and regional organizations that foster and promote economic development.	1	N	EDC		No new funding required	Existing staff or volunteers	
4.2.37	Minimize and strategically place curb cuts to minimize conflict points. Update the commercial zoning requirements to promote curb cut consolidation.	1	N	DPW		TBD	Existing staff for curb cut consolidations involving town-owned property.	Zoning consultant for Action 4.1.1 should update commercial zoning requirements
4.2.39	Provide timely pavement management through the pavement management program created in 2014, and obtaining funding to “catch up” on deferred maintenance.	1	N	DPW	TM	TBD; depends on pavement management schedule	Existing staff; Town funds, Chapter 90 for roadway improvements.	
4.4.28	Continue to address land use conflicts/zoning revisions along East Street, and pursue zoning changes to provide additional retail services along Woburn Street, to support the office and industrial uses located along the corridor.	1	N	DCD, ZBC	PB		Existing staff or volunteers	Zoning consultant for Action 4.1.1 should make recommendations for local review.
4.1.6	Revisit the Town’s approach to zoning on Route 38 and consider supplementing or replacing the overlay framework with distinctive, workable base districts.	1	N	DCD	ZBC		Existing staff or volunteers	Zoning consultant for Action 4.1.1 should review, make recommendations.

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.3.4	Continue to be proactive in maintaining and protecting existing affordable housing units.	1	N	LHP		TBD	Existing volunteers, but Town/CPC funds may also be needed	Funding needs have to be determined on a project-by-project basis.
4.4.3	Strategically use incentives to aid in the redevelopment of underperforming or vacant business sites.	1	N	EDC		No new funding required, except that tax incentives could lead to short-term deferral of tax revenue	Existing staff or volunteers	
4.1.7	Establish well-developed buffering standards for all industrial areas, particularly along East Street.	1	N	DCD	EDC	No new funding required	Existing staff or volunteers	
4.4.4	Continue to streamline the permitting process across town departments.	1	N	DCD	EDC, PB	No new funding required	Existing staff or volunteers	
4.2.7	Identify potential locations for bike rack and pedestrian bench installations, and increase numbers of these amenities at key locations.	1	N	DPW		\$33,500-\$40,000	Town or developer contributions	Budget depends on number of locations, extent of amenities. Bike racks range from \$500-\$750; bicycle lockers, \$2,500±. For benches, assume \$1,500 per bench. Budget should also include landscaping, trash receptacles, and lighting.
4.4.5	Continue to focus on creating a traditional downtown area in the Town Center.	1	N	EDC, TCC		No new funding required	Existing staff or volunteers	
4.2.8	Identify roadways with sufficient width to stripe bike lanes; analyze these locations, and implement where appropriate.	1	N	ED	DPW, PD	TBD	Existing staff to identify & analyze locations; Town funding for improvements.	Projects need to be scoped on a location-specific basis. Should include striping and bicycle pavement markers (symbols).

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.3.7	Evaluate and revise existing development regulations and Comprehensive Permit Policy for fairness and efficiency.	1	N	DCD	LHP	No new funding required	Existing staff or volunteers	
4.5.5	Mitigate point and non-point pollution through proper land management and agricultural practices, effective maintenance of motor vehicles, zoning and erosion control bylaws, and homeowner education.	1	N	DPW	DCD, PB, CC	TBD	Existing staff and educational resources; Town funds for compliance with MA MS4 Permit (Eff. 7/2017).	EPA, DEP public education resources.
4.4.7	Encourage businesses that create a diverse economic base, bring employment opportunities and grow the tax base.	1	N	EDC		No new funding required	Existing staff or volunteers	
4.4.8	Encourage and attract new innovative, technology-based and “green” business and industry, consistent with the town’s vision.	1	N	EDC	TM, DCD	No new funding required	Existing staff or volunteers	
4.4.9	Promote and support the establishment, retention, and expansion of locally-owned businesses.	1	N	EDC		No new funding required	Existing staff or volunteers	
4.7.6	Repair mold and water damage at the Senior Center.	1	N	DPW, COA	TM, FC	TBD (Requires Bids)	Capital Improvements Plan	
4.7.7	Construct a new Central Fire Station.	1	N	FD	TM, FC	TBD (Requires Design, Bids)	Capital Improvements Plan	
4.7.8	Make enhancements to North First Station.	1	N	FD	TM, FC	TBD (Requires Design, Bids)	Capital Improvements Plan	
4.1.10	Consider changing the OSRD special permit to an OSRD “by right” provision to encourage open space by design in new residential developments.	2	M	ZBC, DCD	PB	No new funding required	Existing staff or volunteers	
4.1.12	Consider developing a photovoltaic zoning bylaw to encourage such initiatives.	2	M	DCD	PB	No new funding required	Existing staff	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.2.14	Coordinate with state on projects that involve high accident locations and lobby for specific improvements to address the accident patterns.	2	M	DPW, PD	TM	No new funding required	Existing staff	
4.1.3	Review zoning for target development parcels in the Town and determine the most desired use for the properties in the future.	2	M	PB	DCD	\$0	Existing staff or volunteers	This is an “as-needed” task that will need to be budgeted on a case-by-case basis.
4.2.2	Adopt a Complete Streets policy where appropriate, that provides for a variety of transportation choices that meet the needs of all age groups, abilities, and preferences.	2	M	DPW	DCD, PB	\$80,000 (planning – not construction)	Existing staff to supervise; Town funds for consultant (grant funds may be available)	Adopting a “policy” requires a plan. Town needs professional help to develop options appropriate for Tewksbury roads and prepare some conceptual plans to guide implementation.
4.3.1	Partner with other organizations for infill on Town-owned parcels upon completion of a comprehensive parcel inventory.	2	M	LHP	DCD	No new funding required	Existing staff or volunteers	
4.3.10	Investigate the potential for adopting a Chapter 40R Overlay District.	2	M	DCD, PB		No new funding required	Existing staff for exploratory phase	If 40R district is identified, Town will need consultants to prepare 40R application. For budgetary purposes, assume \$25,000.
4.3.11	Encourage development of more affordable rental housing.	2	M	LHP			Existing staff or volunteers	
4.3.12	Document the specific needs for veterans living in and around Tewksbury and construct affordable veterans housing units that meet those needs.	2	M	LHP, HA	VA	TBD	Existing staff or volunteers	
4.2.25	Identify potential gateway locations based upon the side of road environment.	2	M	DCD	ECD		Existing staff or volunteers	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.3.15	Pursue the purchase of units and provide a subsidized buy-down on the purchase price to qualified first-time homebuyers.	2	M	LHP	DCD	\$50-\$90,000 depending on market value of unit and affordability target	CPC, inclusionary housing fees	
4.2.26	Initiate community/commercial participation to maintain gateways. For example, promote an "Adopt an Island" program that is supported by business or community groups.	2	M	BOS, EDC	TM	No new funding required	Existing staff or volunteers	
4.1.4	Consider implementing a Low Impact Development (LID) Bylaw.	2	M	DCD	DPW, ED	\$15,000 (if Town hires a consultant)	Town	The Engineering Department or DCD may be able to customize one of the available "model bylaws" for Tewksbury, but the Town should consider hiring a consultant who specializes in LID.
4.2.3	Develop and implement a long-term sidewalk enhancement program.	2	M	DPW	BPAC	TBD	Capital Improvements Plan	Budget should be determined when the Town prepares a scope of work for engineering and urban design services.
4.3.2	Reuse Town-owned residential buildings.	2	M	LHP	BOS	No new funding required	Existing staff or volunteers	
4.4.11	Continue to strengthen the Town's affiliation with relevant state agencies such as MOBD and MassEcon.	2	M	EDC	TM	No new funding required	Existing staff or volunteers	
4.2.32	Develop and implement a master sign program for aesthetic and consistent appearance.	2	M	DPW, DCD	EDC	\$25,000	Existing staff or volunteers; Town funds for "branding" and wayfinding consultant	
4.2.34	Pursue intersection improvements at Route 38 intersections as described in this Master Plan.	2	M	DPW	NMCOG	TBD	Town, DOT	Budget should be determined when

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
								design plans are prepared.
4.4.14	Increase the involvement of the Town in the EDIP program and identify other state funding programs that can attract more private investment to the community.	2	M	EDC	BOS, TM	No new funding required	Existing staff or volunteers	
4.2.35	Pursue Route 38 improvements presented in the Route 38 Study in cooperation with MassDOT, such as regulating curb cuts and improved access management.	2	M	DPW	NMCOG	TBD	Existing staff	Cost of improvements will depend on scope of a particular project.
4.2.36	Review “complete streets” policies from other towns in MA an throughout the U.S. and develop a guidance document for use on local projects to allow multi-modal uses on roadways.	2	M	DPW, DCD	PB, BOS	No new funding required	Existing staff or volunteers	Should be done in conjunction with Action 4.2.2.
4.4.16	Designate the Community Development Director as the town’s Permitting Ombudsman and build upon the current Development Cabinet to move projects through the permitting process more efficiently and effectively.	2	M	TM		No new funding required	Existing staff or volunteers	
4.4.17	Work with the Economic Development Committee to target specific industries for recruitment. Utilize the Location Quotient (LQ) tools to determine the strengths of the various subsectors of Tewksbury’s industry and build upon it by attracting similar firms to the community so as to establish economic “clusters”.	2	M	EDC	TM		Existing staff or volunteers	
4.1.5	Update the Town’s sign bylaw to better guide business owners.	2	M	DCD		\$10,000-\$15,000	Town	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.2.4	Implement encouragement programs for walking and biking through the school and recreation departments and through employer TDM programs and the Junction TMO.	2	M	BPAC	HD, TPS		Existing staff or volunteers	
4.3.3	Encourage development of infill of private sector affordable housing.	2	M	LHP	PB	No new funding required	Existing staff or volunteers	
4.4.20	Build upon the town's historical resources to establish the community as a destination location.	2	M	EDC, HC			Existing staff or volunteers	
4.2.41	Integrate traffic impact studies and peer reviews of the traffic studies for planned developments. For large scale developments, continue to implement peer reviews of traffic studies to be paid by developer to ensure accuracy and completeness of studies.	2	M	PB	DCD	\$2,500 to \$6,500 per project	Developer-funded studies	
4.4.21	Develop a permitting checklist, flow chart and development handbook that can be accessed online by developers to ensure timely approvals.	2	M	DCD		No new funding required	Existing staff	
4.4.23	Attract more diverse restaurants and businesses to provide Tewksbury residents with greater opportunities to purchase locally.	2	M	EDC		No new funding required	Existing staff or volunteers	
4.2.44	Allow traffic mitigation at off-site locations such as development proposed in the Victor Drive area, where improved connectivity of land uses is possible.	2	M	PB		No new funding required	Existing staff or volunteers	
4.4.24	Develop a pedestrian and bike trail that will interconnect with the town's commercial centers and open space areas.	2	M	EDC, BPAC		TBD	Existing staff or volunteers	Budget has to be determined on a project-by-project or segment-by-segment basis.
4.2.45	Assess parking regulations and adopt policies that encourage shared parking where appropriate.	2	M	DCD	PB	No new funding required	Existing staff	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.2.46	Review amending the Zoning Bylaw and Planning Board Subdivision Rules and Regulations whereby commercial projects with no adjacent sidewalks or residential projects that opt for sidewalk waivers contribute to a fund to be used to expand the town-wide pedestrian and bicycle system. Also review a potential subdivision regulation change that could provide incentives for development of bike paths to eventually join a real network.	2	M	DCD, DPW	TM, PB	No new funding required for regulatory amendments, but developer contributions need to be based on a plan for pedestrian & bicycle improvements. Planning will require funds.	Existing staff	Establishing fund for developer fees may require special act of the legislature (in order to segregate revenue from the General Fund).
4.4.27	Reexamine the potential development opportunities available at Lowell Junction/I-93 and within the various traffic corridors (Woburn Street, Route 133, East Street, Route 38) studied over the past five years.	2	M	DCD, EDC		No new funding required	Existing staff or volunteers	
4.5.2	Raise South Street where Shawsheen River crests to an elevation of 85.0+ over a distance of several hundred feet.	2	M	DPW	TM	TBD	Capital Improvements Plan	Budget to be determined when project plan is prepared.
4.6.1	Create an open space preservation and enhancement of services master plan for the Town.	2	M	CC	CPC	\$30,000	Town funds	
4.2.6	Promote neighborhood trails. Develop subdivision regulations to provide new trails and improve access to existing by dedicating "paper streets" (i.e. public rights-of-way that are not roadways).	2	M	DCD	PB	No new funding required	Existing staff or volunteers	
4.5.3	Install a 5' x 6' box culvert to mitigate existing failing culvert on Pinnacle Street.	2	M	DPW		TBD (Requires bids)	Town; capital outlay or DPW budget	
4.1.8	Establish a light industrial zone for some of the areas currently zoned Highway Industrial.	2	M	PB	EDC	No new funding required	Existing staff or volunteers	Task could be incorporated within zoning update for Task 4.1.1.

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.3.6	Promote programs that allow residents, especially those that are elderly and disabled, to remain in their homes.	2	M	LHP, COA	NMCOG	TBD	Existing staff and regional resources	Program budgets depend on program type and component services.
4.1.9	Consider allowing convenience retail and various personal and business services in industrially zoned districts, i.e., modernize the Town's industrial district use regulations to meet contemporary standards for industrial and office parks.	2	M	ZBC	EDC	No new funding required	Existing staff or volunteers	Should be addressed as part of the work for Task 4.1.1.
4.7.3	Repair HVAC systems in the Town Hall Annex.	2	M	TM, DPW	BOS, FC	TBD (Requires Bids)	Capital Improvements Plan	
4.2.9	Require new developments to provide links to pedestrian and bicycle accommodations.	2	M	DCD	PB	No new funding required	Existing staff or volunteers	
4.7.4	Consider renovating Public Works building.	2	M	TM, DPW	BOS, FC	TBD (Requires Design, Bids)	Capital Improvements Plan	
4.7.5	Consider commissioning a municipal services space utilization survey to project which departments work the most with one another and would create efficiencies by being collocated.	2	M	TM		\$50,000	Town funds	Requires planning/management consultants and possibly architectural services as well
4.5.9	Provide direction to the existing historical committee on priorities for other older homes and historical artifacts in the area.	2	M	HC		\$15,000	Survey & Planning Grants; CPA	
4.2.1	Conduct a comprehensive inventory of town-wide pedestrian and bicycle network and address gaps in connectivity.	3	O	DPW	BPAC	TBD	Existing staff or volunteers	
4.2.10	Promote healthy travel (bicycle and walking) to and from all schools.	3	O	TPS	BPAC	No new funding required	Existing staff or volunteers	
4.2.12	Continue to support volunteer groups to advocate for off-road pedestrian and bicycle trails.	3	O	BPAC		No new funding required	Existing staff or volunteers	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.2.15	Identify high accident locations that are not part of ongoing project and initiate studies to identify potential safety improvements.	3	O	PD	DPW, TM, NMCOG	No new funding required	Existing staff or volunteers; NMCOG for planning studies.	
4.2.16	Work with MassDOT to conduct Roadway Safety Audits for high accident locations, particularly Salem Road at South Street. Implement corresponding actions in response to the findings.	3	O	PD, DPW	NMCOG	TBD (Requires Bids)	Existing staff or volunteers	Budgeting for improvements should be done once the Town has audit results.
4.2.17	Identify geometric and traffic control improvements to improve safety at high-accident locations and lobby for funding of these improvements.	3	O	ED, PD	NMCOG	No new funding required	Existing staff	
4.2.18	Work with MassDOT to improve functionally obsolete bridges on I-495 within Tewksbury.	3	O	DPW	NMCOG	No new funding required	Existing staff	
4.2.19	Coordinate with MassDOT, NMCOG, adjacent regional planning agencies, and adjacent municipal plans to establish and enhance connections between key regional destinations.	3	O	DCD		No new funding required	Existing staff	
4.2.20	Solicit support from legislators as needed to prioritize and implement regional connectivity projects.	3	O	TM, BOS		No new funding required	Existing staff	
4.2.21	Identify gaps in connectivity between modes and implement improvements to improve overall connectivity, thereby providing the "last mile" link for intermodal trips.	3	O	DPW, DCD	BPAC, NMCOG	TBD	Existing staff or volunteers for general planning and advocacy; Town, state funds for improvements. Budget TBD.	
4.2.22	Provide shelters, benches and bike racks at bus stops.	3	O	DPW		\$150,000	Town, LRTA, NMCOG	Assumes six bus stops.
4.2.23	Promote existing public transportation service to the Route 38 commercial area.	3	O	EDC		No new funding required	Existing staff or volunteers	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.3.13	Make training and educational opportunities on affordable housing available for Town Board and Committee members and staff.	3	O	LHP	BOS	No new funding required	Existing staff or volunteers	Use existing resources
4.2.24	Coordinate with LRTA to improve pedestrian and bicycle connections to bus stops through “associated transit enhancements” available through provisions of MAP-21.	3	O	DPW, BPAC	BOS, NMCOG	LRTA	MAP-21, Town	
4.3.14	Increase public awareness of and support for affordable housing through increased outreach and public education.	3	O	LHP, HA		No new funding required	Existing volunteers	Use existing resources
4.3.16	Research additional alternative funding sources to subsidize new affordable housing units.	3	O	LHP	NMCOG	No new funding required	Existing volunteers	
4.3.17	Investigate opportunities available under a Regional HOME Consortium to generate additional funding for housing.	3	O	LHP	NMCOG	No new funding required	Existing staff or volunteers	
4.3.19	Research and promote First-Time Homebuyer Program opportunities in the region and State to make existing homes more affordable.	3	O	LHP	NMCOG	No new funding required	Existing staff or volunteers	
4.2.30	Incorporate “Complete Streets” design, when feasible and consistent with other master plan goals.	3	O	DPW, ED	DCD		Existing staff	See Action 4.2.2.
4.3.20	Research and communicate Foreclosure Assistance Programs in the region and State to help homeowners avoid foreclosure.	3	O	LHP		No new funding required	Existing volunteers	
4.4.1	Give preference to reuse and redevelopment over the development of greenfields.	3	O	PB		No new funding required	Existing volunteers	
4.2.31	Consider the transportation-land use connection for future development to manage traffic and parking demand.	3	O	DCD		No new funding required	Existing staff or volunteers	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.3.21	Work with programs like the Common Ground Development Corporation, a subsidiary of Community Teamwork, Inc., to develop affordable housing projects.	3	O	LHP	PB	No new funding required	Existing staff or volunteers	
4.3.22	Refer families who are, or in jeopardy of becoming, homeless to the HomeBASE Household Assistance program.	3	O	LHP		No new funding required	Existing staff or volunteers	
4.4.12	Facilitate efforts to link local businesses with Greater Lowell Workforce Investment Board, UMass Lowell, and Middlesex Community College, as means of addressing workforce development needs.	3	O	EDC, BOS	TM		Existing staff or volunteers	
4.2.33	Promote pedestrian scale signage, street lighting, and wayfinding when implementing streetscapes improvements.	3	O	DPW		TBD	Town. Amounts and schedule subject to additional planning.	
4.4.13	Support and expand opportunities for cultural activities and local arts.	3	O	CC, EDC	TPL, TCA	No new funding required	Existing volunteers	
4.4.15	Focus more attention on vacant and underutilized properties for reuse and redevelopment by listing these sites on the Town's upgraded web page and including them on NMCOG's web page.	3	O	DCD	NMCOG	No new funding required	Existing staff or volunteers	
4.2.38	Sustain the local character of roadways by implementing traffic calming in appropriate locations. Use traffic calming techniques to discourage cut-through traffic on neighborhood streets.	3	O	DPW, ED	DCD	TBD	Existing staff and possibly consultants to develop a traffic calming assessment and implementation plan	
4.4.18	Work with NMCOG, the Greater Lowell Chamber of Commerce and Middlesex 3 on branding and cross marketing activities that will increase private investment in the community that	3	O	EDC	NMCOG	\$20,000	Town funds	Town should retain its own branding consultant and collaborate with

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
	could benefit Tewksbury's workforce and residents.							regional partners wherever possible
4.4.19	Develop an effective marketing program through the Economic Development Committee by partnering with local business leaders to serve as Ambassadors for the community.	3	O	EDC		No new funding required	Existing staff or volunteers	
4.4.2	Identify and pursue additional redevelopment opportunities that further desired community character.	3	O	EDC		No new funding required	Existing staff or volunteers	
4.5.1	Reclamation of the existing roadway and sidewalk on Shawsheen Street at Heath Brook.	3	O	DPW	TM	TBD	Capital Improvements Plan	
4.4.22	Work with the Lowell Regional Transit Authority (LRTA) to re-examine public transit routes so that they better address the needs of businesses, consumers and workers in accessing Tewksbury's commercial and industrial locations.	3	O	EDC	LRTA	No new funding required	Existing staff or volunteers	
4.4.25	Utilize the services of the Greater Lowell Workforce Investment Board (GLWIB) to address the needs of employers and underemployed and unemployed workers.	3	O	EDC	GLWIB	No new funding required	Existing staff or volunteers	
4.4.26	Build upon the town's designation as a Green Community by targeting the growing Renewable Energy industries as prospective employers and tax payers.	3	O	EDC	PB, BOS	No new funding required	Existing staff or volunteers	
4.2.47	Maintain pavement quality and signage database created in 2014 and coordinate maintenance programs with the database.	3	O	DPW		No new funding required	Existing staff	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.2.49	Coordinate with NMCOG and MassDOT to investigate and pursue funding.	3	O	DPW, TM		No new funding required	Existing staff or volunteers	
4.4.29	Work with MassDOT and NMCOG to implement the traffic improvements, pedestrian improvements and access management measures outlined in the Route 38 Corridor Study.	3	O	EDC, DPW	NMCOG	TBD (Requires Bids)	Existing staff or volunteers Capital Improvements Plan; grants when available	Funding amounts and sources depend on project
4.2.5	Develop walking and cycling paths that connect activity areas and link to alternative means of transportation.	3	O	DPW	BPAC	TBD	Capital Improvements Plan; grants when available	
4.2.50	Lobby for projects to be prioritized and placed on TIP and assistance from MassDOT for state controlled roadways.	3	O	TM, DPW		No new funding required	Existing staff	
4.4.30	Complete the Town Center Master Plan, review the existing Town Center Overlay Bylaw for consistency with the Master Plan, and develop a strategy for implementing the recommendations outlined in the Town Center Master Plan.	3	O	TCC	DCD	No new funding required	Existing staff or volunteers	Incorporate in Task 4.1.1
4.2.51	Prioritize use of limited local funding sources.	3	O	TM		No new funding required	Existing staff or volunteers	
4.4.31	Address infrastructure issues that provide barriers to the development of commercial and industrial properties.	3	O	EDC, DPW	TM, BOS	TBD	Existing staff or volunteers	Determining budget needs requires project-by-project scope of work.
4.2.52	Seek other forms of grants to promote non-motorized forms of transportation.	3	O	DPW, DCD, TM		No new funding required	Existing staff or volunteers	
4.7.1	Work with the School Committee to prioritize funding allocations for needed school improvements, potential redistricting, and/or consolidation due to decreasing enrollment.	3	O	SC, TM	BOS	TBD	Capital Improvements Plan; SBAA	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
4.5.4	Examine Sewer infiltration and inflow costs expenditures and flood proof the existing sewer manhole structures located within the 100-year floodplain.	3	O	DPW		TBD	Requires scope of work and bids	
4.7.2	Ensure landscaping and urban design of Town Hall fits with the context of surrounding buildings.	3	O	TM, DPW			Existing staff or volunteers	
4.4.6	Ensure land use planning and development regulations provide adequate opportunities to respond to market conditions.	3	O	DCD	EDC	No new funding required	Existing staff or volunteers	
4.3.8	Take advantage of Tewksbury Hospital services for residents with subacute and chronic medical diseases, traumatic brain injuries and other neurologic conditions.	3	O	LHP		No new funding required	Existing staff or volunteers	
4.5.6	Continue work on assessment for Long Pond's water quality with the ultimate goal of transforming the pond into a significant community and recreational asset.	3	O	DPW		TBD	Existing staff, Shawsheen Watershed volunteers; may require additional consulting services	
4.3.9	Work cooperatively with developers and the state to establish some level of local preference in new affordable housing developments for persons living or working in Town.	3	O	DCD		\$3,500	Town funds for consultant	
4.5.8	Finalize any remaining cleanup on Rocco's Landfill site so that the full site, to the extent possible, can be utilized by the community.	3	O	DPW, BOH		No new funding required (existing appropriation)	Federal/state and town funds	
4.2.40	Consider drafting and funding a comprehensive town-wide Traffic Master Plan. The plan should include a detailed capital plan with a list of projects intended to reduce congestion at intersections and safety. Basic conceptual plans and order of magnitude cost estimates should be part of this plan which should seek	4	L	DPW, PD	DCD	\$65,000	Traffic engineer; Town funds	

No.	Master Plan Recommendation	Sort	Timeline ³	Lead ⁴	Support	Funding (Approximate)	Source	Notes
	public input to prioritize a list of projects.							
4.2.42	Create development thresholds and guidelines for traffic impact studies to standardize the permitting process.	4	L	DCD		No new funding required	Existing staff	
4.2.43	Establish development impact fees or a mechanism by which developers could contribute toward a large-scale transportation improvement in lieu of providing specific infrastructure improvements.	4	L	DCD	TM; Town Counsel	Developer-funded improvements	Existing staff	Requires infrastructure improvement plans in order to “price” the impact fee for each project.
4.2.48	Expand database into a complete asset management system that could include sidewalks, pavement markings, street lights and traffic signals.	4	L	DPW		No new funding required	Existing staff	
4.3.5	Consider preserving historic structures by taking advantage of the Town’s Demolition Delay Bylaw to convert historic structures into affordable housing.	4	L	LHP, PB	HC	No new funding required	Existing volunteers	
4.6.2	With the amount of family entertainment and recreation already in town, consider marketing the town as a recreation destination, and further maintaining and enhancing existing assets.	4	L	EDC		No new funding required	Existing volunteers	
4.5.7	Consider Ames Pond for further recreation and economic opportunities.	4	L	DPW, DCD		No new funding required	Existing staff or volunteers	Town does not have site control at Ames Pond.

6 APPENDIX

6.1 LAND USE AND ZONING

Residential Zoning Characteristics

The Town of Tewksbury is predominantly zoned for residential development. The town has four residential zoning districts: Residential 40 (R40), Multiple Family (MFD), Multiple Family/55 (MFD/55), and the Community Development District (CDD). All residential zoning districts except the CDD District allow single-family dwelling by right. Multi-family housing development is allowed by Special Permit in the MFD and MFD/55 districts. The following section describes the characteristics of each district, including the allowed uses, dimensional requirements and development options applicable within each district.

Residential 40 District (R40). The Residential 40 (R40) district is specifically designed to accommodate single family residences as of right. Cluster development, Open Space Residential Design and family suites are allowed within the R40 district by Special Permit, with the Planning Board serving as the Special Permit Granting Authority (SPGA). The minimum lot area allowed within the R40 district is one acre, with 150 feet of frontage. A minimum front yard of 25 feet is required along with a minimum side and rear yard of 15 feet. The maximum building height allowed within the R40 district is 35 feet or 2.5 stories. A maximum building coverage of 15 percent is allowed, as a percentage of the lot area. Three parking spaces are required for each dwelling unit, one of which may be covered.

The **Open Space Residential Design (OSRD) Special Permit** is available in the R40 district, in order to provide greater flexibility and creativity in the design of residential development projects, with the intent of historical resources, and preserving open space, agricultural land, forested land, wildlife habitat and other natural resource areas. This option is also focused on minimizing the cost of infrastructure and its impact on municipal budgets for maintaining such infrastructure. To be eligible for an OSRD permit, a project must be sited on a tract of land no less than 3 acres in size, comprised of contiguous parcels. In the R40 zone, the minimum lot size requirement for an OSRD project is reduced from one acre to 10,000 square feet. The combined frontage of the lots comprising an OSRD project must equal or exceed 50 feet for each lot constructed, with the minimum frontage requirement for each individual lot set at 40 feet.

Under the OSRD Permit, a minimum of fifty percent of the development tract must be set aside as open space, and no more than 50 percent of the dedicated open space may be comprised of wetlands or land with a grade greater than 25 percent. The open space must be conveyed to the Town or a non-profit organization dedicated to the conservation of open space. A legal restriction must be placed on the open space and recorded at the Middlesex North Registry of Deeds.

The OSRD project design must be certified by a licensed Landscape Architect and clearly identify primary and secondary conservation areas, as determined by the Conservation Commission or the Massachusetts Department of Environmental Protection.

The OSRD Special Permit is also subject to a 10 percent affordable housing requirement with a matching density bonus. For each affordable housing unit provided, one market rate is added to the maximum number of dwelling units for the project. A density bonus may also be granted for each additional 10 percent of the site set aside as open space over and above the required 50 percent open space set aside. The density bonus is 5 percent of the maximum number of units allowed for the project, provided that the overall density bonuses granted do not exceed 15 percent.

The issuance of an OSRD Special Permit allows an applicant to submit an Open Space Definitive Subdivision Plan to the Planning Board for its approval under the Subdivision Control Law. If the Planning Board determines that the Open Space Definitive Subdivision Plan does not substantially comply with the OSRD Special Permit, the Board may disapprove the subdivision plan, or conditionally approve it. If a conditional approval is granted, the OSRD Special Permit must be amended to comply with the changes outlined by the Planning Board.

The number of units of housing that can be constructed under the OSRD option can be calculated either by using a specific formula outlined in Section 7544 of the Zoning Bylaw or it may be based on the number of units that could be constructed under a conventional subdivision.

Home occupations are allowed as of right within the R40 district, provided they are conducted solely within the dwelling by the person(s) occupying the dwelling, and they do not exhibit any exterior indication of the presence of a business. The home business must not have employees that reside outside the residence or clients that visit the occupation site. If these conditions are not met, a Special Permit is needed from the Board of Appeals.

In addition, to the uses outlined above, the following exempt and institutional uses are also allowed by right: religious and educational uses, a child care facility in an existing building, agriculture on a parcel of five or more acres, facilities for the sale of produce, wine, and dairy products, and municipal parks and playgrounds. Private cemeteries are allowed but require a Special Permit from the Board of Appeals. Municipal facilities, water towers, reservoirs,

hospitals, and nonexempt farm stands are allowed by Special Permit of the Planning Board. The garaging and parking of two light commercial vehicles is allowed as an accessory use by Special Permit of the Board of Appeals.

Community Development District (CDD). The Community Development District (CDD) has been established to provide elderly housing alternatives to the existing residential, institutional and public housing typically available within the community. The district is specifically focused on Independent Living, Assisted Living, and Long-term Care Facilities. The regulations for this district are written to encourage open space preservation and to ensure that the scale of such projects is consistent with other residential development in town. Site plan approval is required for projects within the CDD district.

Similar to the town's cluster development provision, CDD development must take place on a contiguous lot of no less than twelve (12) acres. In addition, 150 feet of frontage is required and the building height is restricted to 2.5 stories or 35 feet. The CDD district regulations are very specific in terms of the development components and development capacity of a CDD project. The maximum allowable development capacity for units devoted to Independent Living Facility use must be 65 percent of six dwelling units per acre of the development area. The remaining 35 percent of the development capacity of six (6) dwelling units per acre must be used for an Assisted Living Facility/Long-term Care Facility. In addition to the 65/35 ratio, overall development is limited to six (6) units per acre, with no more than two bedrooms per unit or more than twelve bedrooms per acre allowed. In addition, no more than 10 percent of the project area wetlands or floodplain can be used when calculating the density requirements. No more than 30 percent of the total lot area can be devoted to building or structures and a minimum of 25 percent of the site area must be set aside for open space that is protected through a conservation restriction.

In addition to the Independent Living, Assisted Living and Long-term Care uses outlined above, an Adult Day Care facility is also allowed with the CDD by right, along with the garaging or parking of one light commercial vehicle as an accessory use. The only other uses permitted by right within the CDD district are the following exempt uses: religious structures, educational uses, a child care facility in an existing building, agricultural uses, facilities that sell produce, wine, or dairy products on an exempt site, municipal parks and playgrounds, and other municipal facilities. Personal service establishments, the garaging or parking of two light commercial vehicles (as an accessory use) and the garaging or parking of one heavy commercial vehicle (as an accessory use) require a Special Permit from the Board of Appeals. In addition, a retail food or drug store, restaurant, business or professional office, or drive-through facility require a special permit from the Planning Board.

The CDD regulation also gives the Planning Board the latitude to approve accessory uses that provide on-site services, provided they are compatible with the project and contained within a principal building. The total gross area that may be utilized for such accessory uses cannot

exceed 5 percent of the total gross floor area for the entire CDD project, or 10,000 square feet, whichever is greater. Restaurant accessory uses are limited to 100 seats, and 5 percent of the total gross floor area for the entire CDD project. A Community Center or Community Building is also allowed, providing that it does not occupy more than 10 percent of the gross building area within the CDD project. Similarly, an Adult Day Care facility cannot occupy more than 10 percent of the gross floor area within the approved CDD project.

Multiple Family Dwellings (MFD) District. The Multiple Family Dwellings District (MFD) regulates the development of multi-family housing through established eligibility criteria under a Special Permit from the Planning Board. The site must contain at least four acres and have 150 feet of frontage on a public way, unless this requirement is reduced by the Planning Board to a minimum of 40 feet under certain conditions. MFD projects may not contain more than 100 dwelling units and 15 percent of the total number of units must be designated as affordable housing. No more than 150 dwelling units are allowed under an MFD/55 Special Permit, with a maximum of seven (7) units per acre and no more than fourteen (14) bedrooms per acre, although the number of bedrooms per unit may vary from one (1) to three (3). The ratio of three bedroom market rate units to three bedroom affordable housing units must be one (1) to one (1). The maximum building height allowed within the MFD district is three stories or 45 feet.

No more than 5 percent of the total wetland or floodplain within the site may be used to calculate the density requirements of the project. No less than 60 percent of the upland area must be left in its natural state or be developed for uncovered recreational purposes. Buildings and structures may not cover more than 30 percent of the site area.

Single family dwellings are allowed by right within the MFD District. Two-family dwellings, multi-family dwellings and multi-family over 55 dwellings require a Special Permit from the Planning Board. The following exempt uses are also allowed by right within the MFD district: religious uses, educational uses, child care facility in an existing building, agricultural uses, facilities that sell produce, wine, and dairy products on exempt agricultural lands, and municipal parks and playgrounds. In addition, the following uses are allowed through a Special Permit from the Planning Board: nonexempt educational uses, other municipal facilities, water towers and reservoirs and a bed and breakfast. The garaging or parking of more than one light duty commercial vehicle or the garaging or parking of more than one heavy commercial vehicle requires a Special Permit from the Zoning Board of Appeals.

Multiple Family Dwellings/55 (MFD/55) District. The Multiple Family Dwellings/55 District is used to regulate the development of multiple family dwellings for persons over the age of 55 years, by Special Permit and through the establishment of eligibility requirements and conditions. The MFD/55 site must have a minimum lot area of 12 acres with 150 feet of frontage on a public way, unless reduced by the Planning Board to a minimum of 40 feet

under certain conditions. The maximum building height allowed within the MFD/55 district is three stories or 45 feet.

No more than 150 dwelling units are allowed under an MFD/55 Special Permit, with a maximum of seven (7) units per acre and no more than fourteen (14) bedrooms per acre allowed, although the number of bedrooms per unit may vary from one (1) to three (3). The ratio of three bedroom market rate units to three bedroom affordable housing units must be one to one. The MFD/55 district is subject to the Affordable Housing provisions outlined in Section 7010 of the Zoning Bylaw, which is described in greater detail in the Housing section of this document. Projects completed in the MFD/55 must have 15 percent of the housing units designated as affordable housing.

No more than 5 percent of the total wetland or floodplain within the site may be used to calculate the density requirements of the project. The maximum site coverage for buildings and structures cannot exceed 30 percent of the site area. No less than 60 percent of the site's upland area must be free of buildings and structures, and such areas must remain in their natural state or may be developed for recreation purposes, including a golf course.

Uses allowed within the MFD/55 District include single-family dwellings and garaging or parking of one light commercial vehicle (as an accessory use). In addition, the following exempt uses are permitted within the MFD/55 district: religious uses, public and non-profit educational facilities, a child care facility in an existing building, agriculture and the sale of produce, wine and dairy products, and municipal parks and playgrounds. Multi-family dwellings, nonexempt educational uses, and other municipal facilities require a Special Permit from the Planning Board, while the garaging or parking of more than one light commercial vehicle (as an accessory use), and the parking of one heavy commercial vehicle (as an accessory use) requires a Special Permit from the Zoning Board of Appeals.

Commercial and Industrial Zoning

Tewksbury encourages economic development within the following five zoning districts:

Commercial District (COM)

Limited Business District (LB)

Transitional District (TR)

Heavy Industrial District (HI)

Office Research District (OR)

Each district was established for a distinct purpose and each has a separate set of objectives, requirements and conditions. Development in all non-residential districts is subject to a site

plan special permit from the Planning Board. Each of the business related zoning districts is described in greater detail below.

Commercial District (CD). The Commercial District (CD) runs along most of the length of Route 38 (Main Street). Projects developed within the CD district require approvals from the Planning Board, Board of Appeals and the Board of Selectmen. The minimum lot size required within the CD district is one acre, with 150 feet of frontage. A maximum building height of 2.5 stories or 35 feet is allowed, however higher structures of up to 5 stories or 60 feet may be allowed upon the issuance of a Special Permit by the Planning Board. Building and structures must cover 30 percent or less of the lot area.

Uses allowed by right within the CD district include: personal service establishments, bed and breakfast, retail food or drug store, retail sale of alcoholic beverages, retail sales not set forth elsewhere, restaurants, business or professional office, licensed massage therapy, garaging and parking of up to two light commercial vehicles, garaging and parking of one heavy commercial vehicle (as an accessory use), as well as most exempt uses outlined in Appendix A of the town's Zoning Bylaw.

Uses allowed by Special Permit from the Planning Board include the following: single-family dwellings, multi-family dwellings/over 55, nonexempt farm stands and educational uses, animal clinics/hospitals/kennels, funeral home, hotel/motel, fast food restaurant, drive through facility, indoor or outdoor commercial recreation, a major commercial project, stone and monument works, the sale of products manufactured on the premises, and a farm supply warehouse. The Board of Selectmen is charged with issuing a Special Permit for itinerant roadside vending.

The following uses are allowed under a Special Permit from the Zoning Board of Appeals: car wash, garage for automotive storage, limousine, taxi, or livery business, automotive stereo systems installations, membership club, civic, social, professional or fraternal organization, mobile parked food service, and garaging or parking of three or more light commercial vehicles or two or more heavy vehicles (as an accessory use).

Limited Business District (LB). The Limited Business (LB) District is located in the vicinity of Shawsheen Street, Foster Road and Beech Street. The minimum lot size required in the LB District is one acre, with 150 feet of frontage. The maximum building height allowed is 2.5 stories or 35 feet. Buildings and structures must not occupy more than 15 percent of the lot area. The only uses allowed by right in the LB district are single-family dwellings, family suites, and garaging of up to two light commercial vehicles. In addition some exempt uses are also permitted, including religious and educational uses, a child care facility in an existing building, agricultural uses, facilities that sell produce, wine and dairy products on exempt agricultural land, and municipal parks and playgrounds.

The following uses are allowed under a Special Permit from the Planning Board: a child care facility in a new building, other municipal facilities, water towers and reservoirs, non-exempt educational uses, drive-through facility and retail food or drug store. In addition, a Special Permit may be sought from the Zoning Board of Appeals for a personal service establishment or the garaging or parking of one heavy vehicle as an accessory use.

Transitional District (TR). The Transitional District (TR) is located along Route 38 in the vicinity of Hinckley Road and Tanglewood Avenue. The intent of the district is that existing structures remain residential in appearance, and that new structures also have a residential appearance regardless of use. The minimum lot size in the TR district is one acre, with 150 feet of frontage. The maximum building height allowed is 2.5 stories or 35 feet. Buildings and structures must not occupy more than 15 percent of the lot area. Parking within the TR is limited to the side yard and front yard.

Uses allowed by right within the TR are limited to single-family dwellings, family suites, bed and breakfast, business or professional office, and the garaging or parking of one light commercial vehicle. In addition, the following exempt uses are allowed within the TR district: religious and educational uses, child care in an existing building, agricultural uses, facilities for the sale of produce, wine and dairy products, and municipal parks and playgrounds.

The following uses are allowed under a Special Permit issued by the Planning Board: child care facility in a new building, other municipal facilities, water towers and reservoirs, nonexempt educational uses, retail food or drug store, retail sales not set forth elsewhere, restaurants, fast food establishment, ceramic products manufactured by electric kilns and a drive-through facility. In addition, a Special Permit may be sought from the Zoning Board of Appeals for the following uses: personal service establishment, garaging or parking of two or more light commercial vehicles, and garaging or parking of one heavy commercial vehicle.

Heavy Industrial District (HI). The Heavy Industrial District (HI) is found in four areas of town: (1) along a portion of East Street; (2) in North Tewksbury along I-495; (3) in the area adjacent to the Route 38/I-495 interchange; and (4) in the southern area of town near the Billerica border. Development in the HI district requires a minimum lot area of one acre, with 150 feet of frontage. The maximum building height allowed is 2.5 stories or 35 feet, however higher structures of up to five stories or 60 feet may be allowed upon the issuance of a Special Permit by the Planning Board. Buildings and structures must not occupy more than 35 percent of the lot area.

Uses allowed by right within the HI district include the following: personal service establishments, retail sale of alcoholic beverages, retail sales not set forth elsewhere, business or professional office, garaging or parking of one light commercial vehicle, garaging or parking of one or more heavy commercial vehicles, research laboratories and manufacture of equipment or electronics, assembly of electrical appliances, welding shop, machine shop,

stone or monument works, exempt agricultural and educational uses, and a child care facility in an existing building.

The following uses are allowed within the HI district with a Special Permit from the Planning Board: single-family dwelling, a child care facility in a new building, other municipal facilities, essential services, water towers and reservoirs, hospitals, nonexempt farm stand, nonexempt educational uses, an animal clinic, funeral home, hotel/motel, retail food or drug store, restaurant, fast food establishment, indoor or outdoor commercial recreation, adult use establishment, major commercial project, drive-through facility, removal of loam, sand or gravel, manufacturing, retail sales of products manufactured on the premises, wholesale, warehouse, self-storage mini-warehouse or distribution facility, farm supply warehouse, heating fuel storage and sales, contractor's yard or landscaping business, and steel fabrication.

The Zoning Board of Appeals may issue a Special Permit for the following uses within the HI district: private cemeteries, a garage for automotive storage, limousine, taxi, or livery business, automotive stereo systems installation, and membership club, civic, social, professional or fraternal organization.

The Zoning Bylaw outlines a variety of landscaping, buffering and screening requirements to ensure that the impacts of development in the HI are properly mitigated.

Office Research District (OR). The Office Research District is located in northern Tewksbury and flanks both sides of I-495. The minimum lot size allowed in the OR District is one acre, with 150 feet of frontage. The maximum building height allowed is 2.5 stories or 35 feet. Buildings and structures must not occupy more than 35 percent of the lot area.

Uses allowed by right within the district include research laboratories, manufacture of equipment, the garaging or parking of commercial vehicles, both light and heavy duty, as well as certain exempt uses, such as religious and educational facilities, agricultural uses, child care in an existing building, facilities for the sale of produce, wine and dairy projects on agricultural sites, municipal parks and playgrounds, and the garaging or parking of up to two light duty commercial vehicles.

The following uses are allowed by Special Permit from the Planning Board: single-family dwelling, child care facility in a new building, other municipal facilities, essential services, water towers and reservoirs, hospitals, nonexempt educational uses, animal clinic or kennel, funeral home, hotel/motel, restaurant, adult use establishment, a major commercial project, manufacturing and retail sale of products manufactured on the premises. In addition, the garaging or parking of one heavy duty vehicle is allowed by Special Permit of the Zoning Board of Appeals.

Within the ORD district, projects may also include certain services and retail, related to serving the employees on site, as an accessory use by Special Permit of the Planning Board. The amount of gross building area devoted to accessory retail cannot exceed 5 percent of the

total gross building area of the entire project or 10,000 square feet, whichever is greater. Accessory restaurant use is also allowed with approval of the Planning Board, but the space devoted to this use cannot exceed 5 percent of the total gross building area of the entire project, and can contain a maximum of 100 seats.

Overlay Districts

A decade ago, Tewksbury's Zoning Bylaw provided for three overlay districts, while today there are eleven:

- Wireless Communications Facilities
- Multiple Family Dwellings in the Senior Village District/55 (SVD/55)
- Flood Plain District
- Ground Water Protection District
- Interstate Overlay District
- Highway Corridor Overlay District
- Town Center Overlay District
- Village Residential Overlay District
- Village Mixed-Use Overlay District
- South Village Overlay District
- Community Village Overlay District.

Each overlay district serves a unique purpose and has a distinct set of requirements. The eight overlay districts established over the past decade were largely based on a recommendation in the previous Master Plan that character districts be created along Route 38. The following section describes each of the districts in terms of purpose, requirements and procedures.

Wireless Communications Facilities (WCF). As the name implies, the Wireless Communications Facilities (WCF) regulations provide a special permitting process for the siting of wireless communication facilities through a Wireless Communications Facilities Special Permit granted by the Planning Board. The intent of the overlay bylaw is to minimize adverse impacts on adjacent properties and to protect the visual and aesthetic value of the community. The bylaw limits the height of wireless communication facilities to what is essential for public convenience and necessity and promotes shared use of facilities in order to reduce the need for new facilities.

Wireless communication facilities are allowed in the following locations:

- Municipal districts or on other municipal lands shown on the WCF overlay district map;
- On land within 200 feet of I-93 or I-495 and in the Office Research District;
- On electric transmission line easements, on existing structures or poles with a height of at least 50 feet in the HI or OR districts;
- Churches, temples, synagogues and similar buildings, as determined by the Planning Board;
- Golf courses (only as shown on the WCF overlay district map); and
- Utility-pole-mounted Distributed Antenna System antennae are allowed on public and private ways.
- The WCF bylaw prioritizes the town's preferences for the location of WCF facilities as follows:
 - The first priority is in the Municipal District and additional land shown on the WCF overlay district map;
 - The second priority calls for the concealment within churches and similar structures, within spires, belfries, etc.; and
 - The third priority is the remaining area of allowed use as outlined in 6402 of the Zoning Bylaw.

Applicants must prove that alternatives in the higher priority locations are not feasible, if a lower priority location is proposed. When feasible, the WCF devices must be located on existing towers and subjected to "stealth treatment". A tower must be set back a minimum distance of 400 feet from abutting residential districts. This requirement can be reduced by the Planning Board if better aesthetic results would be realized for the neighborhood, but the setback minimum must be no less than 100 feet from residential district in all cases. The maximum allowed tower height cannot exceed 100 feet, unless the applicant can demonstrate that greater height is required for providing wireless communications services.

When appropriate co-location is encouraged and the Planning Board may condition the Special Permit to require that the structure and/or facility be designed to accommodate future wireless communications devices operated by another carrier. At the request of town officials, the Planning Board may also require that the applicant provide reasonable access to the facility for municipal communications.

Multiple Family Dwellings in the Senior Village District/55 (SVD/55). The purpose of the Multiple Family Dwellings in the Senior Village District/55 (SVD/55) is to encourage the development of communities for persons fifty-five years of age or older. The intent of the overlay is to provide a greater variety multi-family housing types at a higher density than is

otherwise allowed within the town's Zoning Bylaw. The district is located in the vicinity of Andover Street and North Street.

The Planning Board is the Special Permit Granting Authority for an SVD/55 project. An SVD/55 project requires a minimum lot size of five (5) contiguous acres, with 150 feet of frontage which can be reduced to 40 under certain conditions. The SVD/55 project density cannot be more than 7 units per acres or more than 14 bedrooms per acre, although the number of bedrooms per unit may vary from one (1) to three (3). No more than 100 dwelling unit are allowed under a SVD/55 permit, regardless of the size of the development site. The maximum coverage of the site for buildings and structures cannot exceed 30 percent of the site area. The maximum building height allowed is 2.5 stories or 35 feet. No less than 25 percent of the site must be left in its natural state or be developed for uncovered recreational facilities.

All dwellings constructed in the SVD/55 project are subject to an age restriction deed rider, restrictive covenant or other document approved by the Planning Board and recorded at the Registry of Deeds or Land Court. The restriction must limit occupancy to seniors age 55 or older, and their spouses and children of any age.

Where project density is proposed at seven (7) units per acre, at least 15 percent of the dwelling units must be designated as affordable. If the project density is six (6) units per acre, 5 percent of the total units must be designated as affordable housing, and if the density is five (5) units per acre, at least 2 percent of the total units must be established as affordable housing.

Density bonuses may also be awarded to a SVD/55 project for a design that advances historic preservation in a development that contains a structure or other feature listed in any of the following:

- National Register of Historic Places
- The State Register of Historic Places
- The Tewksbury Historical Commission's Historic Survey, or that is identified by the Commission as being of historic/and or architectural significance and thereby has potential for inclusion in the historic survey.
- Qualified dwelling units constructed with Planning Board approval of an Historic Preservation Incentive are not counted toward the project's density calculation. Therefore, a 1:1 density bonus is provided for every "historic" housing unit and such units are not counted toward the project's affordability requirement.

Flood Plain District. The Flood Plain District includes all the special flood hazard areas within Tewksbury designated as Zone A and AE as outlined on the Middlesex County Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency (FEMA)

for the administration of the National Flood Insurance Program (NFIP). The Flood Plain Bylaw is an overlay bylaw applied to all zoning districts within the town.

Base flood elevation data is required for subdivision proposals or other development greater than 50 lots or five acres within unnumbered A zones. All development within the district must comply with the State Building Code, the Massachusetts Wetlands Protection Act, and Title V of the state sanitary code.

Construction activities and encroachments are prohibited in the regulatory floodway. The following uses (which have low flood damage potential and do not interrupt flood flows) are encouraged in the flood plain district, providing they are permitted in the underlying zoning district:

- Agricultural uses such as farming, grazing and horticulture;
- Forestry and nursery services;
- Outdoor recreational uses such as fishing, boating and play areas;
- Conservation of water, plants and wildlife;
- Wildlife management areas, pedestrian, bicycle and equestrian paths;
- Temporary non-residential structures used in conjunction with fishing, growing, harvesting, storage or sale of crops raised on the premises; and
- Buildings lawfully existing prior to the adoption of the flood plain bylaw.

Groundwater Protection District. The Groundwater Protection District is designed to ensure adequate quality and quantity of drinking water for the community by protecting the town's water supply from contamination. The overlay bylaw applies to all new construction, reconstruction or expansion of existing buildings, and to new and expanded uses. The Groundwater Protection District is defined as all lands within the town that fall within Zone II. In addition, a section of southeasterly Tewksbury is also included.

The following uses are permitted within the Groundwater Protection District:

- Conservation of soil, water, plants and wildlife;
- Outdoor recreation, nature study, boating, fishing, and hunting, where otherwise legally permitted;
- Foot, bicycle and/or horse paths, and bridges;
- Normal operation and maintenance of existing water bodies and dams, splash boards and other water control, supply and conservation devices;

- Maintenance, repair and enlargement of any existing structure, subject to the prohibited and permitted use sections of the bylaw;
- Residential development, subject to the prohibited and permitted use sections of the bylaw;
- Farming, gardening, nursery, conservation, forestry, harvesting, and grazing, subject to the prohibited and permitted use sections of the bylaw; and
- Construction, maintenance, repair and enlargement of drinking water supply related facilities such as, but not limited to, wells, pipelines, aqueducts, and tunnels.

Underground storage tanks related to these activities are not categorically permitted.

Uses specifically prohibited in the Groundwater Protection District include the following:

- Landfills and open dumps;
- Automobile graveyards and junkyards;
- Landfills receiving only wastewater and/or septage residuals;
- Facilities that generate, treat, store or dispose of hazardous waste;
- Petroleum, fuel oil, and heating oil bulk stations and terminals;
- Storage of liquid hazardous materials and/or liquid petroleum products unless storage is above ground level and on an impervious surface, and in containers, above ground tanks with a building or outdoors in a covered container or above ground tank with a containment system;
- Storage of sludge and septage;
- Storage of deicing chemicals unless such storage is within a structure designed to prevent the escape of contaminated runoff or leachate;
- Storage of animal manure unless covered or contained;
- Earth removal to within 4 feet of historical high groundwater, except for excavation of building foundations, roads or utility works;
- Discharge to the ground of non-sanitary wastewater, with some exceptions;
- Stockpiling and disposal of snow and ice containing deicing chemicals brought in from outside the district;
- Storage of chemical fertilizers unless storage is within a structure designed to prevent runoff or leachate from escaping; and

- Rendering of impervious surface greater than 15 percent or 2,500 square feet of any lot, whichever is greater.

State law allows for the replacement of existing tanks for storing and dispensing gasoline, and exempts above-ground home heating oil systems from the containment requirement.

The following uses require a Special Permit when in the Groundwater Protection District:

- Enlargement or alteration of an existing use that does not conform to the Groundwater Protection District;
- Activities that involve the handling of toxic or hazardous materials in quantities greater than those associated with normal household use; and
- A stormwater management system must be designed and approved by the Planning Board to prevent untreated discharges to wetland and surface waters and to preserve hydrologic conditions that closely resemble predevelopment conditions.

Interstate Overlay District (IOD). The Interstate Overlay District is located within a 1/4 mile radius near the Route 38/I-495 interchange and within a 1/2 mile radius of the I-93/Dascomb Road interchange. The Interstate Overlay District (IOD) is superimposed on all Heavy Industrial (HI) zoning districts. In addition to the uses allowed in the HI district, the following additional uses are allowed within the IOD District upon receiving a Special Permit from the Planning Board: automotive refueling stations and related accessory uses, car wash, garaging and towing of motor vehicles, and motor vehicle rental or leasing agencies, as an accessory use. The Planning Board may only approve one additional automotive refueling station in any calendar year. The same dimensional requirements outlined for the HI zone also apply to the IOD.

Highway Corridor Overlay District (HCOD). The Highway Corridor Overlay District includes the property known as “Lowell Junction” located on the westerly side of I-93. The Overlay District was established to facilitate a development project that will only be viable with the construction of a new interchange on I-93. Development within the HCOD will require the issuance of a Highway Corridor Special Permit by the Planning Board.

The parcel or set of contiguous parcels cannot be less than 80 acres located exclusively in the Town of Tewksbury. The total lot coverage by structures and impervious surfaces cannot exceed 55 percent of the HCOD in its entirety. The structures and all associated parking must be placed within the so-called Ring Road. No building can be more than two stories and 60 feet in height, although 40 percent of the building may be three stories and 80 feet in height. Greater height may be allowed by a separate special permit.

The maximum building coverage of any subdivided lot with the HCOD may be permitted to have a maximum building coverage up to 100 percent provided that maximum lot coverage for the project is not exceeded. The HCOD Overlay Bylaw sets forth very specific

requirements for landscaping, lighting, roadway and signs. In addition, the bylaw references many of the conditions and commitments contained in the Development Agreement between the Town and Mills Corporation dated May 4, 2004.

Uses allowed by right within the HCOD include the following: religious and educational uses, child care, agriculture, the sale of produce, wine and dairy products on agricultural sites, municipal parks and playgrounds, other municipal facilities, essential services, water towers and reservoirs, personal service establishments, retail food and drug stores, retail sale of alcoholic beverages, retail sales not set forth elsewhere, garage for automotive storage, restaurant, fast food, business or professional office, and indoor commercial recreation. In addition, the following uses are allowed by Special Permit from the Planning Board: automotive stereo systems installations, outdoor commercial recreation, and drive-through facility.

Town Center Overlay District (TCOD). The Town Center Overlay District (TCOD) is designed to encourage a mix of business, residential, cultural, educational and civic uses, and to promote compact development that is pedestrian-oriented and preserves the historic value and character of the area. All uses and structures in the TCOD are subject to a Special Permit and Site Plan Special Permit from the Planning Board. Furthermore, all projects in the TCOD must follow design criteria described in the Town Center Design Guidelines.

The minimum lot area required within the TCOD is 10,000 square feet with 50 feet of frontage. The maximum building height allowed within the TCOD is 3 stories or 45 feet. The following uses are allowed within the TCOD: residential uses (multi-family housing, artist lofts, assisted living facilities) as a component of mixed-use development, retail uses not exceeding 7,500 square feet, professional offices not exceeding 10,000 square feet, financial services, restaurant not exceeding 4,000 square feet, hotel, inn, bed and breakfast, lodge or membership club, personal services, artist or craftsman studio, indoor commercial recreation, parking facility, day care facility, performance theater, museum, or art gallery. Mixed-use development is permitted within a single building, with the ground floor used primarily for retail, commercial, service or office and the upper floor(s) used for residential use.

Parking requirements within the TCOD are the same as in the underlying zoning district, however, the Planning Board may reduce such requirements if shared parking is available on another property or if public transportation is available.

Village Residential Overlay District (VROD). Similar to the Town Center Overlay District, the Village Residential Overlay District is designed to encourage a mix of business, residential, cultural, educational and civic uses, and to promote compact development that is pedestrian-oriented and preserves the historic value and character of the area. The VROD is located along Route 38 west of the TCOD. All uses and structures in the VROD are subject to a Special Permit and Site Plan Special Permit from the Planning Board. Furthermore, all projects in the VROD must follow design criteria described in the Village Residential Design Guidelines.

The minimum lot area required within the VROD is 10,000 square feet with 50 feet of frontage. The maximum building height allowed within the VROD is 2.5 stories or 35 feet. The following uses are allowed within the VROD: residential uses (multi-family housing, artist lofts, assisted living facilities) as a component of mixed-use development, retail uses not exceeding 1,200 square feet, professional offices not exceeding 2,400 square feet, financial services, restaurant not exceeding 1,200 square feet, hotel, inn, bed and breakfast, lodge or membership club, personal services, artist or craftsman studio, day care facility, museum, or art gallery. Mixed use development is permitted within a single building, with the ground floor used primarily for retail, commercial, service or office and the upper floor(s) used for residential use.

Parking requirements within the VROD are the same as in the underlying zoning district, however, the Planning Board may reduce such requirements if shared parking is available on another property or if public transportation is available.

Village Mixed-Use Overlay District (VMOD). Similar to the Town Center Overlay District (TCOD) and the Village Residential Overlay District (VROD), the Village Mixed-Use Overlay District (VMOD) is designed to encourage a mix of business, residential, cultural, educational and civic uses, and to promote compact development that is pedestrian-oriented and preserves the historic value and character of the area. The VMOD is located along Route 38 east of the TCOD. All uses and structures in the VMOD are subject to a Special Permit and Site Plan Special Permit from the Planning Board. Furthermore, all projects in the VMOD must follow design criteria described in the Village Mixed-Use Design Guidelines.

The minimum lot area required within the VMOD is 10,000 square feet with 50 feet of frontage. The maximum building height allowed within the VMOD is 2.5 stories or 35 feet. The following uses are allowed within the VMOD: residential uses (multi-family housing, artist lofts, assisted living facilities) as a component of mixed-use development, retail uses not exceeding 7,500 square feet, professional offices not exceeding 10,000 square feet, financial services, restaurant not exceeding 4,000 square feet, hotel, inn, bed and breakfast, lodge or membership club, personal services, artist or craftsman studio, indoor commercial recreation, day care facility, performance theater, museum, or art gallery. Mixed-use development is permitted within a single building, with the ground floor used primarily for retail, commercial, service or office and the upper floor(s) used for residential use.

Parking requirements within the VMOD are the same as in the underlying zoning district, however, the Planning Board may reduce such requirements if shared parking is available on another property or if public transportation is available.

South Village Overlay District (SVOD). Similar to the Town Center Overlay District (TCOD), the Village Residential Overlay District (VROD), and the Village Mixed-Use Overlay District (VMOD), the South Village Overlay District (SVOD) is designed to encourage a mix of business, residential, cultural, educational and civic uses, and to promote compact

development that is pedestrian-oriented and preserves the character of the area. The SVOD is located along Route 38 between Shawsheen Street and South Street. All uses and structures in the SVOD are subject to a Special Permit and Site Plan Special Permit from the Planning Board. Furthermore, all projects in the SVOD must follow design criteria described in the Village Residential Design Guidelines.

The minimum lot area required within the SVOD is 10,000 square feet with 50 feet of frontage. The maximum building height allowed within the SVOD is 2.5 stories or 35 feet. The following uses are allowed within the SVOD: residential uses (multi-family housing, artist lofts, assisted living facilities) as a component of mixed-use development, retail store, professional offices, financial services/bank, restaurant, hotel, inn, bed and breakfast, lodge or membership club, personal services, artist or craftsman studio, day care facility, museum, or art gallery. Mixed use development is permitted within a single building, with the ground floor used primarily for retail, commercial, service or office and the upper floor(s) used for residential use.

An application for an SVOD permit as a mixed-use development may require that certain dwelling units be established as affordable housing units, as determined by the Planning Board. Parking requirements within the SVOD are the same as in the underlying zoning district, however, the Planning Board may reduce such requirements if shared parking is available on another property or if public transportation is available.

Community Village Overlay District (CVOD). Similar to the Town Center Overlay District (TCOD), the Village Residential Overlay District (VROD), the Mixed-Use Overlay District (VMOD), and the South Village Overlay District (SVOD), the Community Village Overlay District (CVOD) is designed to encourage a mix of business, residential, cultural, educational and civic uses, and to promote compact development that is pedestrian-oriented and preserves the character of the area. The CVOD is located along Route 38 just west of the SVOD. All uses and structures in the CVOD are subject to a Special Permit and Site Plan Special Permit from the Planning Board. Furthermore, all projects in the CVOD must follow design criteria described in the Village Residential Design Guidelines.

The minimum lot area required within the CVOD is 10,000 square feet with 50 feet of frontage. The maximum building height allowed within the CVOD is 2.5 stories or 35 feet. .

The following uses are allowed within the CVOD: residential uses (multi-family housing, artist lofts, assisted living facilities, elderly congregate living facility) retail store, professional offices, financial services/bank, restaurant, hotel, inn, bed and breakfast, lodge or membership club, personal services, artist or craftsman studio, day care facility, museum, art gallery, commercial indoor and outdoor recreation, and transient overnight lodging in conjunction with and as an accessory use to a function hall . Mixed use development is permitted within a single building, with the ground floor used primarily for retail, commercial, service or office and the upper floor(s) used for residential use.

An application for a CVOD permit as a residential use development requires that 15 percent of the dwelling units be established as affordable housing units in perpetuity, with the exception of Assisted Living and Elderly Congregate Living Facility proposals. An application for a mixed-use development may require that certain dwelling units be established as affordable housing units in perpetuity.

Parking requirements within the CVOD are the same as in the underlying zoning district, except for Assisted Living Facilities and Elderly Congregate Living Facilities which need to comply with the parking requirement outlined in another section of the Zoning Bylaw addressing those uses (Section 7442). The Planning Board may reduce such requirements if shared parking is available on another property or if public transportation is available.

6.2 TRANSPORTATION

Traffic Safety and Operations

Crash history and operation analysis are related measures that show if Tewksbury residents and visitors are able to travel through the town safely and efficiently. The NMRTP identified total crashes within Tewksbury from 2006 to 2008. Tewksbury had a rate of 2.2 crashes per roadway-mile which was lower than the regional average of 2.7 crashes per roadway mile.

Total Crashes	Roadway Miles	Crashes per Roadway Mile	Percent of Regional Crashes
1,956	293.41	2.2	9 percent

Source: NMRTP page 156

Between 2006 and 2008 the two I-495 interchanges within Tewksbury experienced significant crash rates (see Table 6.2.2.). There were 264 crashes at the two interchanges with one fatality. As presented before, the I-495 interchange overpass was rated “functionally obsolete” which could be a contributing factor to the high number of crashes. Improving the geometric design of the interchange could potentially reduce crashes.

Interchange	Crashes	Property Damage Only	Injury Crashes	Fatal Crashes	EPDO
Interstate 495 at Route 38	162	114	48	0	354
Interstate 495 at Route 133	102	73	28	1	223

Source: NMRTP page 165

Between 2006 and 2008 there were 18 pedestrian crashes reported in Tewksbury with two fatalities and fourteen injuries (see Table 6.2.3.)

	Crashes	Property Damage Only	Injury Crashes	Fatal Crashes	Not Reported /Unknown
Pedestrian Crashes	18	2	14	2	0

Source: NMRTP page 171

MassDOT compiles accident data provided by the Registry of Motor Vehicles as part of the Highway Safety Improvement Program (HSIP). The crashes are mapped, clustered together and ranked by Equivalent Property Damage Only (EPDO). EPDO weights the fatality crashes with ten point, injury crashes with five points and non-injury crashes with one point. A list of the 2012 HSIP clusters within Tewksbury is provided below. Salem Road at South Street was ranked in the state's top 200 locations between 2010 and 2012 which makes it eligible for a Road Safety Audit.

	Fatality	Injured	Non-Injured	EPDO
Salem Road at South Street*	0	17	45	130
Main Street (Route 38) at Clark Road	0	11	74	129
I-495 North at Route 38 Offramp	0	10	19	69
Route 133 at I-495 Northbound ramps	0	9	19	64
Main Street (Route 38) at Shawsheen Street	0	8	20	60
I-495 South at Route 38 Offramp	0	7	21	56
Main Street (Route 38) at Old Main Street	0	5	30	55
Main Street (Route 38) south of Livingston Street	0	2	42	52
Main Street (Route 38) at Old Boston Road	0	4	22	42
Main Street (Route 38) at South Street	0	5	17	42
*2010-2012 Top 200 Intersection Clusters				

Source: MassDOT

6.3 ECONOMIC DEVELOPMENT

Location Quotients

Location quotients (LQ) can be useful tools for identifying cluster industries within a community. Location quotients compare the concentration of individual industries within a community with those same industries within a larger geographic area. Location quotient analysis focuses upon the strengths of a local economy as a precursor to attracting similar industries to the community. When a location quotient is greater than 1.0, it means that the particular industry is more significant than in the larger geographic area.

For the purposes of this document, location quotients were developed based on a comparison of the Town of Tewksbury with the Commonwealth of Massachusetts, utilizing 2014 Q2 ES-202 data from the Executive Office of Labor and Workforce Development. Location quotients were calculated for both the total number of establishments (estab.) and average monthly employment (AME) in each industry sector. Table 6.3.1 on Industry Location Quotients reflects the information on the primary industry sectors on Tewksbury and Massachusetts, as well as the resulting location quotients for establishments and average monthly employment.

Table 6.3.1. Industry Location Quotients

Industry	Tewksbury Estab.	Mass Estab.	LQ for Estab.	Tewksbury AME	Mass AME	LQ for AME
Total, All Industries	866	230,132	-	15,342	3,373,461	-
Goods-Producing Domain	150	27,240	1.46	3,439	399,057	1.89
Construction	120	19,106	1.67	1,115	140,247	1.75
Manufacturing	30*	7,051	1.13*	2,324*	250,359	2.04*
Non-Durable Goods Manufacturing	5	2,649	0.50	116	87,859	0.29
Service-Providing Domain	716	202,892	0.94	11,902	2,974,404	0.88
Trade, Transportation and Utilities	164	42,933	1.02	3,342	588,127	1.25
Utilities	3	466	1.54	27	14,429	0.42
Wholesale Trade	46	14,196	0.86	643	123,950	1.14
Retail Trade	88	23,944	0.98	2,246	348,018	1.41
Transportation and Warehousing	27	4,327	1.66	426	101,910	0.92
Information	12	4,663	0.68	117	92,185	0.28
Financial Activities	50	16,412	0.81	309	208,942	0.33
Finance and Insurance	26	9,869	0.70	189	165,506	0.25
Real Estate and Rental and Leasing	24	6,543	0.97	121	43,436	0.61
Professional and Business Services	145	43,935	0.88	2,401	524,805	1.01
Professional and Technical Services	98	30,506	0.85	1,379	285,511	1.06
Administrative and Waste Services	43	12,074	0.95	343	175,596	0.43
Education and Health Services	153	48,948	0.83	3,052	952,106	0.70
Health Care and Social Assistance	136	4,235	8.53	2,322	595,968	0.86
Leisure and Hospitality	93	20,171	1.23	1,715	354,016	1.07
Arts, Entertainment, and Recreation	12	3,664	0.87	160	60,964	0.58
Accommodation and Food Services	81	16,507	1.30	1,555	293,052	1.17

Industry	Tewksbury Estab.	Mass Estab.	LQ for Estab.	Tewksbury AME	Mass AME	LQ for AME
Other Services, except Public Admin.	85	21,804	1.04	593	116,958	1.12
Public Administration	14	4,026	0.92	373	137,264	0.60

Source: Executive Office of Labor and Workforce Development, ES-202 reports

Note: * Estimates for manufacturing in 2014 Q2 – approximately 30 establishments and 2,324 employees.

6.4 NATURAL AND CULTURAL RESOURCES

Soils

About thirty-one (31.4 percent) of Tewksbury is covered by the Windsor-Hinckley-Deerfield Association, which is composed of sandy, gravelly, and moderately well-drained soils. These soils make up most of the ground cover in the Town and they are found on level or gently sloping land formations. The sandy nature of these soils allows them to absorb sewage effluent, but their rapid permeability means that shallow wells in these soils can easily become contaminated from nearby septic systems or other nonpoint source pollutions. Most of these soils have slight limitations for residential, commercial, or industrial uses, and can readily accommodate most kinds of recreation.

Comprising about fourteen (14.2 percent) of the land area, and throughout Tewksbury, the Freetown soils are composed of very poorly drained muck and freshwater marsh organic soils. They are found in level and depressed areas, and along waterways, and have a moderate to very moderately permeability. The water table is generally at or near the surface most of the year in these areas. These soils have moderate limitations for site development and recreational uses. Freetown soils are poorly suited for most agricultural and woodland uses. There are severe limitations for residential, commercial, or industrial uses because of wetness, poor load-bearing capacity, and seasonal high water tables. Organic layers have very low strength and should be removed to support loads.

The Paxton-Woodbridge Association covers approximately ten (10 percent) of the land area in Tewksbury, mostly concentrated around Ames Pond and in the western corner of Town. They are well-drained and moderately well-drained loamy soils in the sub-glacial and lodgement till classification. These soils are very deep to bedrock and moderately deep to a densic contact. They are found on level to moderately steep formations on till plains, hills, and drumlins. Slopes for such formations range from 0 to 25, and 0 to 45 percent respectively. These soils are characterized by a slowly permeable hardpan within two feet of the surface. Seepage keeps them wet for significant periods in winter and early spring. These soils have few limitations for woodlands, some recreational uses, and agriculture. However, they have

strict limitations for industrial and commercial use, and residential development with on-site sewerage disposal.

Canton-Hollis-Chatfield Association soils are moderately well-drained and comprise only six (6.4 percent) of the land area in the Town. These soils are found in two (2) locations – one tract near Ames Pond, and another in the western corner of Town, where the terrain is hilly. These soils are found in stony and rocky areas with frequent ledge outcrops, and have moderate to severe limitations for woodlands, but slight or moderate limitations for some wildlife or recreational uses. Agricultural, residential, commercial, and most other uses are severely limited by the bedrock. Groundwater supplies are difficult to develop and sewage disposal areas are difficult to install.

Mucky-Fresh Water Marsh Association soils covers approximately eight (8.4 percent) of the land and are very poorly drained organic and mineral soils on low-lying level terrain with water tables at or near the surface. The general soil area has no limitations for wetland wildlife, and is suitable for some kinds of recreational uses. It is not suitable for development. The vast majority of these areas are within protected wetlands.

Comprising about two (2.7 percent) of Tewksbury, the Scituate-Essex Association is composed of compact glacial till soils that have hardpan near the surface. These soils are well-drained and moderately well-drained stony soils that developed in sandy, compact glacial till. The depth to hardpan is from 1.5 to 2 feet. Excess seepage water or fluctuating water table within two feet of the surface of Scituate soils may keep them saturated with water for a significant period of time. The condition generally prevails during the winter and spring, but also occurs during prolonged periods of rainfall. The hardpan present in this soil association is slowly permeable, severely curtailing the ability of these soils to absorb sewage effluent. In addition to hardpan, the soils contain stones and boulders on and below the surface. These soils are unsuitable for development dependent on on-site disposal systems but can be used for woodland, wildlife habitat, and some kinds of recreation.

Biodiversity

Tewksbury is located within the transitional zone of the New England forests. About half of the town is covered with forests, predominantly composed of hardwood species, such as oak, beech, maple, birch and aspen, and some softwoods, such as white pine and hemlock.

Most wetland areas are dominated by red maple. Tewksbury's freshwater meadows are home to reeds, woodgrass, wild millet, spike rush and sedge. The town also has several endangered plant species, as listed in the tables below. Invasive species, such as purple loosestrife, multiflora rose, European buckthorn, and Oriental bittersweet are common in wetlands, hedgerows, roadsides, and overgrown pastures.

Hundreds of animal species can be found in Tewksbury. Overall, almost 50 bird, 23 fish, 23 mammals, 15 reptilian and 15 amphibian species have been observed in Tewksbury, as well as an undocumented number of invertebrate species. Wildlife typical of suburban areas can be found in Tewksbury, such as deer, coyotes, small rodents, foxes, rabbits, opossums, raccoons, fishers, chipmunks, and squirrels. Reptiles and amphibians, such as frogs, snakes and turtles, as well as water dependent mammals, including beavers and muskrats are common. Table 6.4.1 provides a comprehensive list of animal species observed in Tewksbury.

Table 6.4.1. Wildlife Species Observed in Tewksbury

Birds			
American Bittern	Cardinal	House Wren	Starling
American Goldfinch	Chimney Swift	Indigo Bunting	Swamp Sparrow
American Kestrel	Chipping Sparrow	Killdeer	Tree Swallow
American Robin	Common Crow	Mallard Duck	Tufted Titmouse
American Woodcock	Common Flicker	Mocking Bird	Warbling Vireo
Barn Swallow	Common Grackle	Mourning Dove	White Swan
Belted Kingfisher	Common Yellowthroat	Northern Oriole	W. Breasted Nuthatch
Black Duck	Downy Woodpecker	Red-Breasted Nuthatch	Wild Turkey
B. Capped Chickadee	Eastern Kingbird	Red-Tailed Hawk	Wood Duck
Blue Heron	Eastern Meadowlark	Redwinged Blackbird	Yellow Warbler
Blue Jay	Eastern Phoebe	Ring-Necked Pheasant	
Bobolink	Field Sparrow	Rock Dove	
Broad-Winged Hawk	G. Crested Flycatcher	R. Winged Swallow	
Brown Thrasher	Grey Catbird	Rufous-Sided Towhee	
Brown-Headed Cowbird	Hairy Woodpecker	Scarlet Tanager	
Canadian Goose	House Sparrow	Song Sparrow	
Mammals			
Beaver	Field Mouse	Otter	Squirrel
Chipmunk	Fisher	Rabbit	Vole
Coyote	Fox	Raccoon	Weasel
Deer	Mink	Rat	Woodchuck
Deermouse	Mole	Shrew	
Domestic: Dog & Cat	Muskrat	Skunk	
Fish			
American Eel	Common Carp	Largemouth Bass	White Sucker
Black Crappie	Common Shiner	Pumpkinseed	Yellow Bullhead
Bluegill	Creek Chubsucker	Redbreast Sunfish	Yellow Perch
Brook Trout	Fallfish	Redfin Pickerel	
Brown Bullhead	Golden Shiner	Tessellated Darter	
Chain Pickerel	Goldfish	White Perch	
Amphibians			
Bullfrog	Green Frog	N. T. Lined Salamander	Red-Backed Salamander
Eastern American Toad	Grey Tree Frog	Northern Leopard Frog	Red-Spotted Newt
Four-Toed Salamander	Marbled Salamander	Northern Spring Peeper	Spotted Salamander
Fowler's Toad	N. Dusky Salamander	Pickerel Frog	Wood Frog
Reptiles			
E. Smooth Green Snake	Eastern Milk Snake	Northern Brown Snake	Snapping Turtle
Eastern Box Turtle	Eastern Ribbon Snake	N. Ringneck Snake	Spotted Turtle
Eastern Garter Snake	N. Red-Bellied Snake	Northern Water Snake	Stinkpot
Eastern Hognose Snake	Northern Black Racer	Painted Turtle	

Source: Massachusetts Natural Heritage and Endangered Species Program

Green herons, red-tailed hawks, ruffed grouse, screech owl, eastern wood peewee, cedar waxwing and purple finch were all once common in Tewksbury, but the number of observations of these species has dramatically declined. Table 6.4.2 lists animal species considered threatened, endangered or of special concern according to the Massachusetts Natural Heritage and Endangered Species Program.

Table 6.4.2. Wildlife Species Considered Threatened, Endangered or of Special Concern

Taxonomic Group	Scientific Name	Common Name	Mass. Endangered Species Act Status	Most Recent Observation
Amphibian	Ambystoma laterale	Blue-Spotted Salamander	Special Concern	2005
Butterfly/Moth	Apodrepanulatrix liberaria	NJ Tea Inchworm	Endangered	2004
Mussel	Alasmidonta undulata	Triangle Floater	Special Concern	2003
Reptile	Emydoidea blandingii	Blanding's Turtle	Threatened	1993
Reptile	Glyptemys insculpta	Wood Turtle	Special Concern	1992
Butterfly/Moth	Callophrys irus	Frosted Elfin	Special Concern	1986
Bird	Cistothorus platenis	Sedge Wren	Endangered	1978
Fish	Notropis bifrenatus	Bridle Shiner	Special Concern	1962

Source: Massachusetts Natural Heritage and Endangered Species Program

Table 6.4.3. Plant Species Considered Threatened, Endangered, or of Special Concern

Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
Vascular Plant	Panicum philadelphicum	Philadelphia Panic-grass	Special Concern	1990
Vascular Plant	Carex oligosperma	Few-Fruited Sedge	Endangered	1911
Vascular Plant	Utricularia resupinata	Resupinate Bladderwort	Threatened	1900
Vascular Plant	Liatris scariosa var. novaeangliae	New England Blazing Star	Special Concern	1899
Vascular Plant	Scheuchzeria palustris	Pod-Grass	Endangered	1853
Vascular Plant	Potamogeton confervoides	Algae-Like Pondweed	Threatened	Unknown

Source: Massachusetts Natural Heritage and Endangered Species Program

