



Inventory & Assessment Report

Town of Groton

Master Plan 2024

Revised
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Submitted to:
Planning Board
Town of Groton
173 Main Street
Groton, MA 01450

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1. Plan Introduction

[Reserved]

2. Demographic Profile

2.1. Introduction

Demographic data can help provide a basis for understanding communities as they are now and what the future may hold. Population, household, social, and economic trends can offer powerful insights about change over time and uncover a community's needs or strengths to guide planning, policy development, and decision-making. The following section provides a demographic profile of the Town of Groton.

2.2. Current Profile

Population

According to the 2020 Census, Groton's official population is 11,315 people. The town has experienced consistent growth in the past several decades, much in line with neighboring towns of similar size, as shown in Figure 2.2.1. Since 2020, however, recent estimates indicate a slight decrease in Groton's population. The University of Massachusetts Amherst Donahue Institute (UMDI) publishes data from the Census Bureau's Population Division, which produces annual estimates of the population of states, counties, cities, and towns. Estimates released in 2022 indicate that Groton's population had declined to 11,162 residents.¹ More recent estimates from Environics Analytics' Spotlight report (a proprietary market data source) place Groton's 2023 population at 11,226 residents in 2023. These small fluctuations are probably not indicative of any particular demographic shifts in Groton. They may simply suggest that Groton's population growth is slowing down, similar to trends in several neighboring towns (excluding Westford).

¹ University of Massachusetts Donohue Institute (UMDI), citing the U.S. Census Bureau Population Division, Subcounty Resident Population Estimates: April 1, 2020, to July 1, 2022 (SUB-EST2022). U.S. Census Bureau, Population Division. May 18, 2023.

Figure 2.2.1 Population Trends by Community

Source: U.S. Decennial Census, 1950-2020; UMass Donahue Institute, 2022; Environics Analytics, Spotlight Report, 2023

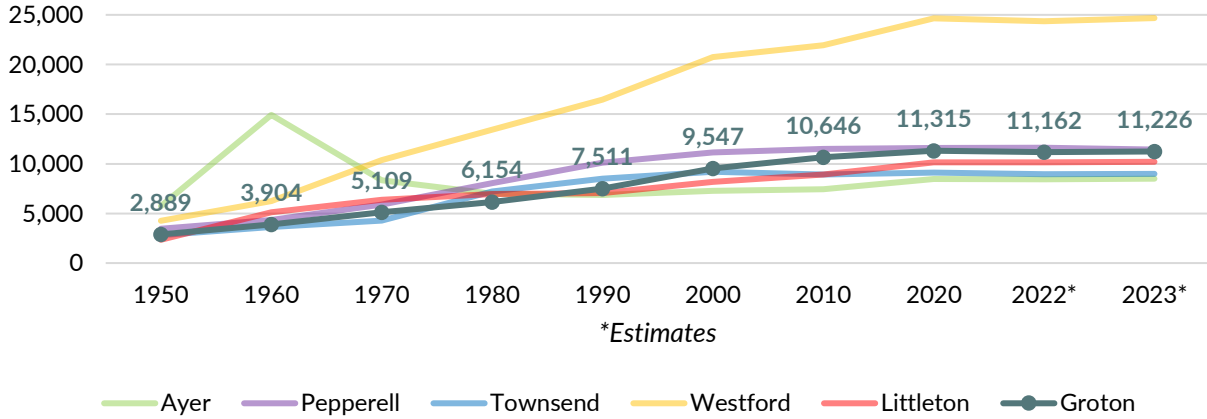
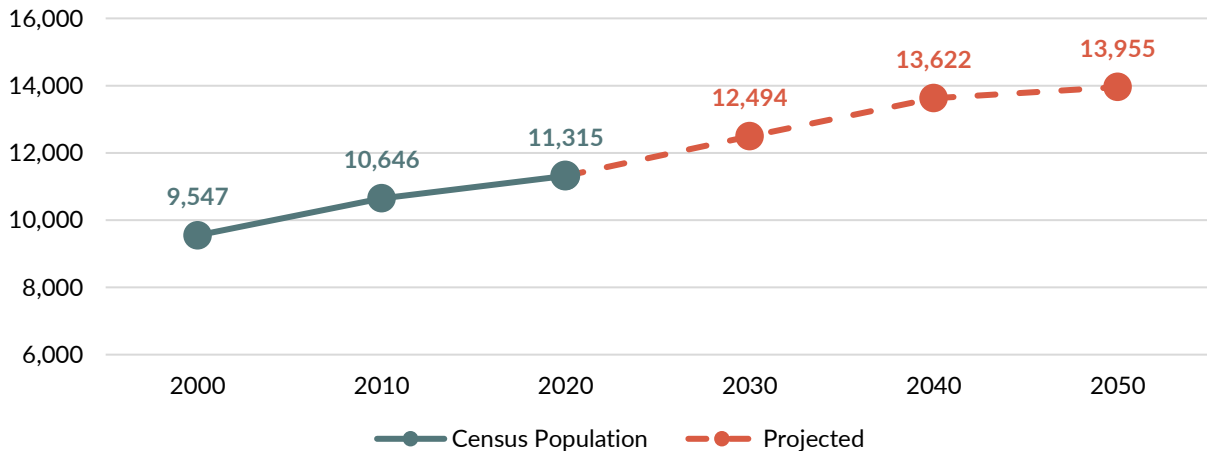


Figure 2.2.2 shows that UMDI projects continued population growth up until 2050 to 13,955 residents, an addition of 2,640 residents from Census 2020. UMDI’s calculations factor in birth rate, mortality rate, and migration rate in their projection model. Furthermore, the model assumes that recent trends in each demographic component of population change will continue. It does not make any predictions for changes in directionality or degrees of these trends, which would invite even more assumptions and uncertainty as they are each subject to many factors and are highly unpredictable. With that said, population projections are just that – predictions – but it is important to consider them generally, and it is sensible to plan for anticipated growth.

Figure 2.2.2 Groton Population - Historic and Projected

Source: U.S. Decennial Census, 2000-2020; UMass Donahue Institute, Population Projections, 2030-2050.



Age & Sex

In 2020, Groton’s population is almost evenly split in age, with just over one-half of the population under 45 years of age and the other half 45 years of age and older, as shown in Figure 2.2.3. The age group of 45 to 64 years is the largest, at 33 percent of the town, followed by children under 18 years. Ages 45 to 64 are considered the prime professional years of a working adult when they reach the summit of their career after years of professional experience and, therefore, hold the highest earning potential before reaching retirement age. Young adults 18 to 24 years account for the lowest share of the population, at only 9 percent. The small size of this age cohort probably indicates that many coming-of-age young adults leave Groton for college elsewhere. The most notable changes in age groups between 2010 and 2020 are the decline in children, from 29 percent to 23 percent, and the rise in seniors, from 10 percent to 15 percent of the total population.

Figure 2.2.3 Change in Age Groups

Source: U.S. Decennial Census, 2020

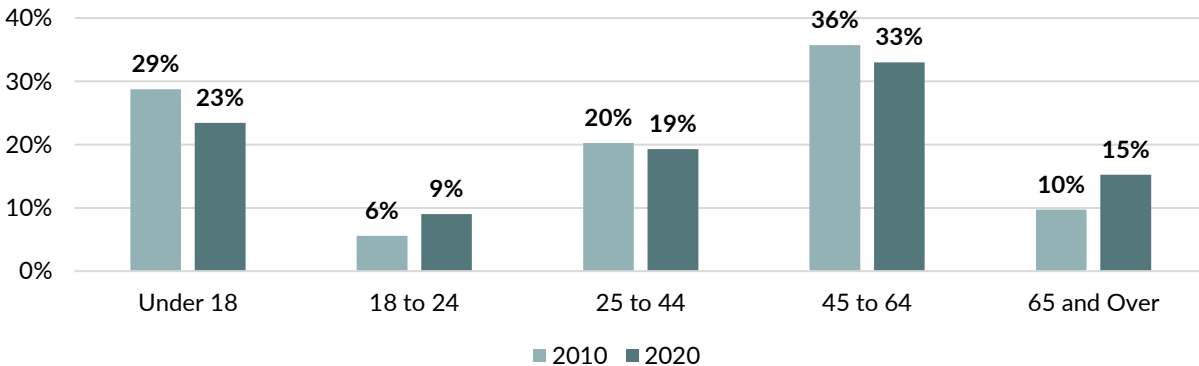
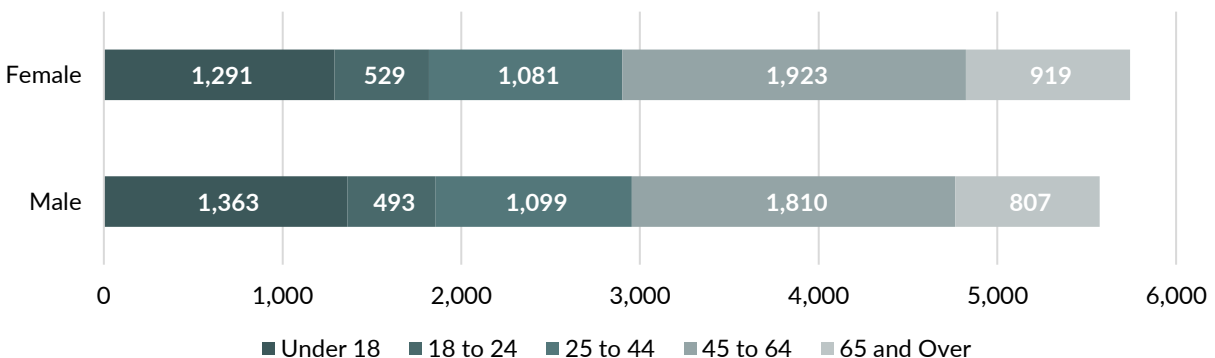


Figure 2.2.4 examines the division of age cohorts among men and women and illustrates a relatively even distribution. However, for those 45 years of age and over, there are 225 more women than men, representing the largest difference between the two sexes related to age (as is common in most towns).

Figure 2.2.4 Age Populations by Sex

Source: U.S. Decennial Census, 2020

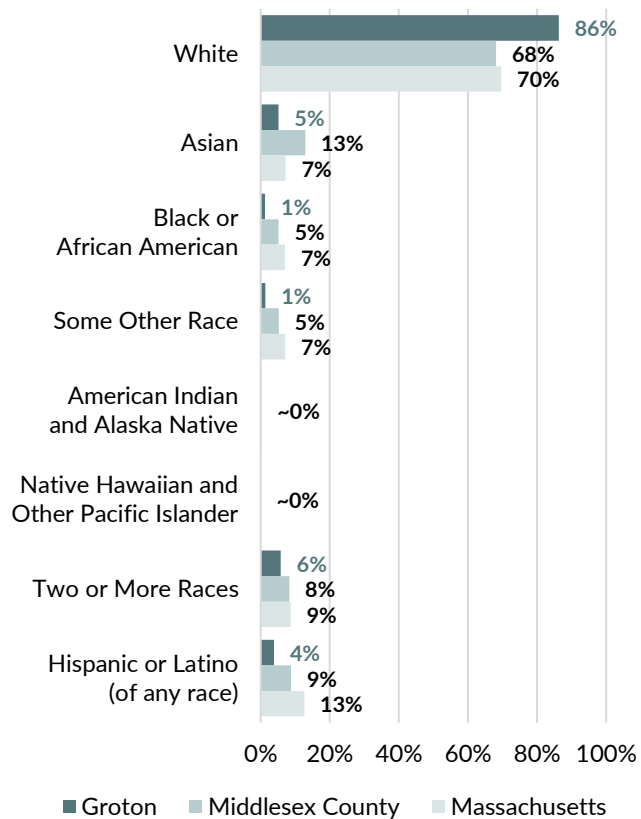


Race & Ethnicity

The racial composition of Groton is predominantly White, accounting for 86 percent of the town’s population, as shown in Figure 2.2.5. The second largest racial group is Asian at approximately 5 percent, followed by Black or African American at 1 percent of the population when considering only single races. Groton has a comparatively large population of people reporting mixed races and ethnicities, with 6 percent of the population being two or more races and 4 percent Hispanic or Latino of any race. Compared to the county and state, Groton is less racially diverse and has fewer percentages of all minority categories except for two: American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Overall, Groton’s minority groups make up a relatively small portion of the town’s population.

Figure 2.2.5 Race and Ethnicity

Source: U.S. Decennial Census, 2020



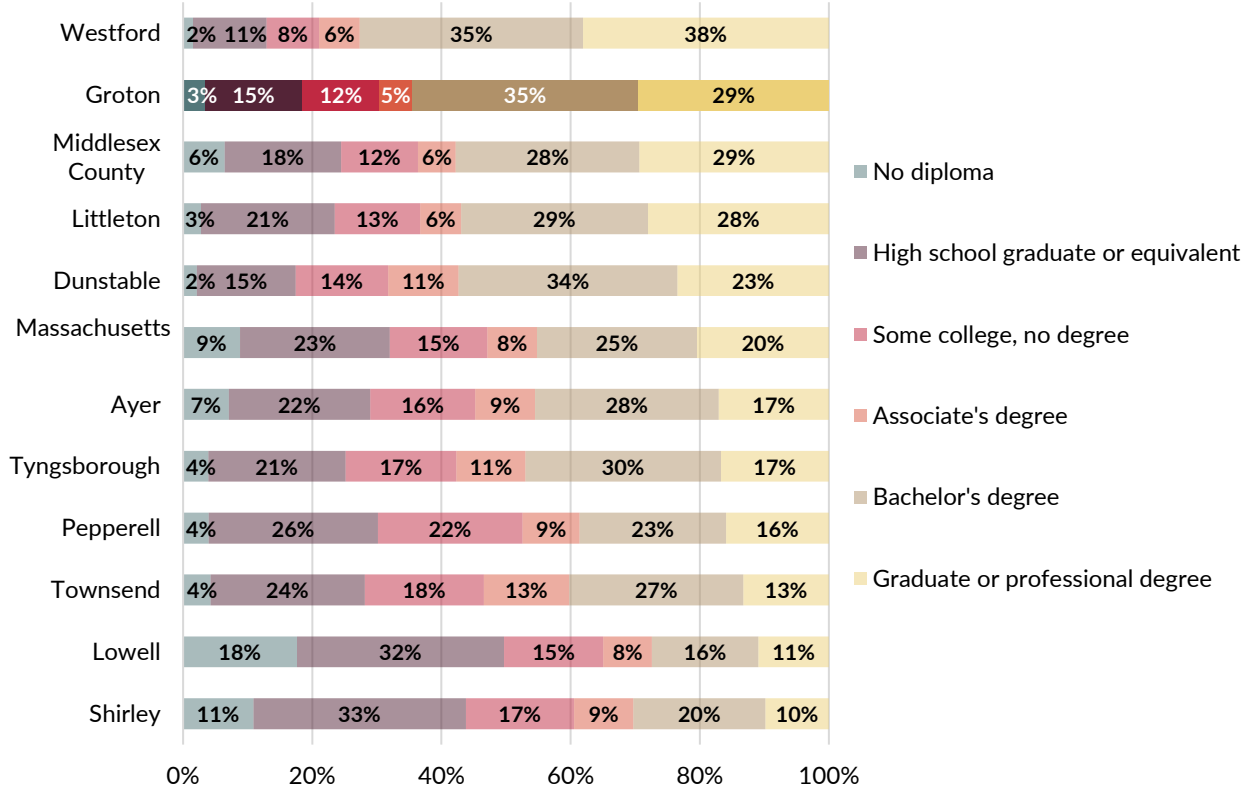
Education

Groton’s population is well-educated compared to adjacent communities and the rest of Middlesex County as a whole. As shown in Figure 2.2.6, over half of Groton residents 25 or older hold a bachelor’s degree or higher at 64 percent, more than the county at 57 percent and Massachusetts at 45 percent. Furthermore, Groton has a larger percentage of residents with a Bachelor’s degree at 35 percent compared to 28 percent in Middlesex County, representing the most significant difference in a degree category between the two geographies in terms of percentage points. However, the share of residents with some college education and a graduate degree or higher are essentially equal.

In the immediate geographic area, the distinction is even greater. Groton has higher shares of both bachelor’s and graduate or professional degree-holding residents than every other adjacent community except Westford. Only Westford has a larger share of graduate-educated residents.

Figure 2.2.6 Educational Attainment of Residents Age 25+

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B15003

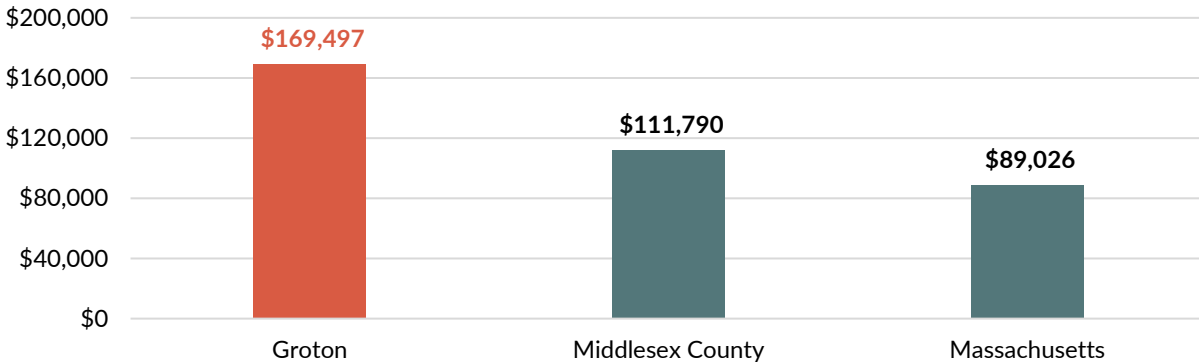


Income

The American Community Survey (2017-2021) places Groton’s median household income at \$169,497. Figure 2.2.7 compares the median household income between Groton, Middlesex County, and the state. It shows that Groton households have significantly higher incomes compared to households throughout Middlesex County and Massachusetts as a whole, by 51.6 percent and 90.4 percent, respectively.

Figure 2.2.7 Median Household Income

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B19013



Employment

One of the most commonly used measures for economic performance is employment. Increasing employment indicates industries that are growing, whether through the expansion of existing businesses or the opening of new ones. Also, reasonably reliable historical data is readily available and can be used to project employment trends from annual data. The sources used are the U.S. Census Bureau American Community Survey (ACS), U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Economic Information System* (REIS), and the ES202 reports from the Massachusetts Department of Economic Research.² The ES202 data does not include self-employment, so they are adjusted by factors derived from REIS county data, which does include self-employed people.

There are two distinct measures when analyzing employment: the number of employed residents of an area of study and the number of jobs in a given place. The former refers to how many residents of that community are currently employed, and their work can be either in or out of town, including self-employment. The latter refers to how many jobs are based or located in that community, and the employee might live either in town or elsewhere and commute to their workplace.

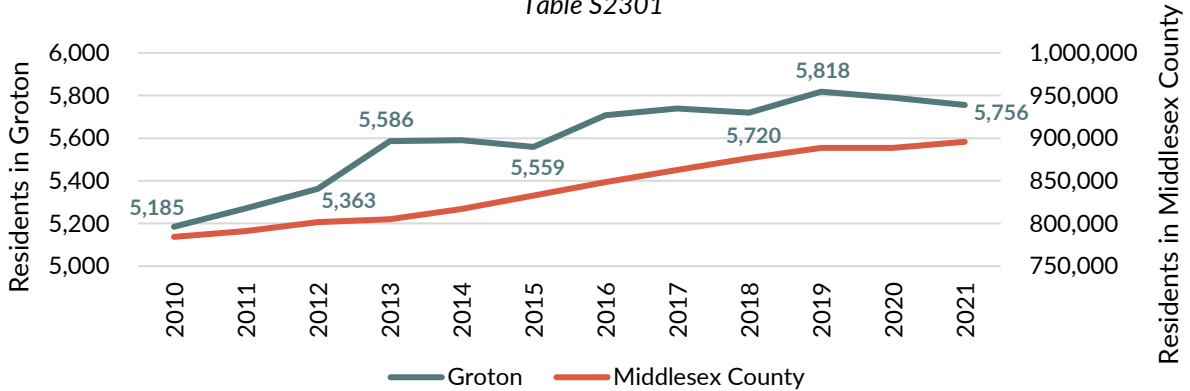
Employed Residents

According to 2021 census estimates, 5,756 Groton residents are employed, representing 66.7 percent of the town's population aged 16 years and older, as shown in Figure 2.2.8. With a 70.5 percent labor force participation rate, Groton's unemployment rate is 5.3 percent, which is notably higher than the county's unemployment rate of only 2.9 percent.

² These include estimated full and part time jobs with wages and salaries plus self-employment. REIS data are not available below the county level and the Massachusetts Department of Economic Research ES202 data – the only publicly available source of jobs at the community level — do not include jobs held by self-employed persons. To estimate total jobs at the community level, we compared jobs overall and by sector at the county level and, using ratios between the more inclusive REIS data and ES202 county data, apply those ratios to ES202- community level employment. We recognize this involves simplified assumptions, but it is a technique that FXM has used on many projects including federal EISs and other peer reviewed analyses. Another feature of REIS is that it is the only available source of employment based on actual tax filings with the IRS and is generally considered by economic professionals to be the most reliable data source at the county level.

Figure 2.2.8 Employment of Residents 16+

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table S2301



These estimates include the number of residents who are self-employed and work from home. The Town issues home occupation permits, which allow Groton residents to conduct business within their own dwellings. This flexibility in workspaces supports the town’s rural charm as dedicated commercial space is limited.³ The town issued 26, 39, and 24 home occupation permits in 2021, 2022, and 2023, respectively.⁴ Furthermore, an estimated 16.7 percent of households receive self-employment income, who may or may not conduct business in their own home.⁵

Jobs in Groton

Figure 2.2.9 shows total employment trends in Groton and Middlesex County. In both, employment is projected to increase over the next five years. The reliability of the county projection is higher than that for Groton, but both indicate a strong prospect for overall employment growth. As of 2021, there are 3,650 jobs in Groton, down from the town’s peak of 4,040 jobs in 2018. The number of jobs in Groton is significantly less than the estimated 5,756 employed residents in Groton. This indicates that many town residents commute to work outside of Groton.

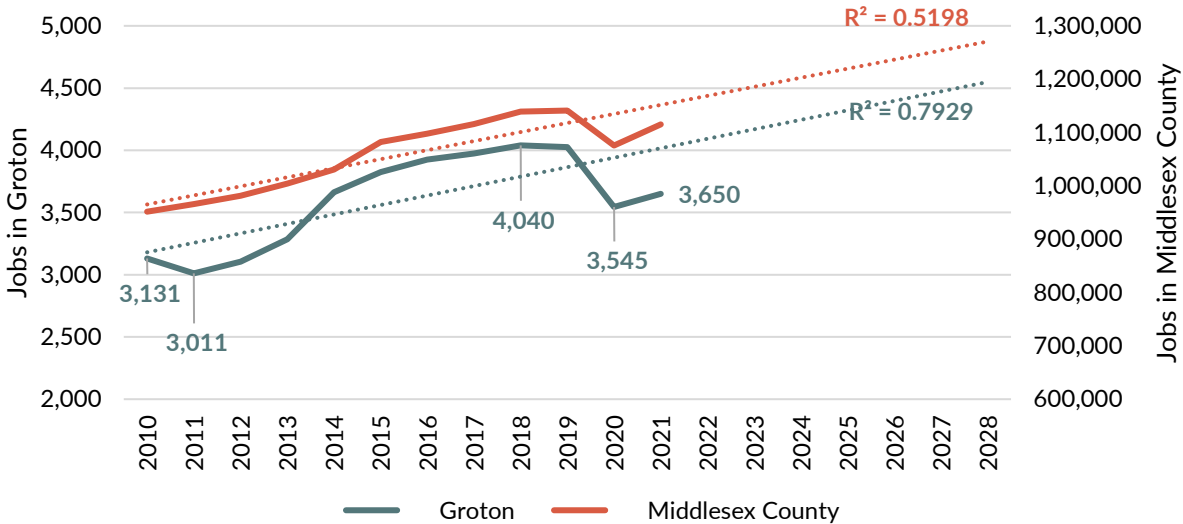
³ Town of Groton, Business Certificates, accessed May 2024, <https://www.grotonma.gov/business-certificates/>.

⁴ Town of Groton, 2023 Annual Report.

⁵ U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021, Table B19053.

Figure 2.2.9 Employment Trends in Groton and Middlesex County

Source: FXM Associates; U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS); Massachusetts Department of Economic Research, ES202 Report



When using historical data to produce future projections, such as the least squares linear regression technique used in Fig. 2.2.9, it is important to consider the reliability of a given dataset. A statistic commonly used for this purpose is called the R^2 calculation and is presented alongside each projection given below. The closer the R^2 value is to 1, the better the predictive value of past performance. A limiting factor on 2026 projections is the influence of the 2020-2021 pandemic, which is still being felt in some sectors and may also affect the R^2 values for employment projections. For example, a sector might have been showing strong growth since 2010, but the volatility introduced by the pandemic-related job losses could pull down the sector’s projected growth and lower the R^2 value of the projection.⁶

Poverty

The overall poverty rate in Groton, 3.8 percent, is significantly lower than that of Middlesex County and Massachusetts, as shown in Table 2.2.1. The most notable point is the very low poverty rate for children under 18. However, Groton’s elderly population experiences very high rates of poverty relative to other age groups and is almost on par with the state. In Groton, 9.4 percent of residents 65 years and older have incomes at or below the poverty rate. According to further ACS estimates shown in Figure 2.2.10, Groton also has a comparatively low number of households (3.8 percent) that receive cash public assistance or SNAP benefits, compared to the county at 8.5 percent and lower than most adjacent communities. Still, many residents subscribe to the Loaves & Fishes Food Pantry in the nearby town of Devens.

⁶ Note that where only a small number of jobs exist in Groton, the predictive value of history may be weak across all sectors.

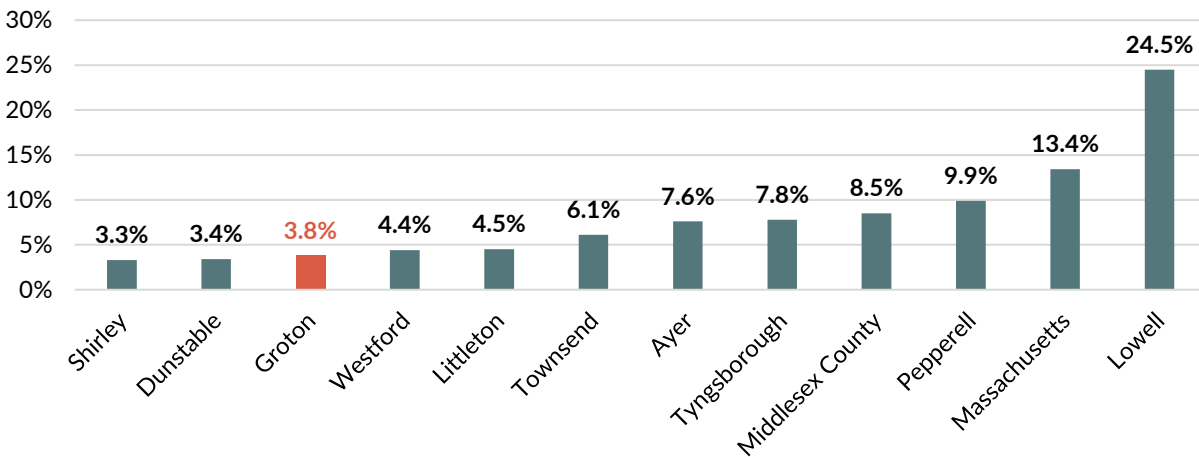
Table 2.2.1 Residents Below Poverty Level

	Groton		Middlesex County		Massachusetts	
	#	%	#	%	#	%
Population for whom poverty status is determined	424	3.8%	116,510	7.4%	668,780	9.9%
Age						
Under 18	14	0.5%	25,346	7.9%	165,364	12.1%
18 to 64	251	3.9%	72,715	7.2%	397,278	9.3%
65 and over	159	9.4%	18,449	7.7%	106,138	9.5%
Families	45	1.6%	18,669	4.7%	122,087	7.1%
Educational Attainment (25 Years and Over)						
No diploma	87	35.4%	13,147	18.5%	98,448	23.5%
High school graduate (includes equivalency)	107	10.1%	22,619	11.3%	133,492	12.0%
Some college or Associate's degree	72	5.7%	15,113	7.6%	95,594	8.7%
Bachelor's Degree or Higher	77	1.6%	23,117	3.5%	87,474	4.0%

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021, Tables S1701 and S1702

Figure 2.2.10 Households Receiving Cash Public Assistance or Food Stamps/SNAP by Community

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021, Table B19058



Educational attainment is a notable factor in poverty rates, and the higher education residents achieve, the less likely they are to face poverty. In Groton, poverty affects 35.4 percent of residents 25 years and over without a high school diploma, compared to just 10.1 percent of residents who graduated from high school, 5.7 percent of residents with some college or an Associate’s degree, and only 1.6 percent of residents with a Bachelor’s degree or higher. This disparity is wider in Groton than in Middlesex County overall or the state, where in the latter two, there are lower percentages of residents with no diploma and higher percentages of residents with college education facing poverty.

Disability

An estimated 6.5 percent of Groton’s total population has a disability, but the percentage is much higher among people 65 and over: an estimated 22.9 percent.⁷ The types of disabilities include hearing, vision, cognitive, ambulatory, self-care, and independent living difficulties. Furthermore, the CDC reported an increasing number of children diagnosed with developmental disabilities, with approximately one out of six children aged 3-17 diagnosed with a developmental disability in a 2019 study, and one out of thirty-six children eight years of age identified with autism spectrum disorder (ASD) in a 2023 study.⁸

As the numbers of both children with developmental disabilities and Groton’s elderly population are expected to increase in the next decade, they will likely raise demand for affordable and age-friendly housing equipped with accessibility features. The Seven Hills Academy at Groton is a special education day program for children and young adults with medical and developmental disabilities. Located in the Seven Hills Pediatric Center and open 251 days a year, the Academy fosters a highly supportive learning environment for students with unique learning and physical needs who struggle in a traditional classroom.⁹

Veteran Status

As shown in Table 2.2.2, an estimated 284 veterans live in Groton, or 3.4 percent of the estimated 8,258 civilian population 18 years and older. Most veterans, nearly 75 percent, are 65 years of age and older. Nearly half served in the Vietnam War, 48.2 percent, followed by a quarter of veterans serving in the Gulf Wars. Approximately 20 percent have a disability either related to or unrelated to their service.¹⁰

Table 2.2.2 Veteran Characteristics in Groton

Age	#	%	Period of Service	#	%
18 to 34 years	0	0.0%	Middle East Post-9/11	20	7.0%
35 to 54 years	51	18.0%	Middle East Pre-9/11	51	18.0%
55 to 64 years	21	7.4%	Vietnam War Era	137	48.2%
65 to 74 years	99	34.9%	Korean War Era	20	7.0%
75 years and over	113	39.8%	World War II Era	21	7.4%

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021, Table S2101

⁷ U.S. Census Bureau. American Community Survey Five-Year Estimates, 2021. Table S1810.

⁸ CDC. “Data & Statistics on Autism Spectrum Disorder.” Accessed March 2024, <https://www.cdc.gov/ncbddd/autism/data.html>.

⁹ Seven Hills. “Seven Hills Academy at Groton.” Accessed March 2024. <https://www.sevenhills.org/programs/seven-hills-academy-at-groton>.

¹⁰ U.S. Census Bureau. American Community Survey Five-Year Estimates, 2021. Table S2101.

3. Inventory & Assessment

3.1. Land Use

Introduction

Land use is an integral component of the long-range planning process because the physical arrangement of a municipality has a significant influence on the socioeconomic and environmental features of the community. Assessment of past and present land use can help to classify areas most appropriate or inappropriate for development or conservation, as well as identify opportunities to align local land use policies with what the community envisions for its future.

By engaging in deliberate and strategic land use planning, Groton can craft a sustainable vision for its community.

Groton boasts expansive open spaces adorned with natural resources, complemented by numerous historic sites and a charming village center. The prevailing land use patterns in the Town narrate its rich agricultural history and quintessential New England ambiance. Both residents and visitors appreciate the Town's idyllic surroundings and abundant natural beauty.

The trajectory of Groton's development involves a continuous evolution, embracing new developments and the repurposing of existing private, public, or institutional properties. When growth is strategically planned, it can harmoniously coexist with the preservation of the Town's significant landscapes, natural resources, and culture. This section delves into an analysis of the current residential, commercial, and institutional developments in Groton, exploring how existing land use regulations shape the potential for future progress.

Existing Land Use Patterns

Groton is situated in Middlesex County, approximately 35 miles northwest of Boston. It is centrally located within the Commonwealth of Massachusetts, providing easy access to major roadways such as Route 495, Route 119, and Route 225, among others. Groton encompasses 32.5 square miles, making it the largest town by area in Middlesex County. The town shares borders with several communities, including Ayer, Littleton, Westford, Tyngsborough, Dunstable, Pepperell, Townsend, and Shirley. Groton's proximity to major transportation routes has contributed to its development as a suburban community with a blend of historic charm and modern conveniences. The town's location within Massachusetts positions it as part of the Greater Boston metropolitan area, allowing residents to enjoy both the tranquility of a rural setting and the accessibility of more urban amenities. (See Map 3.1.1 for a general reference map of Groton in relation to surrounding communities within the Commonwealth.)

Groton occupies land that was home to the Nipmuc and Nashaway Indigenous nations prior to European settlement that began in the seventeenth century.¹¹ Surrounded by bucolic landscapes, Groton is known for its natural beauty and is characterized by rolling hills, woodlands, farmland, and water bodies. The Nashua and Squannacook Rivers add to the scenic appeal, providing distinguishable boundaries in the center of town and at its westerly border, respectively. While Groton retains a rural character, its strategic location has made it a desirable residential area for those seeking a suburban lifestyle within reasonable commuting distance of Boston. The town's bordering communities contribute to the regional tapestry, with each town having its own unique character and history. Groton's blend of natural landscapes, historic features, and proximity to nearby urban centers make it a distinctive and sought-after community in the Commonwealth.

Groton is characterized by diverse natural features, including drumlins and kettle ponds, that contribute to its unique landscape. These natural features have played a significant role in shaping the town's development and influencing patterns of settlement and land use. Groton's land patterns are a result of the interaction between its natural environment and human activities over time, reflecting a balance between development and conservation.

As can be seen in Map 3.1.2 Unofficial Zoning Map, the majority of the Town is zoned for Residential/Agricultural use. Commercial and industrial uses fall within one of the following zoning districts: Industrial, General Business, Neighborhood Business, Village Center Business, or Residential/Business. These commercial and industrial use districts are clustered in West Groton, Groton Center, or the Four Corners area, with a few exceptions.

Table 3.1.1 Land Use by Area (2021 Tax Parcel Data*)

Land Use Category	Acres	% of Total Area
Agriculture	942.84	4.41%
Commercial/Industrial	422.12	1.97%
Institutional/Nonprofit (Religious, Private Schools, & Other Nonprofit)	2,482.69	11.61%
Multifamily Residential	302.17	1.41%
Open Space (Conservation, Recreation, & Public Land for Recreation)	5414.3	25.31%
Public Land (Federal, State, & Municipal Land/Structures)	2,242.50	10.48%
Single-Family Residential**	7,306.65	34.16%
Utility	343.19	1.60%
Vacant Land (Developable, Potentially Developable, & Undevelopable)	1,932.42	9.03%
Total Acres	21,388.87	100.00%

Source: MassGIS & Groton Assessor Database (2021)

*Tax parcel data does not include areas like roads and major water bodies, so this number is smaller than Groton's total land area.

** Includes parcels with multiple single-family dwellings.

¹¹ Freedom's Way National Heritage Area, Accessed November 2023. <https://freedomsway.org/communities/groton/>

Table 3.1.1 Land Use by Area depicts Groton’s land area by primary use, according to tax parcel-level data from the Town Assessor Database (See Map 3.1.3 Land Use for a visualization of the same data). Parcels associated with single-family homes comprise the largest category, totaling approximately 7,306 acres, more than thirty-four percent of Groton’s total land area.

Residential Development¹²

A significant portion of Groton's land is designated for residential use. This includes primarily single-family homes, with few apartments and condominiums. Many historic farmhouses and country estates establish the fabric of the suburban residential land use patterns across the community. Though much of Groton’s single-family housing consists of larger footprint homes situated on plots of land two-acres or larger, there is a clustering of smaller homes and lot sizes in the Lost Lake area, which originated as a seasonal summer enclave that has transitioned to a year-round residential neighborhood.

Groton’s most consistently recurring development trend has been a steady rate of single-family housing development, with home renovations and home occupation permits being the most common permit application types in recent years.¹³ Map 3.1.4 Age of Housing depicts a scattering of housing developments in recent decades, with concentration pockets of more recent developments occurring along major roadway corridors in proximity to available infrastructure.)

Groton has proactively worked to expand housing opportunities for low- and moderate-income households in recent decades, proving the capacity of local government ability to overcome barriers to housing production through the utilization of development incentive programs, updated zoning bylaws, and strategic allocation of the Community Preservation Act (CPA) funding. The community of Groton has emphatically expressed its commitment to bolstering and broadening low- and moderate-income housing opportunities within the Town through active participation in the community engagement initiatives outlined in this Master Plan. Furthermore, the Town has achieved significant strides in this endeavor, which is evident through the recent approval of multiple affordable housing development proposals, thereby propelling Groton into compliance with G.L. c. 40B by substantially augmenting its Subsidized Housing Inventory (SHI).



**Graphic 3.1.1 Black Angus Cattle at Gibbet Hill,
Source: Gibbet Hill Farm**

Open Space & Conservation¹⁴

Groton places a strong emphasis on preserving its natural landscapes and open spaces. Open space and conservation areas, parks, and recreational facilities make up a substantial portion of the town's landscape. Groton’s longstanding history of farming and agriculture remains a fundamental part of its land use

¹² For more information on housing and residential development in Groton, see Section 3.5 Housing and Residential Development.

¹³ Town of Groton Annual Town Report, 2022 & 2021, Accessed November 2023.

<https://www.grotonma.gov/community/about/town-reports/>

¹⁴ For more information on Open Space and Conservation land in Groton, see Section 3.3 Open Space and Recreation.

characteristics. Farms and farmlands contribute to the town's rural charm, with local produce and agritourism playing a role in the community. One of the town's most recognizable features that have become synonymous with its agrarian character are the herds of Black Angus cattle that can be seen peppering Gibbet Hill, which has been bred in Groton since the post-war era.¹⁵

Nonprofit, Educational, & Institutional Uses¹⁶

Groton is home to an assortment of nonprofit, educational, and institutional developments that contribute to the unique character and functionality of the community.

Many of Groton's nonprofit organizations are dedicated to land preservation or conservation efforts, including the Groton Conservation Trust, the Groton Land Foundation, the Massachusetts Audubon Society, and the New England Forestry Foundation. These organizations collectively own over three thousand acres of dedicated open space.¹⁷

Another nonprofit organization involved in Groton's day-to-day activity is the Friends of Prescott, Inc., which manages the Prescott School Community Center in a former school building owned by the town in the heart of Groton Center. The Center relies on donations, subleasing parts of the building, and rentals for events.

Groton hosts two major private educational institutions that collectively own hundreds of acres commonly associated with educational and recreational uses:

- **The Groton School:** Founded in 1884, the Groton School is a private boarding and day school for grades eight through twelve that provides college-preparatory education for a student body of approximately 380 students.¹⁸ The campus encompasses 480 acres located in the central-southern region of town adjacent to Route 111. This school is highly selective and was attended by President Franklin D. Roosevelt.
- **Lawrence Academy:** Established in 1793, Lawrence Academy is a private boarding and day school that provides approximately four hundred students in grades nine through twelve with a college-preparatory curriculum. The academy is situated on a 140-acre campus in the heart of Groton Center.¹⁹

There are several day-care centers located in Groton, including the Children's Center at Groton, Country Kids Child Development Center, and Back to Nature: Learning Space. The educational facilities in Groton also include multiple branches of the Groton-Dunstable Regional School District.

¹⁵ Gibbet Hill Farm, Accessed December 2023. <https://www.gibbethillfarm.com/>

¹⁶ Details on the regional school district can be located in Section 3.7 Community Facilities and Services.

¹⁷ Community Opportunities Group, *Groton Master Plan 2011* (September 2011), 70.

¹⁸ Groton School, Accessed November 2023. <https://www.groton.org/>

¹⁹ Lawrence Academy, Accessed November 2023. <https://www.lacademy.edu/>

Another prominent institution deeply ingrained within the fabric of the Groton community is the Groton Hill Music Center, serving as a hub for musical education, performance, and outreach endeavors. Situated amidst expansive lands, including those perpetually designated for agricultural use, the center not only enriches the cultural landscape but also stands as a testament to the town's commitment to both artistic and agricultural preservation.

Commercial Development²⁰

While predominantly residential, Groton has limited areas for commercial and retail business, mainly centered around Groton Center, West Groton, Four Corners, Mill Run Plaza, and South Groton. These establishments include local businesses, shops, and restaurants, contributing to the town's economic activity.

Groton Center



**Graphic 3.1.2 The Groton Inn,
Photo by author**

Groton Center, known as “Town Center,” is a hub of commercial, social, and municipal activity. This area of town is home to a variety of small businesses, shops, restaurants, municipal buildings (including Town Hall and the public library), and the famous Groton Inn. The Groton Inn, originally established circa 1678, was long considered the oldest continuously operating inn in the United States in the modern age.²¹ The original structure burned down in 2011 and was rebuilt in 2018 in a similar architectural style as the original historic structure. The structure now houses the Forge and Vine restaurant as well as a 60-room inn.

West Groton

The area of West Groton developed as an industrial mill village due to the presence of the Squannacook River. West Groton has its own fire and water department stations, as well as a post office. The Hollingsworth & Vose company has been in operation in West Groton since it originated as a paper mill in 1852, continuing to maintain a presence with manufacturing uses, as well as research and development space.²² West Groton is also the longstanding location of Blood Farm, a butchery and meat processing business that has been family-run for seven generations, beginning in 1847.²³ Rivercourt Residences, a senior housing facility in a renovated mill building, provides 78 units for independent and assisted living.²⁴

²⁰ For more information on Commercial Development in Groton, see Section 3.6 Economic Development.

²¹ Bair, Diane, & Wright, Pamela. “The Groton Inn, former oldest inn in America, gets a new life.” *The Boston Globe*. December 5, 2018.

²² Hollingsworth & Vose, Company History, Accessed December 2023. <https://www.hollingsworth-vose.com/company/history/>

²³ Blood Farm, About Us, Accessed January 2024. <https://bloodfarms.com/about-us>

²⁴ RiverCourt Residences, Accessed March 2024. <https://www.rivercourtresidences.com/>

Four Corners

The Four Corners area of Groton contains a concentration of commercial land abutting a residential zone. Located at the intersection of Routes 119 and 225, three corners have seen the recent development of medical offices, retail establishments, and office space. The remaining corner to the southeast, currently zoned for residential use, is considered vacant land (the house on it formerly housed three tenants). It is owned by a developer who has proposed various commercial activities in recent years, among them a pickleball court and a big box store, neither of which received town approval for the zoning changes needed to facilitate such development. As of May 2024, a special permit application for a 24-unit multi-family, age-restricted development is pending on the vacant residential corner. The addition of these units can potentially benefit the existing commercial properties nearby. Residents interviewed in this Master Plan engagement process voiced a need for improved planning for the types of uses the community wants to see at this location, indicating potential interest in smaller-scale residential or mixed-use.

Mill Run Plaza

Mill Run Plaza lies on Route 111, northwest of the town's village center. Like Four Corners, this plaza is commercially zoned and contains a number of businesses, including cafes, bakery, restaurants, offices, veterinary care, and medical services. Directly across the street, the Groton Farms multi-family rental community of 200 units across multiple buildings is undergoing development as of May 2024. This addition of the largest residential complex in Groton is expected to boost economic activity at Mill Run Plaza considerably. It would be wise to plan for the incoming influx of foot traffic at the plaza and take advantage of its potential for additional commercial growth.

South Groton

Southeast of the town center is a commercial plaza on Route 119/225 intersecting Lovers Lane. The local post office, pharmacy, butcher shop, bank, and more offices and medical services are located here. Additionally, this plaza is the location of the Groton Community School, which offers preschool to Kindergarten programs and childcare. Up the road on Lovers Lane is the Groton Country Club. This area serves as a major entry point into the town center for commuters once they pass through Four Corners. As such, this plaza has a large commercial impact on the town.

Trends

The pattern of residential settlement in Groton reflects the town's historical development over several centuries. Groton, like many New England towns, has a rich history that has influenced its settlement patterns. The following is an overview of the land use trends in Groton:

- **Colonial Settlement:** The Town of Groton, as it is known today, was settled in the seventeenth century during the European colonization of America. The town was incorporated in 1655. Colonial settlers established homesteads and farms in the area,

following the traditional New England town layout, with a town civic center and dispersed farmsteads.

- **Historic Village Center:** The town's historic village center, otherwise known as Groton Center, developed as the primary hub of residential and commercial activity. This central area features colonial-style homes, churches, and small businesses, and it became the social and administrative heart of the town.
- **Agricultural Expansion:** Groton's agricultural tradition continued through the eighteenth and nineteenth centuries. Many families established farms in the surrounding countryside, creating a pattern of dispersed farmsteads and open fields. This rural landscape was dotted with farmhouses, barns, and orchards, reflecting the agrarian way of life prevalent during this era.
- **Industrialization and Mill Villages:** In the nineteenth century, Groton saw the trends of industrialization, leading to the development of small mill villages along its waterways, namely in West Groton. These villages included residential housing for factory workers and their families. At one point in history, industries found in Groton included a soapstone quarry, a hop-growing industry, a brick factory, a sawmill, a grist mill, and a pewter mill.²⁵
- **Preservation of Historic Homes:** Over centuries, the town has maintained its historic character by preserving many colonial-era homes and buildings. This has contributed to the town's appeal and its recognition as a historic New England community. Many of these historic homes are still in use as residences or museums.
- **Suburban Expansion:** In the twentieth and twenty-first centuries, Groton has seen suburban expansion with the construction of modern residential developments and subdivisions. As the Boston metropolitan area has grown, Groton has experienced an influx of commuters looking for a suburban lifestyle while maintaining access to urban regions.
- **Conservation Efforts:** The town has strongly emphasized conservation and open space preservation, which has helped maintain its character and prevented excessive suburban sprawl. Thoughtful land use regulations and conservation efforts have also worked to protect Groton's rural and historic aspects.

Groton's historical pattern of residential settlement reflects the evolution of a New England town from its colonial roots through periods of agricultural dominance, limited industrialization, and modern suburban expansion. The town's commitment to preserving its historic and rural character, along with its efforts to control development through land use regulations, has shaped its unique residential landscape over the centuries.

²⁵ Town of Groton, *A Brief History of Groton*, Accessed November 2023. <https://www.grotonma.gov/community/about/groton-history/>.

Local Capacity, Policies, and Regulations

Local Capacity

There are a number of municipal boards, committees, and departments that play key roles in land use and planning in Groton. These groups include but are not limited to the following:

- **Planning Board:** Operating under G.L. c. 40A and c. 41, the Planning Board guides development through oversight of zoning bylaw changes and the adoption of a comprehensive plan, often referred to as a Master or Long-Range Plan. The Planning Board plays a central role in land use planning. It is responsible for reviewing and making recommendations on zoning bylaws, site plans, subdivisions, and other land development matters.
- **Conservation Commission:** Operating under G.L. c. 40 § 8C, the Conservation Commission is involved in the protection and preservation of the town's natural resources, wetlands, and open spaces.
- **Zoning Board of Appeals (ZBA):** The ZBA handles requests for variances or exceptions to the Town's zoning bylaws. They play a role in addressing specific cases where property owners seek relief from zoning regulations. In addition, the ZBA is responsible for issuing comprehensive permits for affordable housing under G.L. c. 40B, § 20-23.
- **Historic Districts Commission:** Groton's Historic Districts Commission is responsible for the protection and preservation of the Groton Center Historic District, formed in 1964 and subsequently enlarged.
- **Open Space and Recreation Committee (OSRC):** The OSRC is involved in planning for and promoting the use of open spaces and recreational areas within the town.

Policies & Regulations

Land use regulations play a crucial role in shaping the character and development of Groton. These regulations are put in place to manage growth, preserve natural resources, and maintain the town's unique identity. Some of the impacts of these regulations include:

- **Zoning Bylaws:** Groton's zoning bylaws designate specific areas for different land uses, such as residential, agricultural, and commercial. This helps control the location and type of development in the town.
- **Design Guidelines:** The Town has adopted Design Guidelines for Groton Center to protect the character of the area and guide future development through prescribed aesthetic and site design elements permitted in the district.

- **Conservation Restrictions:** Conservation restrictions and open space regulations protect the town's natural beauty and ecosystem. These restrictions limit development in sensitive areas, preserving green spaces and wildlife habitats.
- **Historic Preservation:** Groton's historic district regulations aim to protect and maintain the town's historic character, ensuring that historical buildings and landmarks are preserved.
- **Density and Growth Management Policy:** Dimensional standards and area regulations control the density of development, which helps maintain the rural and suburban character of Groton while preventing overdevelopment by managing growth.
- **Environmental Protection:** Regulations related to wetlands, septic disposal, and other environmental factors ensure responsible land use that minimizes negative impacts on the environment. Integration of Low-Impact Development (LID) principles in land use permitting rules and regulations also contributes to environmental protection efforts.

Overall, land use regulations in Groton are designed to strike a balance between preserving the town's natural beauty, historical significance, and rural character while also allowing for responsible growth and development in designated areas. These regulations are vital in shaping the town's land use characteristics and maintaining the quality of life for its residents.

3.2. Natural & Cultural Resource Areas

Introduction

Groton has maintained the character and feel of a quintessential New England village. A great deal of the town remains in its natural state, undeveloped due to laudable local conservation efforts. Natural constraints limiting land use and landowners choosing to keep lands for agricultural use contribute to the town's idyllic New England landscape.

Existing Conditions

*Geology, Topography, and Soils*²⁶

Groton landscape was formed 12,000 to 20,000 years ago as the Laurentide ice sheet receded from New England. The glaciers left behind various geological features, soils, and topography that have influenced Groton's land use patterns.

Groton's most unique geologic feature is the collection of drumlins that run from the Indian Hills north to the Chestnut Hills. The drumlins consist of good agricultural soils and separate Groton into two distinct topographical areas: a hilly eastern region and a flatter western region. Due to the moderate and steep slopes associated with the drumlins, the hillier areas of Groton tend to be unsuitable for development. Other glacial landforms, including kames, eskers, kettle hole ponds, and braided streams, also exist in the eastern portions of Groton. Relatively level open land with development potential lies west of Route 111, but development constraints exist here as well, notably the floodplains associated with the Nashua and Squannacook Rivers.

*Water Resources*²⁷

Watersheds and Surface Waters

Groton lies within two watersheds: the Nashua River Watershed, which covers about two-thirds of the town to the west, and the Merrimack River Basin, which covers the rest of the town to the east. Together, Groton's two rivers – the Nashua and Squannacook Rivers – along with several streams, ponds, and brooks, make up the inventory of surface water resources in Groton. The Town has eight Great Ponds, the largest of which is Lost Lake/Knops Pond. According to the Commonwealth's 2022 Integrated List of Waters, Lost Lake/Knops Pond is listed as a Category 4 water body due to impairment caused by metals and invasive species. Massapoag Pond is classified as a Category 5 water body due to metals, noxious aquatic plants, and invasive species. James Brook and segments of the Nashua and Squannacook Rivers that run through Groton are also listed as Category 5 water bodies.²⁸

²⁶ See Map 3.2.1A and 3.2.1B Geology and Soils.

²⁷ See Map 3.2.2 Water Resources.

²⁸ Massachusetts Department of Environmental Protection, Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle, May 2023.

Wetlands

Wetlands in Groton vary from small pockets to the 145-acre Reedy Meadow. The most substantial areas of wetland in Groton are Reedy Meadow, the “Halfmoon Swamp” in the Snake Hill Area at the Ayer town line, Burnt Meadow Swamp, and Carmichael Swamp.²⁹ Since all the major wetland areas are located on the east side of town, development there has been greatly limited.

Not only have many of these wetland areas been protected as conservation land, but the Wetlands Protection Act (G.L. c. 131 § 40) has further limited development. Furthermore, Groton’s Wetlands Protection Bylaw significantly extends the protection of the Wetlands Protection Act. Groton adopted wetland protection in 2000 and amended it in its entirety in 2015. The Wetlands Bylaw prohibits activities deemed by the Conservation Commission as detrimental from encroaching or impacting wetland resource areas, related water resources, and adjoining land cover in Groton.³⁰

Table 3.2.1 displays Groton’s wetlands by type and the amount of acreage each type covers. Excluding *open water*, Groton contains approximately 2,688 acres of wetlands. This equates to over 12 percent of the Town’s total surface area. With this much wetland coverage, Groton lives up to its Native American name, Petapawag, which translates to “swamps on a hill.” Not shown in the table is the Town’s inventory of vernal pools, which are seasonal depressions of land that contain water for only part of the year. They are also protected under the Wetlands Protection Act, and the Natural Heritage & Endangered Species Program (NHESP) identified 100 certified and 354 potential vernal pools in Groton in their 2016 database.³¹

Table 3.2.1 Wetland Inventory

Wetland Type	Acres	Percent of Total
Bog	50	1.2 %
Deep Marsh	256	6.4 %
Open Water	1,328	33.1 %
Shallow Marsh Meadow or Fen	314	7.8 %
Shrub Swamp	493	12.3 %
Wooded Swamp: Coniferous	19	0.5 %
Wooded Swamp: Deciduous	1,269	31.6 %
Wooded Swamp: Mixed Trees	289	7.2 %
Total	4,017	100.0 %

Source: Groton Open Space and Recreation Plan 2019; MassGIS. “DEP Wetlands,” 2018

²⁹ Town of Groton, Open Space and Recreation Plan, 2019.

³⁰ Town of Groton. “Wetlands.” <https://ecode360.com/9078449>.

³¹ MassGIS. “NHESP Natural Communities.” <https://www.mass.gov/info-details/massgis-data-nhesp-natural-communities>.

Vernal Pools

Vernal pools can be found in meadows, river floodplains, swales, wetlands, and small woodland depressions or kettle holes that collect groundwater or spring runoff for at least two months of the year. They are temporary bodies of freshwater that provide habitat for a variety of wildlife species, but primarily amphibians and reptiles. Vernal pools matter because so many plant and animal species depend on them for habitat, breeding, and reproduction. As of 2023, there are 100 certified vernal pools in Groton, an increase of 32 certified vernal pools since 2011. The Natural Heritage and Endangered Species Program (NHESP) approximated the location of potential vernal pools using aerial photography in 2000, identifying 354 potential vernal pools in Groton. While they exist in many parts of Groton, they are especially clustered in the northwest corner of town. There are also many vernal pools in the northeast portion of town, coinciding with a concentration of wetlands in the same area.

Water Supply and Aquifers³²

In Groton, drinking water supplies draw from aquifers or areas of water-bearing permeable rock or gravel that store and transmit groundwater. Map 3.2.2 Water Resources shows the importance of the Squannacook River, Cow Pond Brook, and Baddacook Pond to Groton's water supply due to the location of nearby public water supplies. Another large aquifer underlies the Reedy Meadow area in the north part of Groton.³³

Like most Massachusetts towns, Groton has adopted zoning to limit land uses and use intensity in state-designated water resource protection areas known as Zone IIs, but Groton also regulates activities within the watersheds that drain into Zone II. Together, the DEP-approved Zone II areas and the larger watersheds determine the boundaries of Groton's Water Resource Protection District.³⁴

Vegetation and Wildlife

Wildlife in Groton is typical of eastern and central Massachusetts. Virtually all of the common species found in this part of the State are permanent or occasional residents in local forests, marshes, and wetlands. Waterways, water bodies, and other wet areas provide habitats for fish, amphibians, and birds. Local woodlands support mostly small rodents and mammals, such as mice, voles, chipmunks, squirrels, muskrats, minks, weasels, woodchucks, beavers, raccoons, otters, opossums, fishers, and porcupines, while coyotes, foxes, and deer, and occasionally moose and bear, reside in more secluded forests. Many types of birds also inhabit woodlands, including blue jays, robins, sparrows, orioles, owls, woodpeckers, hawks, cardinals, eagles, and turkeys. Groton has three large expanses of protected woodlands at the Wharton Plantation, the J. Harry Rich State Forest and the Town Forest (which is managed by the Town Forest Committee).

³² For more details on wetlands in Groton, see Section 3.7 Community Facilities and Services.

³³ Town of Groton, Master Plan, 2011, 15.

³⁴ Town of Groton, Zoning Code, § 218-7.2 Water Resource Protection Overlay District.

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) maintains a list of species that are protected under the Massachusetts Endangered Species Act (MESA). Criteria used to determine extinction risk are primarily rarity in the state, population trend, and overall threat. NHESP has reported observations of nineteen species of fish and wildlife, and five plant species that are indigenous to Groton are considered endangered, threatened, or of special concern (See appendix). The Nashua River watershed supports the largest contiguous and unfragmented population of Blanding's Turtles in Massachusetts. Blanding's turtles require a large area as they move over varied types of landscapes throughout their lives, including vernal pools, swamps, and fields. Portions of the Nashua River and two of its tributaries in Groton (the Squannacook River and Unkety Brook) support endangered dragonflies and freshwater mussels. Rare species reside in Groton because there is enough intact habitat to support them.

One of the primary signs of human interference with the natural environment and threats to biodiversity is the presence of invasive species. The Invasive Species Committee has identified several common invasive species that threaten Groton's habitats, including plants such as European Buckthorn, Oriental Bittersweet, Multiflora Rose, Japanese Honeysuckle, and Purple Loosestrife. Additionally, several invasive insects, like the Spotted Lanternfly, Jumping Worm, Emerald Ash Borer, and Browntail Moth, have been spotted in or near Groton.

Scenic Resources and Unique Environments

Groton's 2019-2026 Open Space and Recreation Plan highlights several unique scenic resources. In addition to the geologic features noted earlier in this chapter and the resources identified in Section 3.3 Open Space & Recreation, the following natural resource areas are considered scenic resources of particular value:

- Scenic properties include the Lawrence Homestead and the Sawtell Schoolhouse.
- Scenic areas include Autumn Hills, Chicopee Row, Gibbet and Angus Hills, James Brook, the Squannacook River, the Nashua River, and the Soapstone Quarry.
- Scenic roads include Farmers Row and Old Ayer Road.
- Scenic views include those from the Bates Conservation Land, Farmers Row, Old Ayer Road, Town Forest Road, Broadmeadow Road, Chicopee Row, and the top of Gibbet Hill and Bancroft Castle (particularly looking west and northwest).

Scenic Roads Bylaw

Groton adopted the Scenic Roads Act, G.L. c. 40, § 15C, and a Scenic Roads Bylaw in 1974 and revised its regulations in 2008. All local roads (excluding state-numbered routes) are subject to the bylaw. The Scenic Roads Bylaw requires a public hearing by the Planning Board and Tree Warden for the removal of trees or stone walls during repair, maintenance, reconstruction, or paving within the right-of-way of a scenic road.³⁵

Agriculture³⁶

Farmlands help to define the rural character in Groton, especially in the Farmers Row and Main Street Historic Districts. Farmers Row has many picturesque farmhouses and barns, with scenic views to the west of the Wachusett Hills and farmland and orchards. Groton has almost 9,000 acres of Prime Farmland or Farmland of Statewide Importance. These two classes of soils represent varying levels of agricultural value. Most of the active farms are on Prime Farmland soils or soils of Statewide Importance, except some of the orchards and pastureland north of Groton Center. Many of these properties are temporarily protected under Chapter 61.

Cultural Resource Areas

Buildings, landscapes, archeological sites, and other historic resources can be found throughout Groton, exemplifying architectural styles and development patterns spanning over 350 years. The Massachusetts Cultural Resource Information System (MACRIS) online database lists approximately 647 resources in Groton, including objects, structures, buildings, burial grounds, and areas, that have been documented in individual or area inventory forms, and many of which have been nominated to the State Register of Historic Places. Map 3.2.4 displays Groton's historic resources.

Historic Property Designations and Protections

Since the 1960s, Groton residents have actively sought to protect its historic resources by obtaining national designations and securing protective restrictions and easements. There are three local historic districts, seven National Register of Historic Places properties, and four properties with Preservation Restrictions.

National Register of Historic Places³⁷

The National Register of Historic Places (NRHP) is the official federal list of districts, sites, buildings, structures, and objects that have been deemed significant in American history, architecture, archaeology, engineering, and culture. Groton has seven properties currently listed individually on the National Register (NRIND) but no National Register districts.

³⁵ Town of Groton, Open Space and Recreation Plan, 2019, 53.

³⁶ See Map 3.2.3 Agricultural Land & Farmland Soils.

³⁷ See Map 3.2.4 Historic Resources.

- The **Governor George S. Boutwell House** (1851) at 172 Main Street was added to the NRHP in 1964. This impressive Greek Revival/ Italianate-style building with decorative architectural features, including quoins, bracketed window hoods, and an elaborate entrance porch, is owned by the Groton Historical Society (GHS) and operated as a museum.
- Also added to the NRHP in 1964, the former **Groton High School** (1871) is a two-story, brick Classical Revival style found at 145 Main Street. Also known as the Prescott or Butler School, the building currently houses a community center and office space. Some improvements have been made with CPA funding to bring the building up to code; however, substantial further improvements are needed to enable all floors to become available for public use.
- Several buildings on the **Groton Leatherboard Company** complex were added to the NRHP in 2002. These former industrial mill buildings have since been redeveloped as RiverCourt Residences at 6 and 8 W. Main Street.
- The **Joseph Bennett-Arthur Shattuck House** (c. 1812), at 653 Martins Pond Road, was added in 2006. This well-preserved example of rural Federal period architecture is associated with a property that was farmed for two centuries, most of which is now local conservation land.
- The **Groton Inn** (1787, reconstructed 2018) at 130 Main Street was listed on the NRHP in 1976. The building was reconstructed in the historic style after having burned down in 2011. Prior to the fire, it was believed to be the oldest operating inn in the nation.
- **The Sawtell School** (1833) was added to the NRHP in 2008. This brick one-room schoolhouse at 366 Chicopee Row was originally constructed as the District 7 School and later renamed the Chicopee School. Today, this building is operated and maintained by the Sawtell School Fund Association, which was established in the late 18th century for public education purposes.
- **The First Parish Church** (1755, remodeled 1837) at 1 Powder House Road is a two-story, wood-frame building with a steeple. It is also known as the Old Groton Meeting House and was used as Groton's town hall until the existing town hall was built in 1859. It was recently added to the NRHP in 2021.

Local Historic Districts

Town Meeting established the local historic districts in 1964. The Main Street Historic District is located on Main Street between School Street and Old Ayer Road and on Hollis Street to School Street. It includes two separate districts that meet at Court Street. Combined, the districts include 127 historic buildings, structures, and the Old Burying Ground. The area is distinguished by a number of colonial-style buildings with elements of Greek Revival and Gothic architecture. Town

Hall and three churches dating from 1755, 1826, and 1842. The Old Burying Ground Commission is responsible for preserving and protecting the Old Burying Ground, overseeing all repairs to stone markers, issuing permits for gravestone rubbings, and educating the public about the Burying Ground. with classic white clapboards, black shutters, and small windowpanes complement the district.

The third district, the Farmers Row Historic District, includes 50 historic properties on Farmers Row between Pleasant Street and Joy Lane. All three historic districts are overseen by the Historic Districts Commission, which administers the Historic District Bylaw by reviewing the appropriateness of alterations and new construction.

Preservation Restrictions

Preservation Restrictions provide the highest level of protection for historic resources. Four properties in town are currently protected by a Preservation Restriction. In addition to being on the National Registry of Historic Places, both **The Shattuck House** and **First Parish Church of Groton** are also under the local preservation restriction. **The Williams Barn** (c. 1840) is located on Chicopee Row. The barn was purchased and restored by the town in the late 1990s as part of a larger conservation project to protect an important open space parcel in town. It is managed by the Williams Barn Committee and now houses the Groton Farmer's Market, which is used for educational and cultural programming. **The Dr. Amos Bancroft House** (1839) next to the Town House Lot on Main Street. This Greek Revival building was dubbed the Goodwill House in 1940, as it was used to house and support German refugees.

Preservation Organizations

Groton has a **Historical Commission**, which is responsible for identifying and protecting historic properties throughout the town, and a **Historic District Commission**, which is charged with protecting historic character within the town's historic districts. **Groton History Center** is a private organization that maintains a collection of local historical artifacts and archives, offering exhibits at the Boutwell House, as well as historic walks, lectures, and other programs.

The Groton Historical Commission (GHC) is also responsible for administering the Town's **Demolition Delay bylaw**. Under the bylaw, a property owner proposing to demolish a structure seventy-five years or older must submit a request to the GHC for consideration of historic significance. A determination of historical significance by the GHC triggers an eighteen-month demolition delay period, during which the GHC works with the property owner to explore alternatives to demolition or appropriate mitigation. After the delay period expires, property owners may demolish the historic building.

Trends

Preservation and Stewardship

Groton has a number of boards and committees devoting time and expertise to protect the town's natural and cultural resources. The town's inventory of over 8,000 acres of open space helps to preserve natural resources of local and regional significance.

Local Capacity, Policies, and Regulations

Past and Current Natural and Cultural Resource Protection Efforts

The Town has completed several plans that detail issues, opportunities, and recommendations for Groton's natural and cultural resources and resource areas. Common themes in these plans include the need to protect Groton's water resources, linking the Town's cultural resources and history to the landscape, connecting these spaces together to create regional connections and wildlife corridors where appropriate, protecting agricultural land, and promoting awareness of the Town's resources of residents and visitors. Many goals, strategies, and recommendations from these plans remain applicable and may frame opportunities for the Town to revisit and explore.

Town of Groton Master Plan (2011)

Groton's 2011 Master Plan included specific goals and objectives related to natural and cultural resources. These goals focused on protecting the integrity of the Town's natural resource systems, protecting groundwater and surface water resources, identifying and preserving agricultural land to support the continuation and expansion of agriculture, and strengthening and expanding the protection of cultural and historic resources. The plan included several recommendations to protect Groton's natural and cultural resources.

Groton Center Design Guidelines (2014)

In 2014, the Town developed a set of design guidelines for Groton Center, following the boundaries of the Town Center Overlay District (TCOD). These guidelines were designed to promote the development of a socially and economically vibrant town center. The guidelines intended to support the redevelopment process in areas with opportunity for modest (historic areas) or more extensive redevelopment (along Station Avenue) while respecting the historical context of the district, responding to local architectural traditions, and exploring creative approaches to design to allow for greater density and flexibility.

Groton Open Space and Recreation Plan (2019-2026)

Five of the seven goals of the most recent Open Space and Recreation Plan pertain to natural and historic resource protection. These include promoting the preservation of land resources, protecting water resources, promoting resiliency to climate change, sustaining biological diversity,

supporting local agriculture, and enhancing Groton’s community identity through landscape and cultural awareness.

Groton Hazard Mitigation Plan and Municipal Vulnerability Plan (2020)

In 2020, the Town of Groton adopted a joint Hazard Mitigation Plan and Municipal Vulnerability Preparedness Plan (HMP-MVP Plan) to identify the impacts of natural hazards and climate change on the community. Through this process, the Town created a set of goals to protect public health, property, infrastructure, the environment, and cultural resources. The protection of Groton’s water resources from flooding, drought, and more is of particular concern, as highlighted by the plan.

Local Capacity

In addition to those discussed earlier, there are additional local initiatives and committees that enhance and protect the Town’s natural and historic resources.

Agricultural Commission

The Agricultural Commission was formed to promote and develop the agricultural resources of the town; to promote agricultural-based economic opportunities; to preserve, revitalize, and sustain the Groton agricultural industry; to encourage the pursuit of agriculture as a career opportunity and lifestyle in the Town of Groton; and to represent the Groton farming community.

Community Preservation Committee

Groton officially adopted the Community Preservation Act (CPA) in 2004. A three-percent local surcharge on property tax bills in Town and supplemental funding from the Commonwealth provides for CPA funds.³⁸ The Community Preservation Committee guides the usage of CPA funds and is made up of appointed members representing the Town’s various boards and commissions. The Town has used CPA funds extensively to advance open space and historic preservation, improve recreational facilities, and expand affordable housing.

Since 2005, Groton has raised \$7.3 million in local revenue and \$3.4 million in matching funds. From this, the town has committed \$10.6 million of CPA revenue. The largest share, \$7.5 million, has been used for open space preservation, including \$5.7 million that supported the purchase of Surrenden Farm and \$1.8 million to the Conservation Fund and other open space projects. Over this time, the Town has also committed nearly \$1 million to recreation projects and \$1.4 million to historic preservation.

Destination Groton Committee

The Destination Groton Committee’s primary purpose is to promote Groton as a tourist destination while preserving its rural, small-town charm. This includes working with residents, local

³⁸ Groton Community Preservation Committee, *Groton Community Preservation Plan, 2023-2024*, 8.

businesses, Town staff, and other Town Committees, Boards, and Commissions to create tourism programming and strategic marketing to promote Groton's unique character and destination potential.

Greenway Committee

The Greenway Committee's official charge is to protect river and stream frontage in Groton, particularly along the Nashua and Squannacook Rivers, educate townspeople about the environmental and financial importance of protecting riverfront lands, and seek gifts of land or easements along the riverways and the opportunity to purchase frontage.

Sustainability Commission

The Sustainability Commission works to focus and coordinate Groton's sustainability effort, offering guidance and resources to various Town entities and advocating for the preservation of natural resources and incorporation of climate resilience. Among its key duties, the Sustainability Commission is tasked with integrating sustainability metrics into Town plans, policies, operations, and bylaws, monitoring the Town's progress towards these metrics, identifying funding opportunities, collaborating with regional partners, and raising awareness of climate-related issues.

3.3. Open Space & Recreation

Introduction

Groton is known for its natural beauty and areas of conservation land that account for 30 to 40 percent of the Town's land. Since its first Comprehensive Master Plan of 1963, Groton has prioritized its rural character, agricultural heritage, and valuable natural resources. Because open space and recreation are such important features of the Town and its values, the community continually works to protect, preserve, and value the natural environment that makes Groton. Unless noted otherwise, the primary source of much of the content in this chapter is Groton's 2019-2026 Open Space and Recreation Plan.

Existing Conditions

Scenic Landscapes

Groton has numerous beautiful areas that are popular visitation spots that show the appeal of the natural landscape that only a rural town can provide. There are several historical landmarks and aesthetically pleasing sites around Groton as defined by the Commonwealth of Massachusetts. A scenic landscape refers to a vast and contiguous area with significance on a statewide or regional level. One criterion to meet this designation is the ability of the public to view and enjoy the area. Therefore, public ways often form the boundaries of such a landscape. During the early 1980s, the Department of Conservation and Recreation (DCR), formerly the Massachusetts Department of Environmental Management (DEM), compiled a comprehensive statewide inventory of scenic landscapes. They noted that high scenic value typically correlates with and relies upon the presence of thriving natural habitats, agricultural activities, historical landmarks, and minimal, regulated contemporary development. Some of the favorite areas residents and visitors of Groton go to include Nashua River Rail Trail, Groton Town Forest, Gibbet Hill, General Field, Cow Pond, Bancroft Castle, and Shepley Hill Quarry. A full list of official scenic landscapes in Groton can be found in the appendix.

Land Protection

The Town consists of more than 8,000 acres of protected open space, defined as land that is held for conservation purposes by the town, nonprofit organizations, or private institutions and individuals. Table 3.3.1 displays the acreage of both protected and unprotected open space within the community. The finer details of the currently designated parcels of open space and recreation can be found in the Town's 2019-2026 Open Space and Recreation Plan.

Table 3.3.1 Protected and Unprotected Open Space

Category	Acreage	Percentage of Land Cover
Protected	8,093	38.6 %
Municipal	3,219	15.3 %
State-Owned	1,044	5.0 %
Private with CR	1,150	5.5 %
Nonprofit Conservation Organization	2,680	12.8 %
Semi-Protected	3,281	15.6 %
Town-Owned	348	1.7 %
State-Owned	33	0.2 %
Institutional	905	4.3 %
Chapter 61, 61A, 61B	1,995	9.5 %
Surface Waters	576	2.7 %
Total	11,950 acres	57.0 %

Source: Groton Open Space and Recreation Plan, 2019

Furthermore, Groton is within two regional Areas of Critical Environmental Concern (ACEC), which are defined as areas where special management attention is needed to protect important and unique historical, cultural, and scenic values, fish and wildlife, or other natural resources.³⁹ They are areas of open space critical to maintaining the region's biodiversity, and such designation elevates the state's permitting standards and lowers the thresholds for review. These two ACECs are the Petapawag (25,680 acres) and the Squannassit (37,420 acres). Groton is especially unique because the town is situated directly within these two ACECs. While only 5 percent of the state's land mass is designated as an ACEC, 88 percent of Groton's land area is in an ACEC.⁴⁰ While this means the town is blessed with scenic landscapes and natural resources, there are more restrictions on using and developing land in an ACEC.

Wetlands⁴¹

A wetland is an area of land saturated with water, and the water table intersects the surface of the ground for most of the year. They serve a key role in surface water systems because they act as a protective buffer to preserve the water quality of nearby rivers, streams, and ponds. Additionally, they mitigate flooding impacts and filter stormwater runoff of nutrients and sediment before it flows into open waters.

Wildlife

The preservation of wildlife serves as the linchpin to fostering biodiversity and sustaining the innate vibrancy and health of the natural environment. Groton is in a transitional area between two major forest biomes, creating diverse habitat types and contributing to the town's unique biodiversity. Flora and fauna are abundant with numerous species of rare and endangered

³⁹ Bureau of Land Management. "Areas of Critical Environmental Concern." <https://www.blm.gov/programs/planning-and-nepa/planning-101/special-planning-designations/acec>.

⁴⁰ MA Department of Conservation & Recreation. "ACEC Program Overview." Accessed March 2024. <https://www.mass.gov/info-details/acec-program-overview>.

⁴¹ For more details on wetlands in Groton, see Section 3.2 Natural & Cultural Resource Areas.

wildlife, including plants, vertebrates, and invertebrate animals. The state's NHESP has identified 67 percent of Groton as a Core Habitat, including 5,686 acres of Critical Natural Landscape. Much of this area is included within the two regional ACECs (Petapawag and Squannassit). Expansive areas of protected open space corridors help preserve habitats and ecosystems, in particular along the Nashua and Squannacook Rivers, the Throne, and the Reedy Meadow/Unkety Brook Valley in the central/eastern part of town. Within each of these corridors, however, there are gaps or interruptions of the open spaces that could potentially fragment existing ecosystems and habitats.

Trails

Open space and recreation resources are abundant in Groton. Groton is also part of a network of trails that encompasses 130 miles and includes activities such as hiking, bicycling, birdwatching, hunting, and water-based recreation. Many Groton residents take pride in the trails that run throughout town, encompassing 10 square miles of land. Part of the Town's trail system is designated for both recreation and transportation. There are thirteen easements for trails located on private property.

- The Nashua River Trail and Squannacook River Rail Trail allow off-road bicycling. Both trails also offer various recreational opportunities, such as horseback riding and mountain biking. The Nashua River Trail opened in 2002 and is universally accessible. It connects Ayer's MBTA Commuter Rail Station from the center of Groton.
- The Squannacook River Rail Trail is currently in development and is scheduled to fully open in June 2024. The multi-use path runs alongside Route 119, starting from Elm Street eastward from Townsend, linking up with Groton alongside the Squannacook River, and connecting with the Bertozzi and Squannacook River Wildlife Management Areas. The next phase concludes the project, with the trail continuing behind Harbor Village.
- Along Nod Road, the John Tinker Trail is the only ADA-accessible trail built by the Groton Trails Committee. It is a quarter-mile-long trail in the Rich State Forest, and it is designed to be accessible and used by anyone regardless of mobility impairments, with smooth surfaces, seating, rest areas, handicap-accessible picnic tables, and handicap parking.⁴²
- Lastly, Fitch's Bridge was recently built and opened in 2013 to replace the original bridge that was last reconstructed in 1921. The very first bridge was built in the mid-1700s and has undergone repairs or replacements since then. Crossing the Nashua River, this bridge connects Pepperell Road from the west of the river to Fairgrounds Road to the east.⁴³

Though the trails are largely praised by the community, they suggested improving the connectivity and accessibility between limited-used trails even further, which is necessary to navigate the trails without the use of a vehicle.

⁴² Groton Trails Network. "Accessible Trail Walks." Accessed March 2024. <https://www.grotontrails.org/accessible-trail-walks.html>.

⁴³ The Groton Herald. "Fitch's Bridge: A Historic Trail Connection," January 16, 2013. <https://www.grotonherald.com/letters/fitchs-bridge-historic-trail-connection>.

Trends

Build Out

Groton boasts a large amount of protected open space, but the town also has a large amount of undeveloped, unprotected land that falls under Residential Agriculture zoning. Certain residential land may be designated for development in the form of compact, adaptable projects, both of which require open space set-asides. Despite Groton's long and successful history of protecting open space, these ecologically significant parcels remain vulnerable, particularly along waterways. Finding new ways to protect them will remain challenging due to competing demands for funding.

The Town seeks to use at least some of the land for affordable housing or economic development since there was a large recent acquisition of permanent conservation land. Groton is comprised of three distinct villages: Groton Center, West Groton, and Lost Lake. Over time, much of the land in town that was once dedicated to agricultural uses, such as farmlands and orchards, has gradually transformed into low-density residential neighborhoods. While the villages retain their historic charm and distinctive characters, the majority of residential activity in Groton now occurs in modern subdivisions or on established roads outside these historic areas. In addition to the historic villages, the Four Corners area has grown to foster another village identity among the community, with residential and commercial developments prompting increased civic engagement in recent history.

Public/Private Water Supply and PFAS Contamination

Groton has two water supply entities: the Groton Water Department and the West Groton Water Supply District. The infrastructure of the Town has allowed for effective water conservation measures such as an increasing block rate structure, mandatory water restrictions, and public education. Prior incidents of water contamination close to town have prompted the implementation of stricter protocols for controlling water pollutants, particularly per- and polyfluoroalkyl substances (PFAS).

PFAS levels in the Town's public water supplies are below federal and state limits, but there is PFAS exposure in the vicinity of the Groton-Dunstable Regional High School. This contaminated groundwater is from the school's private water supply well, which is believed to be contaminated by firefighting foam that was used to suppress a fire in the past. In a Town Meeting held in 2023, voters authorized spending up to \$16.8 million to expand the Town of Groton's municipal water system from the town center up Chicopee Row to the High School area. This solution will require additional piping over a distance of 3.5 miles and is estimated to cost around \$13 million. This plan necessitates State permits for water transfer between drainage basins, which could take up to two years to obtain. Despite efforts, the State has indicated no ability to expedite this permitting process, and construction is expected to require an additional year. However, this action is necessary to prevent exposure to PFAS from contaminated groundwater in the vicinity of the high school.⁴⁴

⁴⁴ Town of Groton, *PFAs in Groton*. <https://www.grotonma.gov/wp-content/uploads/2023/07/PFAS.pdf>.

Other occasional findings of contamination surpassing federal limits called for more concerted efforts in monitoring and remediation. There are two former town landfills, one situated off Nod Road, which were established before the mandate for lining and potentially resulted in the leaching of contaminants. The lack of data exacerbates the challenge of managing these landfill sites. Increasing public awareness about this issue will help spur action and awareness around PFAS contamination, keeping drinking water safe to consume.

Light Pollution

The encroachment of light pollution poses a burgeoning concern that Groton is actively addressing. Light pollution presents a multifaceted threat to biodiversity, human health, energy efficiency, astronomical observation, and the quality of life in both urban and rural areas. Addressing this issue requires a combination of regulatory measures, technological advancements, and public awareness initiatives. This issue has raised concern over the reduced visibility of the Milky Way Galaxy within the Town, which only 15 percent of Massachusetts can see throughout the majority of the year.⁴⁵ Groton is working to update development regulations to restore the natural nighttime environment by reducing light pollution. This includes the encouragement of dark sky-compliant light fixtures and protective shielding to limit light pollution risk while also improving energy efficiency. The Town has established a relationship with the Massachusetts Institute of Technology (MIT) Wallace Astrophysical Observatory in an effort to better understand light disturbance potential for major developments and their risk of negatively impacting the critical science, defense, and education work on MIT property.

Local Capacity, Policies, and Regulations

Groton has several local organizations, committees, and groups dedicated to Open Space and Recreation management and education. Each has its roles, and they work cooperatively to bring out Groton's best conservation, preservation, and sustainability efforts to maintain Groton as a pleasant New England community that cares for its natural landscape. They also deal with current environmental issues that Groton hopes to address whenever possible.

Wild and Scenic Rivers Study Committee

This committee guides local communities to work in partnership to protect and preserve regional rivers. Includes stewardship recommendations to be carried out voluntarily by participating towns such as Groton. Nashua River and its history are of particular importance, while the committee hopes to prevent the levels of pollution the river has seen in the past.

Groton Conservation Commission

The Conservation Commission was the main party responsible for the creation of the Open Space Plan 2019. The commission was established in 1963 to better regulate a more proactive approach

⁴⁵ Interview with Tim Brothers, MIT, October 26, 2023.

in Groton when it comes to conservation projects and funding. Their work involves wetland, grassland, forestry conservation, management, and environmental oversight. They manage 1,343 acres of permanently protected open space throughout 79 different properties. The most substantial recent expansion of the Town's preserved land holdings is the Cox-Walker property, comprising 108 acres along Chicopee Row. This acquisition encompasses two parcels bought in 2012 using local funds supplemented by a \$400,000 grant from the Land Acquisitions for Natural Diversity (LAND) program. The most-used properties by the public, which are owned by the commission, are Sorhaug Woods and Williams Barn.

Groton Garden Club

The Groton Garden Club was founded in 1923 and is a non-profit, all-volunteer organization. They hold monthly meetings from October through June, which include presentations on gardening or horticulture topics.⁴⁶ The club also has a native plant and pollinator garden at the Groton Town Hall to educate the public on the importance of pollinators and planting local fauna.

Invasive Species Committee

The Invasive Species Committee is responsible for surveying and documenting the invasive species that are currently pervading Groton. They are also responsible for educating the public on current invasive species impacting the community and sustainable best management practices to control them. Activities include attending Town events or local school classes to inform the public. Some of the most prominent invasive species negatively impacting the biodiversity of Groton include Honeysuckle, Bittersweet, Phragmites, and Knotweed.

Park Commission

The Park Commission was established in the early 1900s, and they maintain the various recreational fields and areas. They work closely with recreational sports leagues and oversee equestrian facilities in Groton. A large portion of the recreational inventory is in the most recent Open Space and Recreation Plan under Park Commission jurisdiction.

Recreation Groups

Numerous sports leagues, clubs, and other recreational programs are very active in Groton and surrounding towns. They frequently use open public fields in town for their activities, including but not limited to Sargisson Beach, the parks, and the trails. The leagues make use of existing institutions and facilities, such as local school gyms and fields, to hold events and activities. Activities are available to anyone with all interests, from baseball, dancing, hiking, and swimming to summer camps, horseriding, kayaking, and more.⁴⁷

⁴⁶ Groton Garden Club, 2020. <https://www.grotongardenclub.org/about-us>.

⁴⁷ Town of Groton. "Recreation." Accessed March 2024. <https://www.grotonma.gov/community/recreation/>.

Groton Conservation Trust

Groton Conservation Trust is a private, non-profit land trust founded in 1964. Its mission involves acquiring, preserving, and granting public access to lands of significant conservation value. Over the past half-century, the Trust has assumed stewardship of over forty properties totaling close to 1,500 acres. Presently, the Trust is managed by volunteers with diverse backgrounds, ranging from scientists, lawyers, and educators to environmentalists and outdoor enthusiasts.⁴⁸ The Trust is focused on determining the best practices to manage and combat the effects of this invasive wildlife, as well as identifying opportunities to adapt and mitigate the impacts of climate change on the natural environment. The Trust's properties also include hunting grounds, on which there is a push for open hunting in more conservation-restricted areas to control the overpopulation of certain species.

Sustainability Commission

The Sustainability Commission aims to organize the Town's efforts toward sustainability, offering direction and knowledge to facilitate Groton's transition into a more sustainable community. The Commission's duties include aiding residents of all ages, town agencies, and Town Boards in planning for and implementing processes to ensure the preservation of natural resources while incorporating climate resilience and adaptation measures where suitable.⁴⁹ Currently, they are prioritizing town-wide decarbonization pertaining to transportation and planning for climate change impacts alongside an action plan that addresses these issues in the capacity in which Groton can control these issues.

Greenway Committee

The Greenway Committee is committed to protecting river and stream frontage in Groton, particularly along the Nashua and Squannacook Rivers. They have the continuous mission of completing a buffer along these waterways to prevent pollution and provide flood protection, recreation, wildlife habitat, trail connectors, and scenic beauty. They also hope to educate townspeople on the environmental and financial importance of protecting riverfront lands. The Committee sponsors nature walks, canoe trips, river cleanups, and an annual river festival, a popular event in Groton that helps with outreach and education.

Community Preservation Committee

The Conservation Preservation Committee (CPC) uses the Community Preservation Act (CPA) funds generated by Groton taxpayers, over \$800,000 annually, to create open space, historic preservation, and affordable housing projects to improve Groton through a residential lens. At least 10 percent of the annual CPA funding must be allocated towards each of these three categories, and up to 5 percent may be used for administrative expenses of the committee. The rest of the funding can be used for any allowed use.

⁴⁸ Groton Conservation Trust. <https://www.gctrust.org/about>.

⁴⁹ Town of Groton, Sustainability Commission. <https://www.grotonma.gov/government/boards-and-committees/sustainability-commission/>.

The most recent work the CPC has implemented for Open Space is Groton’s first phase of the Squannacook River Rail Trail, which was completed in the Spring of 2023. Some of the many projects undertaken in Fiscal Year 2022 include the continuation of restoration at Lost Lake/Knopps Pond (\$88,765), a transfer of funds to the Conservation Commission (\$350,000), and, of particular note, the final debt service payment for the Surrenden Farms property (\$204,150).⁵⁰

⁵⁰ Groton Community Preservation Plan 2023-2024

3.4. Transportation

Introduction

Groton's transportation system is essential for both local and regional travel. The town is located at a crossroads between Fitchburg/Leominster, Lowell, and Nashua, New Hampshire. These cities, as well as the continued growth of the 495 corridor in Littleton and Westford, are putting a strain on a transportation network that was originally designed for local trips and farm vehicles.

The town's transportation network primarily comprises roads designed for cars. The Town of Groton has 109 miles of roadway, of which 100 are accepted by the town, 5.5 miles are under the jurisdiction of the Massachusetts Department of Transportation (MassDOT), and another 3.5 miles are private ways. State highways, including Route 119, running northwest-southeast through the center of town, provide strong connections between Groton's neighborhoods, Town Center, commercial district, and the regional transportation network in neighboring towns of Pepperell and Littleton. Locally accepted minor arterials, including Route 111 and Route 40, connect Groton neighborhoods and to neighboring communities of Ayer and Westford.

Residents of Groton can access the MBTA commuter rail station in Ayer via Route 111 and Old Ayer Road. The commuter rail connects to Boston's transit system at North Station in downtown Boston. Boston Express bus service also provides access from the nearby town of Tyngsborough to both Logan Airport and Boston's transit system at South Station.

Much of Groton's traffic congestion is caused by peak-hour commuting traffic. This includes residents of Groton, Pepperell, Townsend, and Dunstable, as well as Hollis and Brookline, New Hampshire, and other nearby towns who are driving to and from work through Groton.

The last Groton master plan was completed in 2011 and identified several traffic issues, as well as a lack of alternate transportation connectivity for residents. The biggest traffic concern stemmed from the existing road layout, which funnels most of Groton's arterials through the Town Center, resulting in increasing congestion at the Town Center. Residents also expressed concern about out-of-town vehicles contributing significantly to traffic volumes.

Although the town's transportation network includes more than just cars, the conversation about transportation in Groton is often dominated by traffic, congestion, and cars. When asked about the key issues facing Groton today, residents who participated in community meetings and interviews for the master planning process were nearly unanimous in their concerns about connectivity and congestion. During the master planning process, citizens highlighted their concerns about Groton's current transportation system. These included:

- A lack of sidewalks and bicycle infrastructure, especially ADA-accessible infrastructure, discourages residents from utilizing alternate transportation modes to access nearby destinations.
- Dangerous intersections and numerous curb cuts and driveways along Main Street.

- High volumes of cut-through traffic, both inter-town along Main Street and intra-town through residential neighborhoods.
- A lack of connectivity to commuter rail stations in neighboring towns.
- Little to no public transportation beyond town-operated senior center shuttles.
- Heavy traffic during major events (i.e., sports tournaments) requires police details for traffic management and direction.

Overall, residents were primarily concerned about traffic congestion and the lack of connectivity for active transportation modes.

Existing Conditions

Street Network

Groton has a well-established network of streets. Over three centuries, the Town has grown in an organic settlement pattern around a central village, natural resources, and farmlands. Groton’s street network includes a hierarchy of arterial, collector, and local streets, and there are no limited access highways. Groton’s arterials include MassDOT jurisdiction roadway Boston Road/Main Street (Route 119) and locally-accepted Routes 40, 111, and 225. Collector-type roadways in Groton include Pepperell Road, Longley Road, and Sandy Pond Road. Local type roadways in Groton include Playground Road, Robin Hill Road, and Castle Drive. The town has jurisdiction over about 104 of Groton’s 113 centerline miles of roadway (see Table 3.4.1 below), and most of the roadways in town are two and four-lane roads with generally low-speed limits.

Table 3.4.1 Groton, Roadway Centerline Miles by Functional Classification and Jurisdiction

	Urban and Rural Combined			
Function	Arterial 25.5	Collector 8.4	Local 79.6	Total 113.5
Jurisdiction	MassDOT 5.5	Town 104.2	Private 3.8	Total 113.5

Source: MassDOT Road Inventory Year End Report, 2022

Map 3.4.1 illustrates Groton’s current street network, with varying line thicknesses based on average daily traffic. Highlighted on this map are five major intersections define the town’s network and destinations: the Four Corners intersection in the southeast corner of town, the Pleasant Street at Main Street intersection (including Hollis and Court Streets), the Lowell Street & Broadmeadow Road at Main Street intersection in the center of town, the Pepperell Street & Townsend Street at West Main Street intersection in the southwest corner of town, and the Old Ayer Road at Main Street intersection. Each of these intersections has unique features, opportunities, and roles in Groton’s transportation network.

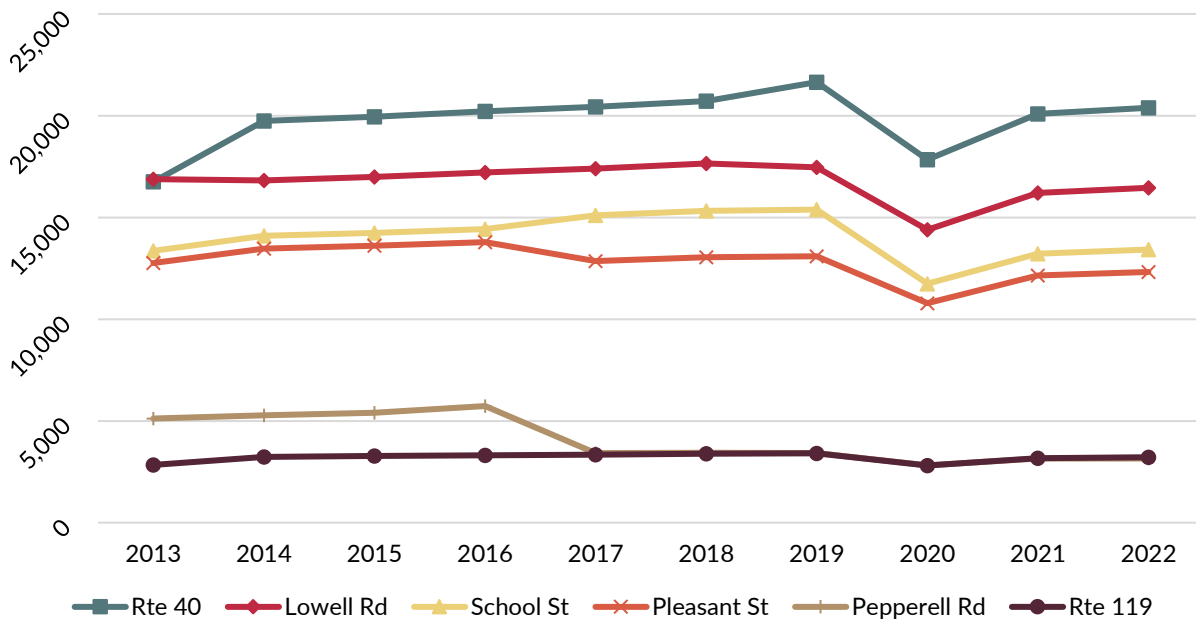
Commuting

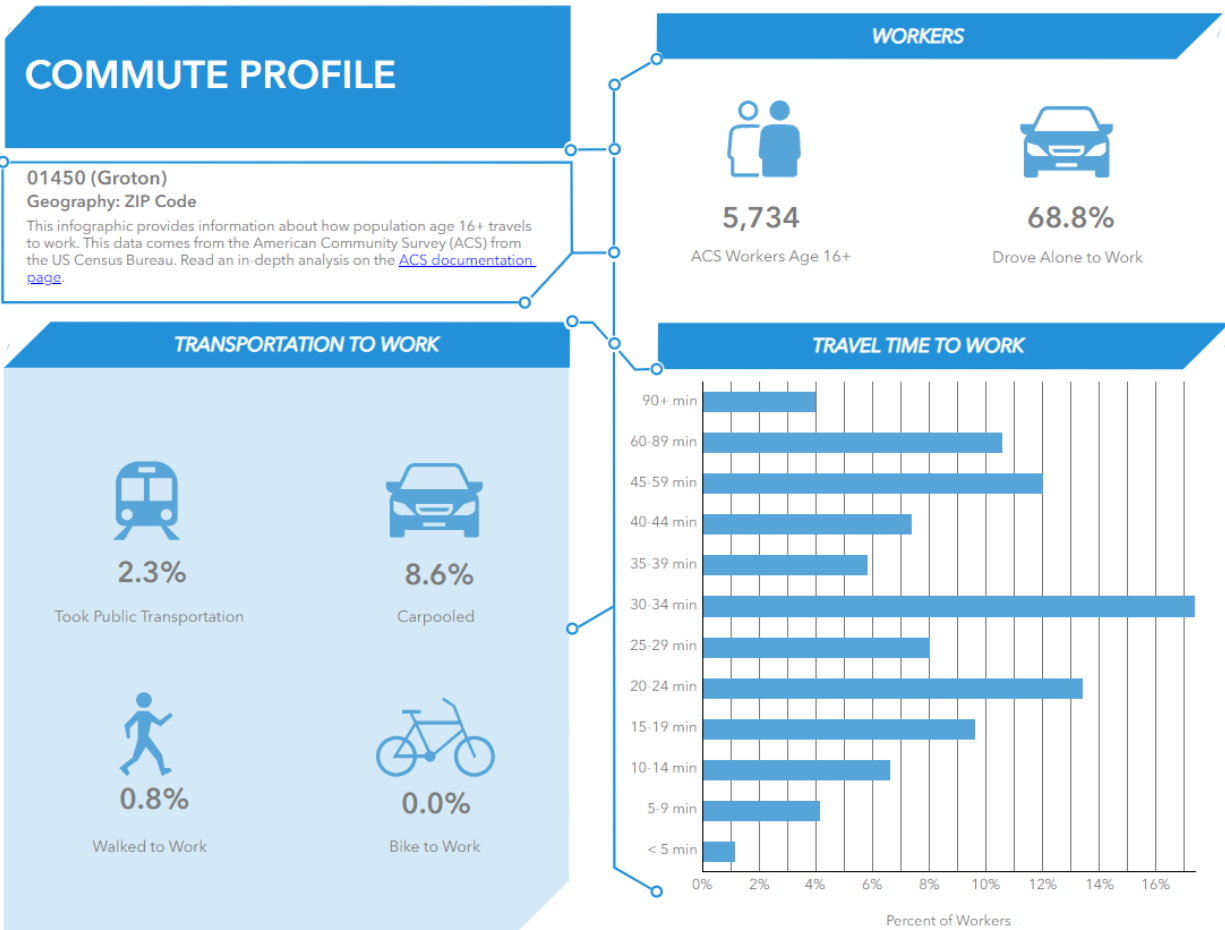
We reviewed traffic data in Groton from the MassDOT Highway Department on six Groton roadways from 2013 to 2022. Traffic in Groton has remained level over this time period, with a general decrease in traffic in 2020, likely as a result of the pandemic (see Figure 3.4.1 Annual Average Daily Traffic). Prior to 2020, traffic levels were on a steadily increasing trend, but the COVID-19 pandemic interrupted work and commuting patterns, resulting in a stark decrease in traffic levels. Though traffic levels have since begun to increase post-pandemic, the traffic volumes in 2023 have still not yet returned to 2019 levels. While Groton residents indicated that traffic and congestion have been increasing over the years, traffic volume data indicate that this increase has not been significant. Work-from-home patterns may contribute to lower traffic levels between 2019 and 2022.

Most residents in Groton commute to work by driving alone. Only nine percent carpooled with other people, and approximately three percent took public transport or walked to work. Less than one percent walked to work, and no (or nearly no) Groton residents commuted via bicycle. (See Graphic 3.4.1.) This commuting mode share breakdown is similar to that of other nearby towns, although Groton has a higher share of residents working from home.

Figure 3.4.1 Annual Average Daily Traffic (AADT), 2013-2022

Source: MassDOT





Graphic 3.4.1: Commute Profile, Source: American Community Survey

Active Transportation⁵¹

In addition to the motor vehicle network, Groton has some pedestrian and bicyclist infrastructure for active transportation uses.

The Groton Trails Committee maintains 130 miles of trails on conservation parcels throughout the town, allowing for passive recreation, including hiking, birdwatching, and other non-motorized uses. These trails are primarily unimproved, with limited connections between different parcels of conservation land. Accordingly, these trails are primarily used for recreation rather than as transportation routes. Currently, only one of these trails is ADA accessible, the John Tinker Trail along Nod Road. Residents noted that these trails were a valuable part of Groton’s character and that they could be improved through enhanced pedestrian and parking facilities at the respective conservation parcels. These trails do not have safe walking infrastructure connecting them to other areas of Groton, limiting access to those willing to drive and park at trailheads. Parking areas are also limited, further inhibiting access to the trail network.

⁵¹ See Map 3.4.2 Pedestrian/Cyclist Circulation.

On-road bicycle infrastructure, such as separated or buffered bike lanes, is limited. Residents stated that they would feel unsafe biking on the town's roadways and sharing that space with motor vehicles. Generally, bicycle infrastructure is assessed by who would feel most comfortable riding on a given segment. Higher-confidence bicyclists (experienced riders) are willing to bike alongside vehicular traffic, while lower-confidence bicyclists (children, new riders) prefer bicycle infrastructure that is physically separated from motor vehicles. The town does have two major active transportation routes that are fully separated from motor vehicles: the Nashua River Rail Trail and the Squannacook River Trail. The Nashua River Rail Trail (NRRT) is a key bicycle and pedestrian route, serving as a recreational and commuter link through Groton and to other destinations in the region, including the Ayer Commuter Rail Station (see below). It extends approximately 12.5 miles from Nashua, NH, to Ayer, MA. Pedestrians and bicyclists are able to access the NRRT at several locations in Groton, including Sand Hill Road, Common Street, Station Avenue, Broadmeadow Road, and Smith Street. The Squannacook River Trail (SRT) also acts as an active transportation link; the final section is under design, and completion is anticipated for April 2024. As with the walking trails, safe access to these bike paths is limited by the lack of bicycle infrastructure throughout the town.

Groton's sidewalk network is marginal and disconnected; sidewalks are primarily located in the downtown area and in newer subdivisions, where sidewalk installation is mandated. The Groton Complete Streets Policy was adopted in 2016 and aims to provide safe routes for all transportation modes and users. As a result of this policy, the Groton Complete Streets committee is working to increase the number of sidewalk miles in Groton, and many of these projects are in various stages of planning and design. The Complete Streets committee has successfully implemented sidewalk safety improvements, including sidewalk extensions, curb-cut accessibility improvements, and flashing pedestrian beacons at key crosswalks. These improvements, especially those along Main Street, have expanded Groton's active transportation network in recent years.

The Montachusett Joint Transportation Committee published a Groton Walkability Report in 2012. While this report is more than a decade old and focused primarily on downtown Groton, it gives valuable insight into the pedestrian network in Groton. Participating residents identified several concerns, including safety issues in numerous locations and several popular gathering locations that would benefit from the addition of sidewalks.

Large Vehicle Routes

Drivers utilize heavy vehicles, such as landscaping trucks, e-commerce delivery vans, and single-unit retail delivery trucks, on Groton's roadways in addition to passenger cars. While there are no trucking routes running through Groton, these larger vehicles have different dimensional requirements. These dimensional requirements are especially important along routes to common truck destinations in manufacturing, such as Hollingsworth & Vose, and in agriculture.

Parking

Most businesses along Main Street have dedicated parking lots and one or more associated curb cuts onto Main Street. Parking along Main Street between Lowell Road (Route 40) and West Street is unsigned, offered at no charge, and generally only regulated during snow emergencies. The zoning requirements for parking state both minimum and maximum parking stall requirements for various land uses, and the Town typically restricts on-street neighborhood parking, especially overnight. There are several parking lots for access to the Nashua River Rail Trail (discussed above) and public parking at Town Hall, Groton Town Field, and other municipal facilities. Large private parking areas can be found at Groton Hill Music Center and at Shaw's Plaza. Residents expressed that there are insufficient ADA-accessible parking stalls along Main Street and that parking for trail access near Gibbet Hill is limited and unsafe for drivers parked along the roadway. Some publicly available electric vehicle parking is located throughout town and is discussed further below.

Public Transit

The Town of Groton is not directly served by public transportation routes. Residents are able to access the MBTA Fitchburg Commuter Rail line via Commuter Rail stations in Ayer, Littleton, and Shirley, most frequently in Ayer. Ayer recently completed the construction of a parking garage. This commuter rail service allows residents to connect to the City of Boston. Additionally, residents utilize the Boston Express bus service from the nearby town of Tyngsborough to access both Logan Airport and Boston's transit system at South Station. The Town also operates shuttle services for seniors, providing 2,389 rides to 99 passengers in 2022, and the Groton-Dunstable Regional School District operates school buses for its students.

While Groton is part of the Montachusett Regional Planning Commission (MRPC), it is served by the Lowell Regional Transit Authority (LRTA). However, no routes from the LRTA reach Groton. The overlap in jurisdiction leads to confusion about which organization the town should look for support for mass transit. Residents expressed interest in public transit, which was the right size for Groton, whether that is a reliable shuttle route between destinations or enhanced microtransit services such as the existing senior shuttle.

Safety⁵²

We utilized data from the MassDOT crash portal and found that between January 2016 and July 2023, Groton roadways and motorists experienced 1,326 reported crashes (See Table 3.4.2). Based on information from local police departments, MassDOT sorts crashes by severity category, including property damage only, Injury Non Fatal, Fatal Injury, Unknown, and Not Reported. Most of these crashes (78 percent) were property damage only (non-injury) crashes, and there were no fatal crashes during this period. The lack of fatal crashes indicates that Groton's roadways are generally safe. However, 265 of these crashes during this time period, or 20 percent, were non-fatal injury crashes, including suspected serious injuries (See Table 3.4.3). These numbers do not include crashes in which the injury status or severity is unknown.

⁵² See Map 3.4.4 Vehicle Crash Locations.

Table 3.4.2 Groton Crashes by Severity (Jan. 2016 - Jul. 2023)

Severity	Quantity	Percentage
Property damage only	1,029	77.6%
Injury Non-Fatal	265	20.0%
Fatal	0	0.0%
Unknown	25	1.9%
Not reported	7	0.5%
Totals	1,326	100.0 %

Source: MassDOT

Table 3.4.3 Groton crashes by Injury Severity (Jan. 2016 - Jul. 2023)

Severity	Quantity	Percentage Of Injury Crashes	Percentage Of Total Crashes
Serious/Incapacitating	20	8%	2%
Minor/Non Incapacitating	128	48%	10%
Unknown	117	44%	9%

Source: MassDOT

An analysis of this data reveals that nearly 1000 of these crashes were along Route 119/Main Street, highlighting a need for traffic calming along this busy corridor. Other roadways with comparatively high crash rates are Chicopee Row, Townsend Road, Hollis Street, Forge Village Road, Lost Lake Road, and Lowell Road.

Four Corners

This intersection is in the southeast corner of Groton and is defined by Sandy Pond Road, Boston Road, and Forge Village Road. A shopping plaza to the northwest of the intersection contains a Shaw’s grocery store, a Dollar Tree, and other light commercial uses surrounding the intersection. Residential neighborhoods are located down each of the four legs of the intersection. This intersection is a key connection to the residential neighborhoods in southern Groton and handles traffic coming into Groton from Littleton. During the time period assessed, there were 179 crashes at and near this intersection. In other words, thirteen percent of all crashes in Groton occurred at this intersection, so the intersection’s geometry, sight lines, and other features should be reviewed for improvement.

Pleasant Street at Main Street

This intersection, in combination with the Broadmeadow Road/Lowell Road intersection, defines the approximate boundaries of Downtown Groton. Based on the geometry of this intersection, the proximity of the intersections of Court Street and Hollis Street with Main Street is considered part of this intersection analysis. Town Hall and the Station Avenue area are located to the immediate south of this intersection, and the Groton Police Department and the Groton Fire Department lie

to the west along Pleasant Street. Adjacent land uses are primarily residential and commercial. Due to its central location and nearby destinations, this intersection serves a significant role in Groton's roadway network. This intersection saw 113 crashes over the time period assessed, meaning nine percent of the total crashes in Groton occurred at this intersection. Turning movements and nearby points of interest may contribute to this crash rate.

Broadmeadow Road & Lowell Road at Main Street

This intersection, in combination with the Pleasant Street intersection, defines the approximate boundaries of Downtown Groton. Town Hall and the Station Avenue area are located to the immediate north of this intersection, and the Groton Public Library, the Groton Center for the Arts, and Lawrence Academy lie to the south. Bancroft Castle and Scarlet Hill Farm are situated to the east along Lowell Street. Groton Hill Music Center lies to the southeast of this intersection. Adjacent land uses are primarily residential and light commercial. The nearby destinations and centrality of this intersection make it a key intersection in the town's roadway network. The adjacent destinations may contribute to the 212 crashes that occurred here over the time period assessed, or sixteen percent of the crashes in Groton. The intersection's geometry, sight lines, and nearby destinations may be contributing factors to the high crash rate.

Pepperrell Road & Townsend Road at West Main Street

At the western edge of town, this intersection marks the town border with Shirley and is surrounded by primarily residential and conservation land. It is adjacent to the Lawrence Park Conservation Area, the Conservation Canoe/Boat Launch, and the Groton Town Forest. Townsend Road leads to Cutler Field and the Squannacook River Reservation, Pepperrell Road leads to residential neighborhoods, and West Main Street leads to a fire station, the Groton Senior Center, and residential neighborhoods. This intersection serves as a critical link for the town's overall roadway network by connecting to the residential neighborhoods in West Groton and distributing traffic entering Groton from Shirley. There were twelve crashes near this intersection during the time period studied, or less than 1 percent of the total crashes in Groton, meaning that intersection safety improvements may not be immediately necessary at this location.

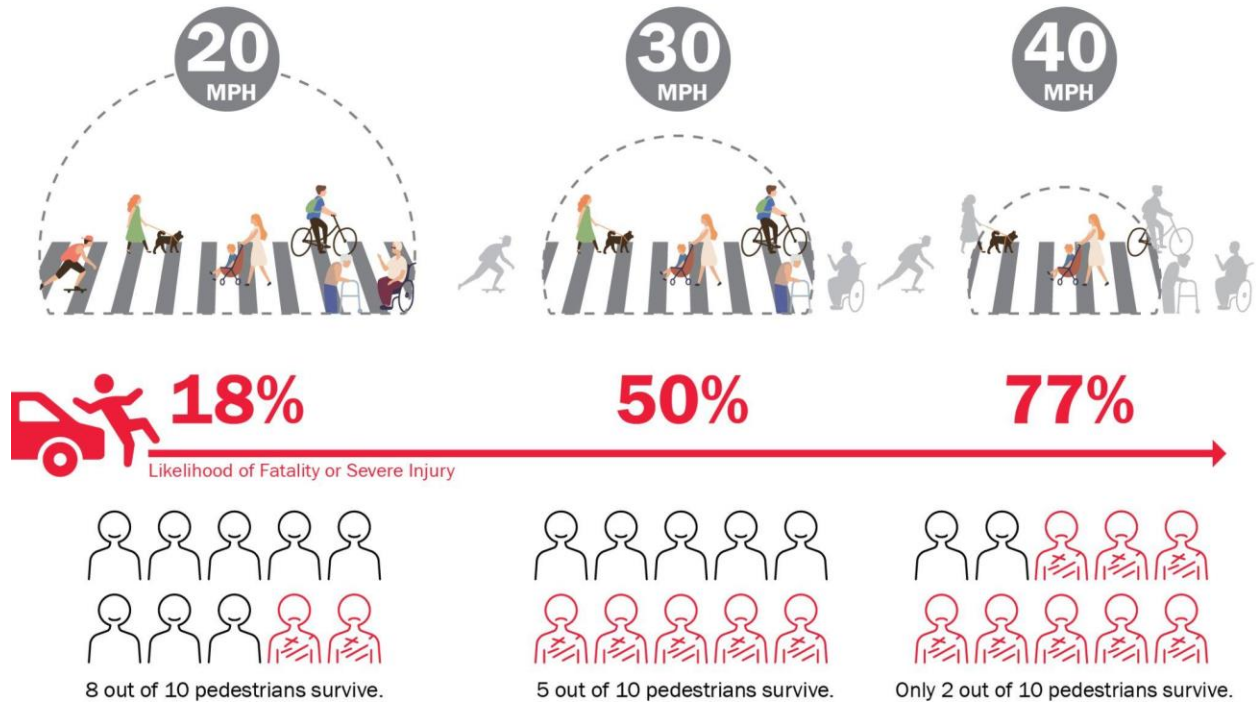
Old Ayer Road at Main Street

This intersection is south down Main Street from the Broadmeadow Road & Lowell Street intersection and is characterized by its triangular geometry. The current intersection geometry limits sight lines, although some efforts have been made to adjust the layout to make the left-turning movements easier. Old Ayer Road accesses multiple conservation land parcels and leads to the Groton Hill Music Center. This intersection is along a major route to the music center, and it plays a key role in the town's transportation network, especially during concerts and other events. There were only four crashes at this intersection during the time period studied, indicating that intersection safety improvements should be focused on other locations.

Speeds

Currently, most speed limits in Groton are set to 35 mph, and actual speeds are likely higher. Higher speeds are less safe for all roadway users, especially bicyclists and pedestrians (See Graphic 3.4.2). These high vehicle speeds may contribute to residents' hesitation to utilize active transportation modes.

Higher Speeds Reduces Driver's Field of Vision



Higher Speeds Significantly Increase Likelihood of Fatality or Severe Injury

Graphic 3.4.2 Pedestrian Injury Rates at Different Vehicle Speeds

Trends

Groton is a historically rural community but has been seeing increased development in line with the rest of the Commonwealth. New developments often correspond to an increase in Vehicle Miles Traveled (VMT). VMT correlates to increased pollution levels in the form of tailpipe emissions and brake and tire dust. Local communities bear the brunt of private motor vehicle VMTs; Groton residents are already experiencing this in the increasing cut-through traffic.

Due to the rural and residential character of the town, some of the traffic can be attributed to the “last mile problem,” a term that describes how to get people the last mile (or further, in Groton’s residents’ case) to and from public transit facilities. For example, a Groton resident who wants to catch the commuter rail at Ayer Station must drive through Groton to get there.

Some commuting patterns have changed as a result of the COVID-19 pandemic. Some affluent residents have flexible jobs that allow remote work or off-peak commutes, which lessens congestion during peak hours and increases midday congestion during what has traditionally been considered off-peak hours. Some peak-hour traffic can also be attributed to school pickup/drop-off.

Increases in both electric vehicle use and delivery van traffic will likely continue. Electric vehicles have become increasingly popular due to state and federal incentive programs. As the share of electric vehicles on the road has increased, so has the demand for charging stations. Groton residents have access to public, for-fee electric vehicle charging stations at the Prescott School Community Center and Groton Center, as well as publicly accessible chargers on private property at the Unitarian Universalist Church along Lowell Road, the Groton Country Club, and the Groton Inn. For further details, please refer to the Resilience and Sustainability section. With the rise of e-commerce, delivery vehicle traffic has also likely increased significantly compared to the last master planning effort in Groton.

Past and Recent Projects

Some projects in Groton that were supported in the 2011 Master Plan have been completed. For instance, the Squannacook Rail Trail in the northwest section of Town was funded after Senator John Cronin and the state legislature earmarked \$50,000 for Phase 4 in August 2022. Groton passed \$90,000 in Community Preservation Act funding, and Squannacook Greenways won a \$150,000 MassTrails grant in June 2023 to support the design and construction of Phase 4 of the trail. Construction started in November 2023, and this final section is anticipated to be open by June 2024. The Town has also undertaken policy changes recommended in the 2011 Master Plan, including adopting the Town's first Complete Streets Policy (July 2016). Groton finalized its complete streets prioritization Plan in April 2017 with thirteen projects of varying size and scale. Since then, the town has applied for and been awarded \$702,635 and implemented or prepared designs for five of the thirteen projects.

Since the development of the 2011 Master Plan, several transportation studies have been prepared by the Town and Montachusett Regional Planning Commission (MRPC):

- 2023 Montachusett Regional Transportation Plan 2024 (MRPC/Montachusett Metropolitan Planning Organization – MMPO)
- 2012 Town of Groton Walkability Report and Study (MRPC)
- 2014 Groton Center Design Guidelines Station Avenue (Town)
- 2014 Groton Trails Vision Report (Groton Trails Vision Committee)
- 2015-2023 Transportation Improvement Programs, FFY 2016-2022 through -2019-2028 (MRPC)
- 2017 Complete Streets Prioritization Plan

These studies were performed either as part of ongoing programming conducted by MRPC or as specific studies to address a potential need identified by one of their member communities. These

studies provide tremendous amounts of data from which the Master Plan can identify a number of key trends and needs.

The 2023 Transportation Improvement Program (TIP) from the MRPC also identified goals consistent with what we heard from Groton residents, including improving safety, reducing congestion, and promoting equitable transportation. This program report also included performance measures to assess the progress of those goals. This TIP noted an increase in crash-related fatalities in 2020 and 2021 compared to previous years, although this may be due to a decrease in Vehicle Miles Traveled (VMT) due to the COVID-19 pandemic. No Groton-specific projects were identified in this TIP.

The Groton Complete Streets Committee created a Complete Streets Prioritization plan that was approved by MassDOT in 2017. This plan included thirteen priority projects (see Table 3.4.4 below). The Committee applied for and was granted MassDOT Tier 3 Construction funds in 2017 for projects 4) Main Street Traffic Calming, 7) Long Hill Road Sidewalk, 10) Speed Limit Signage, and 11) Bike Facility. Groton has since installed traffic calming along Main Street and has received funds to extend sidewalks along Lowell Road to Gibbet Hill Grill and West Main Street to the Senior Center.

Table 3.4.4 Complete Streets Priority Projects, 2017

#	Project Name	Project Description
1	Sidewalk/Bicycle Path Connection between Rail Trail & Temple Drive	Pave pedestrian sidewalk/bicycle access to a width of 8 ft on a public easement from Temple Drive to the DCR Nashua River Rail Trail.
2	Rail Trail Sidewalk at Whistle Post Lane	Pave pedestrian sidewalks to a width of 8 ft and install 2 ADA ramps from Whistle Post Lane to the DCR Nashua River Rail Trail as recommended in the ADA Self-Evaluation Transition Plan.
3	West Main Street Sidewalk	Construct a sidewalk along West Main St (Rt 225), including 2 ADA ramps, 1 crosswalk and 1 set of flashing pedestrian light & sign, from its current end to the Senior Center.
4	Main Street Traffic Calming	Install 32 ADA ramps and 6 crosswalks with 6 sets of flashing pedestrian lights with signs along Main Street (Rt 119) in Groton Center.
5	Lowell Road Sidewalk	Construct a sidewalk along Lowell Road (Rt 40) from its current terminus to the Gibbet Hill Grill Restaurant.
6	Forge Village Road Bicycle Lane & Pedestrian Improvements	Shoulder widening to accommodate bicycles and pedestrian improvements including signage, 2 crosswalks with 4 ADA ramps, along Forge Village Rd (Rt 225) from Four Corners to Waitowicz Field.
7	Long Hill Road Sidewalk	Construct a sidewalk along Long Hill Road, including 4 ADA ramps and 1 crosswalk with flashing lights, from its current terminus at Riverbend Drive to Groton Place.
8	Sandy Pond Road Sidewalk	Construct a sidewalk along Sandy Pond Road, including 2 ADA ramps and 1 crosswalk, from current terminus to intersection with Robin Hill Road.

Table 3.4.4 Complete Streets Priority Projects, 2017

9	Roadway Striping & Signage Project	Install striping and signage to facilitate partial road sharing on public roadways with sufficient ROW width.
10	Speed Limit Signage Project	Install 6 flashing, solar speed limit signs where appropriate.
11	Bike Facility Project	Purchase & install 1 bikeway repair station at Nashua River Rail Trail.
12	Lovers Lane Multi-Use Trail	Construct a multi-use trail, including 4 ADA ramps and 2 crosswalks, on Lovers Lane.
13	Bridge over Rail Trail at West Street	Construct a pedestrian/bicycle bridge on West Street over the DCR Nashua River Rail Trail using existing granite abutments. The Committee will apply for Community Preservation Funds for engineering design.

Source: Groton Complete Streets Prioritization Plan, 2017

Proposed/Upcoming Projects

The Montachusett Regional Transportation Plan discussed above identified the Nashua River Rail Trail as in need of repairs due to the deterioration of the trail surface. Additionally, Phase 4 of the Squannacook River Rail Trail is estimated to be completed by early 2024. Phases 1, 2, and 3 from Townsend Center to West Groton have already been completed.

The Nashua River Walk project proposes a 0.25-mile segment of fully accessible trail along the Nashua River. It would connect to the existing John Tinker Trail and would include interpretive signage and a picnic area. The Groton Trails Committee proposed the river walk, and Community Preservation Act (CPA) funds will provide approximately \$60,000 for the project.

Local Capacity, Policies, and Regulations

Groton’s transportation network is driven and influenced by various people and existing regulations. Current town staff committees related to transportation include the following:

- Department of Public Works & Highway Department
- Trails Committee
- Complete Streets Committee
- Destination Groton Committee
- MBTA Advisory Board
- Montachusett Joint Transportation Committee

Of these, the Department of Public Works (DPW) and its Highway Department have significant influence over Groton’s transportation network. The DPW is responsible for roadway maintenance and management, Groton’s transfer station, and other infrastructure in town.

The Town of Groton has \$513,680.63 in Chapter 90 funds allocated for fiscal year 2023. This value is calculated by a legislatively determined formula that considers total miles of roadway, population, and employment levels. While the 2023 allocation is lower than the \$517,100 allocated in 2022, this allocation is higher than the 2016-2021 average Chapter 90 amount of \$503,363. This increase in recent years corresponds to the increasing costs associated with paving and designing roadways.

The Groton Trails Committee is responsible for mapping the trail system, identifying abandoned roads, and expanding the network based on available land. While most of these trails are rugged and different parcels do not connect, the network of trails provides opportunities for infrastructure that is focused on active transportation users instead of private motor vehicle drivers.

The Groton Complete Streets Committee advocates for the accommodation of all roadway users into the walkways, roads, trails, and transit networks. This committee aims to implement Complete Streets principles and modify existing practices where there are barriers to implementation. Their goal is for the transportation network to accommodate all roadway users of all ages. Their recent safety improvements include sidewalk extensions and curb-cut accessibility enhancements.

Destination Groton Committee leads Groton's efforts to become a destination community. Its members coordinate with many different groups within Groton and manage traffic, parking, and infrastructure for business expansion, special events, and venues.

3.5. Housing and Residential Development

Introduction

Groton is a semi-rural town with a residential development pattern characterized by single-family homes on larger lots. A limited amount of new housing development has occurred in Groton over the past several decades. This has contributed, in part, to rising home prices as the demand for a home in Groton exceeds the available supply.

This section of the Master Plan examines the housing landscape in Groton and what can be interpreted from demographics about housing needs within the community. Many participants in the community engagement process voiced a desire to make Groton's housing market more accessible and affordable for the town's workforce and long-time residents, expand opportunities for aging residents seeking to downsize and attract potential homebuyers who wish to make Groton their new home. The community hopes to guide future residential development in a manner that complements the physical landscape of the town and meets the needs of people at all stages of their lives. Planning for housing in Groton will benefit from the same careful attention and emphasis the Town has traditionally placed on the conservation and preservation of land and water resources.

Existing Conditions

Residential Building Profile

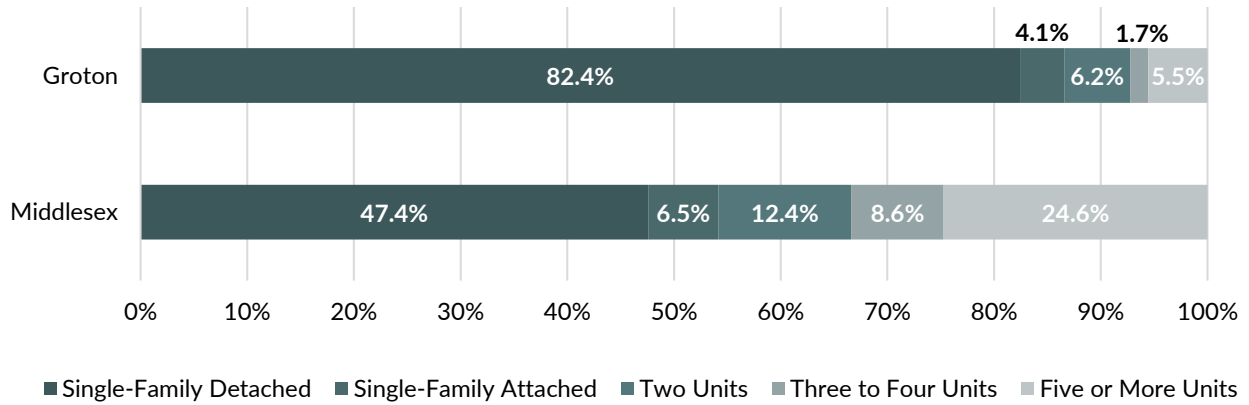
Building Types & Sizes

The housing profile in Groton is largely family-oriented, and the residential building typology is overwhelmingly comprised of detached single-family dwellings. Figure 3.5.1 shows the shares of housing unit types within the town and compares them to those of Middlesex County. Of Groton's total number of housing units, 82.4 percent are detached single-family homes, a significantly larger percentage than that of the county at 47.4 percent.⁵³ For Middlesex County as a whole, the rest of the housing stock, including attached single-family dwellings, are units in structures containing two or more units and most commonly in the form of apartment buildings. This diversity of housing types supports all ranges of household incomes, ages, lifestyles, and other demographics, and the variety of such fosters a diverse community. In contrast, Groton's homogenous housing typology supports a more limited demographic that favors family households.

⁵³ U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021. Table B25024.

Figure 3.5.1 Housing Unit Types

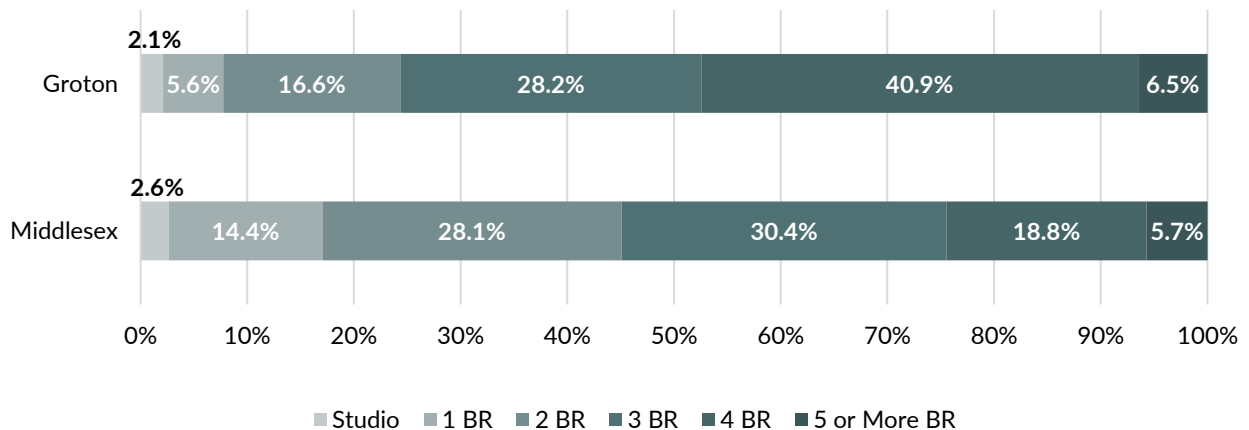
Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B25024



Housing units – mostly in the form of detached single-family homes – most commonly support three- or four-person households, as shown in Figure 3.5.2. Nearly 70 percent of all units contain three to four bedrooms. Combining this information with the town’s residential building typologies demonstrates that Groton’s housing market largely supports midsized family households in detached single-family homes. In comparison, Middlesex County has a much larger share of two- to three-bedroom units at 58.5 percent supporting smaller-sized family households and individual renters, considering the county’s comparatively higher percentage of multi-family and multiple-unit residential structures.

Figure 3.5.2 Housing Units by Number of Bedrooms

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B25041

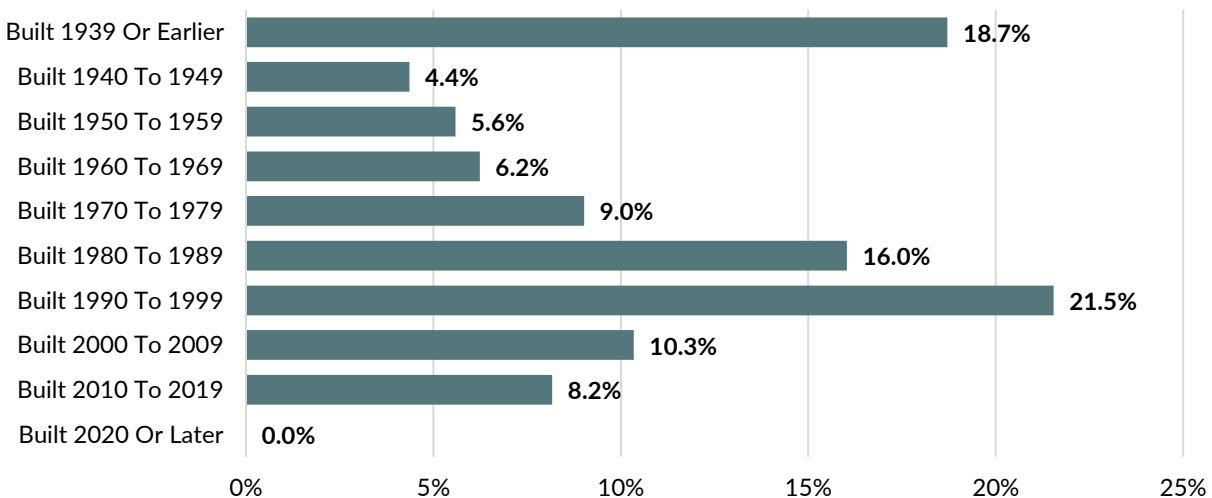


Age of Housing⁵⁴

The general age of residential structures often relates to the quality and longevity of the units they contain. In many towns, the oldest homes are often the most treasured and regarded as an essential component of a community's image and character, but this is not always the case. Figure 3.5.3 shows that over half of all units are in structures that were built after 1980, and the rest (44 percent) are in structures that were built before. Less than 20 percent pre-date 1940, the first year that the Census Bureau began collecting information about the nation's housing stock. It is important to note that the estimates shown in Figure 3.5.3 do not indicate how many homes were produced in each period because homes have been demolished or repurposed, but rather the age of homes that are currently standing. Furthermore, it should be emphasized that these are only estimates as of 2021, so the chart does not include new units that have been developed since.

Figure 3.5.3 Groton Housing Units by Year Built

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B25034



Housing Vacancy

A vacancy rate below five percent indicates that demand for housing exceeds housing supply, which can increase sale and rental prices, making it more difficult for new buyers or renters to find housing in town.⁵⁵ According to 2021 census estimates, Groton has a housing vacancy rate of 4.1 percent.⁵⁶ Compared to the county's rate of 4.5 percent and the state's rate of 8.9 percent, there are fewer shares of housing units in town available for prospective renters and buyers to move into Groton or town residents to move within Groton.

⁵⁴ For more information on the Age of Housing in Groton, see Section 3.1 Land Use.

⁵⁵ Smith, G. "Understanding Rental Vacancy Rates for Real Estate Investing in 2023." Azibo. May 10, 2023. <https://www.azibo.com/blog/rental-vacancy-rates>.

⁵⁶ U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021. Table B25002.

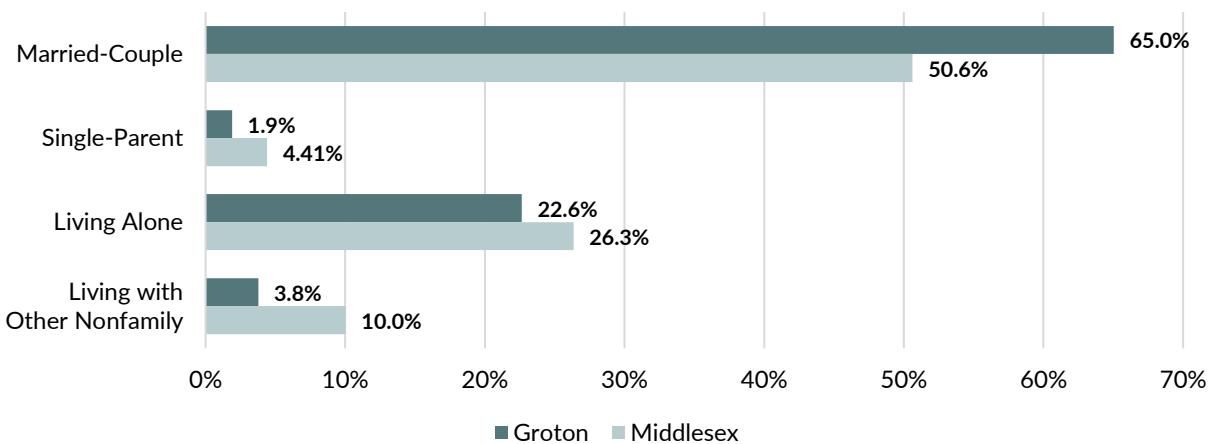
Household Characteristics

Household Types & Sizes

Of 3,992 total housing units in Groton as of 2021 census estimates, 95.9 percent are occupied. The majority of Groton's 3,829 households, 73.6 percent, are families, including married and unmarried couples and single-parent households, as shown in Figure 3.5.4. Married couples constitute the majority of households at 65 percent, followed by 22.6 percent of householders living alone. The average family size is 3.4 members, but the large percentage of residents living alone brings the average household size of all households down to 2.9 members.

Figure 3.5.4 Household Type

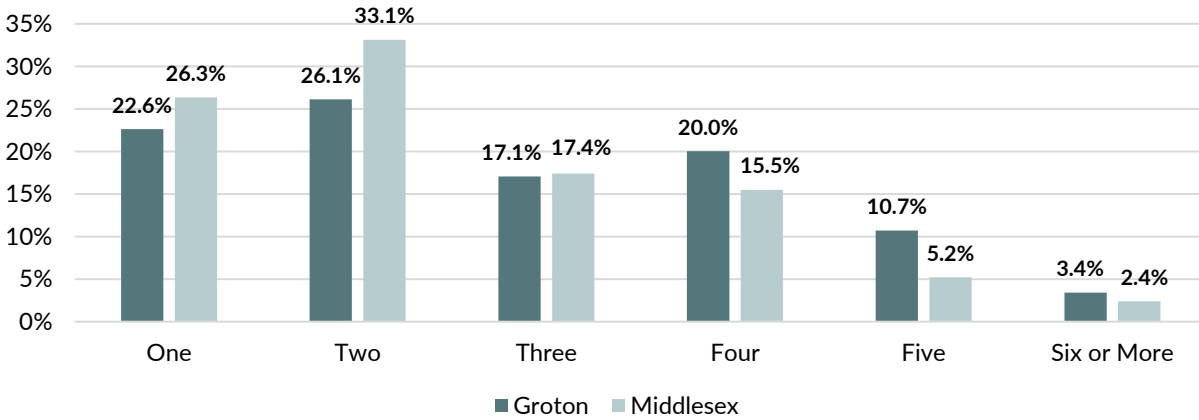
Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Tables B11012 and B11016



Two-member households are the largest group of households by size, at 26.1 percent, followed by four- and then three-member households at 20 and 16.5 percent, respectively, as shown in Figure 3.5.5. According to these estimates, the two-member households are underrepresented by the housing market that demonstrably supports larger household sizes (see Figure 3.5.1). In many cases, two-person families or couples could find sufficient housing in just one-bedroom units, but then that would limit housing availability for 22.6 percent of residents living alone. Conversely, many single residents live in larger units with two or more bedrooms, limiting housing availability for smaller families who cannot afford or wish to live in larger homes than they need. Studios and one-bedroom units account for just over 300 units (7.7 percent of all units), which is less than half of how many residents live alone (867) (see Figure 3.5.2). Furthermore, nearly half of all units have four or more bedrooms. Factoring in household living patterns and discrepancies, many households live in units with more bedrooms than the number of residents. These extra rooms may be used for office space, storage, library, guest rooms, or perhaps in anticipation of additional members to their households or families.

Figure 3.5.5 Household Size

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B11016

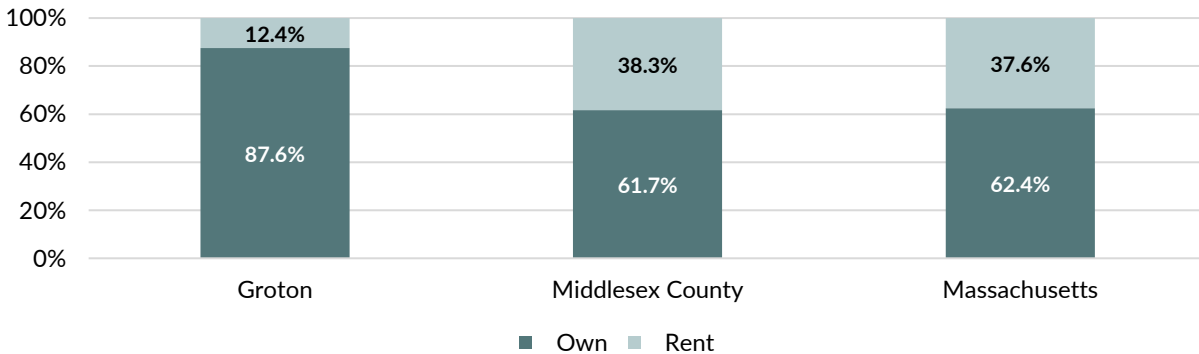


Tenure

An analysis of homeownership levels and rental opportunities is an important feature of a housing assessment. Of all housing units in Groton, 87.6 percent are owner-occupied and 12.4 percent are rented, as shown in Figure 3.5.6. This share of homeowners is much higher than Middlesex County at 62.1 percent and the state at 63.2 percent. Having so few rental opportunities can result in lower-income households and families struggling to find housing accommodations in Groton, as rental housing tends to be a more affordable option compared to buying a home.

Figure 3.5.6 Housing Tenure

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B25003



Housing Affordability

Housing affordability is a persistent issue but not unique to Groton. Lower-income residents face the greatest challenges related to housing, and statistics illustrate this problem in detail. Further estimates from the Census Bureau show that renter households financially struggle to pay for housing in far greater numbers than homeowners.

Low-Income Households

Table 3.5.1 below shows a distribution of owners and renters among households earning 100 percent or less of the U.S. Department of Housing and Urban Development (HUD) Area Median Family Income (HAMFI) in Groton.⁵⁷ The most recent HAMFI data is calculated by HUD based on 2020 ACS Five-Year estimates, so the figures are slightly different from the housing figures using more recent 2021 ACS estimates. Nevertheless, renters have much lower incomes than homeowners; the median household income of renters was estimated to be \$43,750, or 27 percent of the median household income of homeowners, \$161,893 as of 2020. Furthermore, 70 percent of renter households earned 80 percent or less of the HAMFI compared to 21 percent of owner households. It should be noted that the average size of owner households is 3.0 residents compared to an average of 1.7 residents in renter households.⁵⁸ Larger households are more likely to have more individuals earning income and contributing to the total household income. Of all family households, 69.6 percent have two or more earners.⁵⁹ Even as the average size of owner households is 76.4 percent larger than renter households, the median household income of owner households is 270 percent greater. It is also important to distinguish that HUD compares household incomes to the area median *family* income, the latter of which is greater in Groton.

Table 3.5.1 Income Distribution Overview

Household Income	Owner	Renter	Total
Extremely Low-Income: Up to 30% HAMFI	275	150	425
Very Low-Income: >30% to 50% HAMFI	230	45	275
Low-Income: >50% to 80% HAMFI	245	110	355
Moderate Income: >80% to 100% HAMFI	225	35	260
Median Income and Higher: >100% HAMFI	2,535	95	2,630
Total	3,510	435	3,945
Percent Family Household	80.0%	30.7%	74.6%
Median Household Income	\$161,893	\$43,750	\$142,500
Median Family Income	n/a	n/a	\$177,118
Median Nonfamily	n/a	n/a	\$47,250

Source: HUD, Comprehensive Housing Affordability Strategy (CHAS), 2016-2020; U.S. Census Bureau, American Community Survey Five-Year Estimates, 2020. Tables B19113, B19202, B25115, and B25119.

⁵⁷ HAMFI is the same as the more commonly used term, Area Median Income, or AMI.

⁵⁸ U.S. Census Bureau, American Community Survey Five-Year Estimates, 2020. Table B25010.

⁵⁹ U.S. Census Bureau, American Community Survey Five-Year Estimates, 2020. Table B19122.

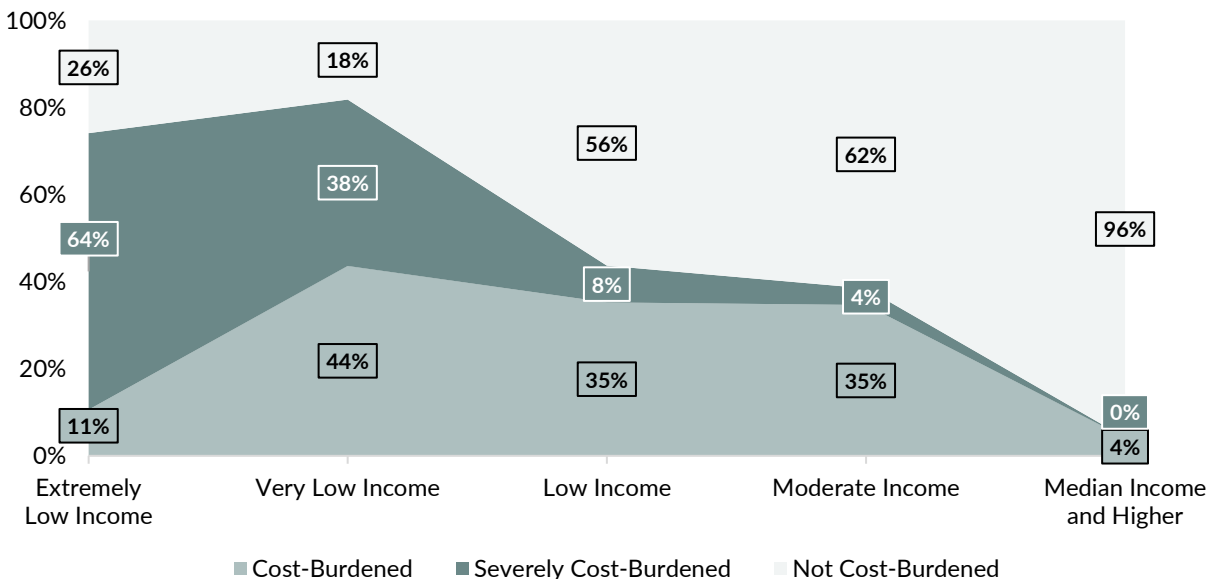
Cost Burden

One standard measure of housing affordability is cost burden. Households are considered cost-burdened when they spend more than 30 percent of their income on rent and basic utilities or a monthly mortgage payment (principal, interest, taxes, and insurance).⁶⁰ Younger households, non-family households, and elderly households are more likely to be housing cost-burdened because, overall, they have lower incomes.

Figure 3.5.7 reports the housing cost burden for all households in Groton and shows that cost burden rates are greater among households earning less than the HAMFI and the highest among the lowest income earners, up to 50 percent of the HAMFI. Very low-income households earning between 30 and 50 percent of the HAMFI experience the highest rate of cost burden at 82 percent, but extremely low-income households earning 30 percent or less of the HAMFI experience the highest rate of severe cost burden, i.e., they spend more than half of their monthly income on housing.

Figure 3.5.7 Housing Cost Burden by Household Income

Source: HUD, Consolidated Housing Affordability Strategy, 2016-2020

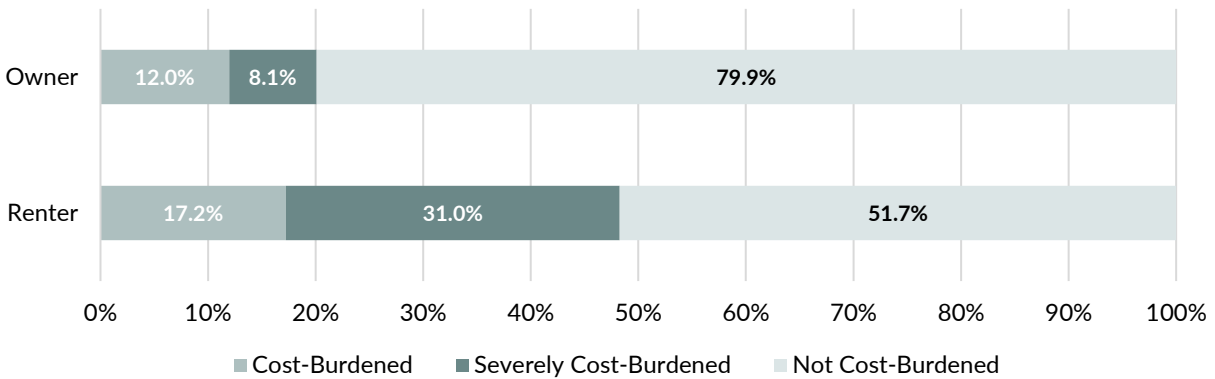


Cost burden rates are typically higher among renter households, and as shown in Figure 3.5.8, 48.2 percent of renters are cost-burdened compared to 20.1 percent of owners in Groton. Among cost-burdened renters, over half of them are severely cost-burdened at a rate of 64.3 percent. In contrast, less than half of cost-burdened homeowners experienced severe cost burden. Not only are renters more likely to struggle to pay for housing, but these housing challenges are also even more difficult for them to overcome.

⁶⁰ U.S. Census Bureau. "Housing Costs and Living Arrangements: 2022." Census.gov. December 2022. <https://www.census.gov/library/stories/2022/12/housing-costs-burden.html>.

Figure 3.5.8 Cost Burden by Tenure

Source: HUD Consolidated Housing Affordability Strategy, 2016-2020



Subsidized Housing Inventory

Under G.L. c. 40B, § 20-23, commonly known as Chapter 40B, affordable housing means housing developed or operated by a public or private entity and reserved for income-eligible households earning at or below 80 percent of the Area Median Income (AMI). Under Chapter 40B, affordable units must be secured by a deed restriction to protect affordability over time and qualify units for listing on the Executive Office of Housing and Livable Communities’ (EOHLC) Subsidized Housing Inventory (SHI). The state law establishes that a minimum of 10 percent of the housing units, following the most recent census figures, in each city or town must be affordable and eligible for the SHI. If the number of SHI units does not compose at least 10 percent of a town’s total housing stock, developers can qualify for waivers of local regulations in order to build a proposed affordable or mixed-income development. At least 20 to 25 percent of the units must have affordability restrictions.⁶¹

Figure 3.5.9 Groton Subsidized Housing Inventory Units

Source: Executive Office of Housing and Livable Communities, 2024

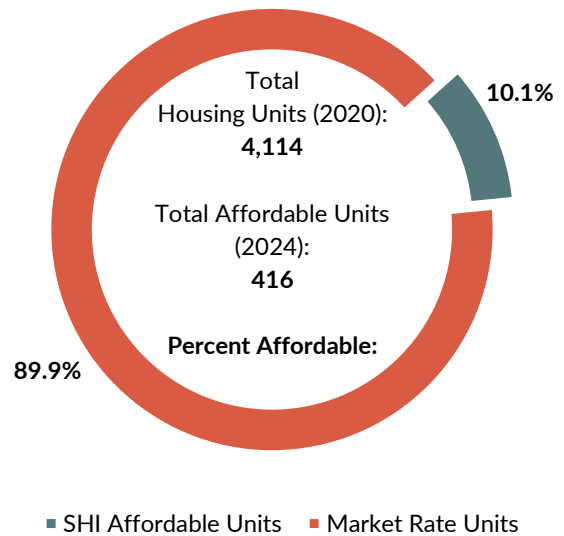


Figure 3.5.9 and Table 3.5.2 report the list of Chapter 40B-eligible units based on the Subsidized Housing Inventory maintained by EOHLC. As of March 2024, Groton has “safe harbor” status as the town’s total number of SHI units met the statutory minimum.⁶² Groton Farms is the most

⁶¹ MAPC, “New Subsidized Housing Inventory Figures Provide an Estimate of Affordable Housing Available in each Massachusetts Community,” 2023.

⁶² Executive Office of Housing and Livable Communities, “Subsidized Housing Inventory,” 2024.

recent addition to the inventory after the Board of Appeals granted the project a comprehensive permit in November 2023, and the state officially added it to the inventory in February 2024. The development adds 200 total units to the community, with 50 of the units having affordability restrictions.

Before the addition of Groton Farms, the Town was 196 units short of the minimum threshold. Now, with “safe harbor” status, Groton can decline to consider new 40B comprehensive permit applications. However, the SHI is only one measure of housing affordability, and Chapter 40B is one impetus for increasing the number of attainable housing. The 10 percent threshold does not fully represent the demand for attainable and affordable housing in Groton, and the town must continue working to meet the housing needs of the community.

Table 3.5.2 List of Chapter 40B Developments in Groton

Project Name	Total Units	Address	Type	Subsidizing Agency
Groton Farms	200	500 Main Street	Rental	MassHousing
RiverCourt Residences	78	8 West Main Street (West Groton)	Rental	MassDevelopment
Groton Commons	34	74 Willowdale Road	Rental	EOHLC
19 Lowell Road	20	19 Lowell Road	Rental	EOHLC
Winthrop Place	16	Main Street	Rental	Rural Housing Service (RHS)
Groton Residential Gardens	11	Mill and Main Street	Ownership	MassHousing
Academy Hill	10	Rose Crest Way, Lilac Circle	Ownership	EOHLC
Sandy Pond Road	9	34, 36, and 38 Sandy Pond Road	Rental	EOLHC, Mass. Housing Partnership (MHP)
Brookfield Commons	8	Brookfield Road	Ownership	EOHLC
29 Lowell Road	5	29 Lowell Road	Rental	EOHLC
DDS Group Homes	5	Confidential	Rental	DDS
Squannacook Hill	5	Townsend Road	Ownership	MassHousing
Boynton Meadows	3	134 Main Street	Ownership	EOHLC
698 Townsend Road	2	698 Townsend Road	Ownership	EOHLC
Brookfield Commons	2	Brookfield Road	Rental	EOHLC
Longfellow Place	2	Longfellow Road	Ownership	EOHLC
Nashua Road	2	Nashua Road	Ownership	EOHLC
Reedy Meadow Estates	2	4 Olivia Way	Ownership	EOHLC
Fawn Terrace	1	Fawn Terrace	Ownership	EOHLC
Lowell Road	1	Lowell Road	Ownership	Local Initiative Program (LIP)
Total	416	10.1% of 4,114 Total Year-Round Units		

Source: Executive Office of Housing and Livable Communities, Ch. 40B Subsidized Housing Inventory, 2024

RiverCourt Residences, a formerly abandoned mill building, was redeveloped for use as a senior and assisted living facility. Groton Commons also provides housing exclusively to limited-income senior or mobility-impaired residents. Groton has been working on increasing the number of multifamily developments in town and the number of affordable units in recent years. As of January 2024, a comprehensive permit for forty homeownership units known as Heritage Landing was in the permitting process with the Board of Appeals.

Trends

The following section includes a summary of trends in housing and residential developments in Groton.

Parcel Type Change

Table 3.5.3 reports changes in parcel-type housing units from Fiscal Year 2005 to 2020. The most significant change in parcel types is the increase in parcels for condominiums, almost tripling during these 15 years. The increase in single-family and decline in multi-family and apartment parcels are an indication of the town’s trajectory towards more single-family development. The number of Chapter 61 parcels has nearly halved, and shows the number of undeveloped properties removed from tax-exempt status such as forestry, agriculture, and recreation.⁶³ The number of vacant lots also fell. Both of these declines indicate that these parcels have been developed since.

Table 3.5.3 Groton Parcel Type Change

Parcel Type	FY2005	FY2020	Percent Change
Single-Family	2,990	3,225	7.9%
Condos	104	295	183.7%
Two-Family	160	137	-14.4%
Three-Family	14	11	-21.4%
Apartment	14	12	-14.3%
Commercial	100	89	-11.0%
Industrial	17	15	-11.8%
Chapter 61	103	53	-48.5%
Vacant	644	482	-25.2%

Source: Groton Housing Production Plan 2020-2025; MA Department of Revenue, Databank Reports FY20

Home Sale Prices and Values

Home prices are rapidly increasing and Figure 3.5.10 shows that the median sale prices of single-family properties have more than doubled since 2000. It plateaued prior to and then fell during the Great Recession (2007-2009) before rising again to peak levels in 2023.

⁶³ Department of Conservation and Recreation. “Forest Tax Program Chapter 61.”

Figure 3.5.10 Median Sales Price of Single-Family Homes

Source: Banker & Tradesman, Town Stats

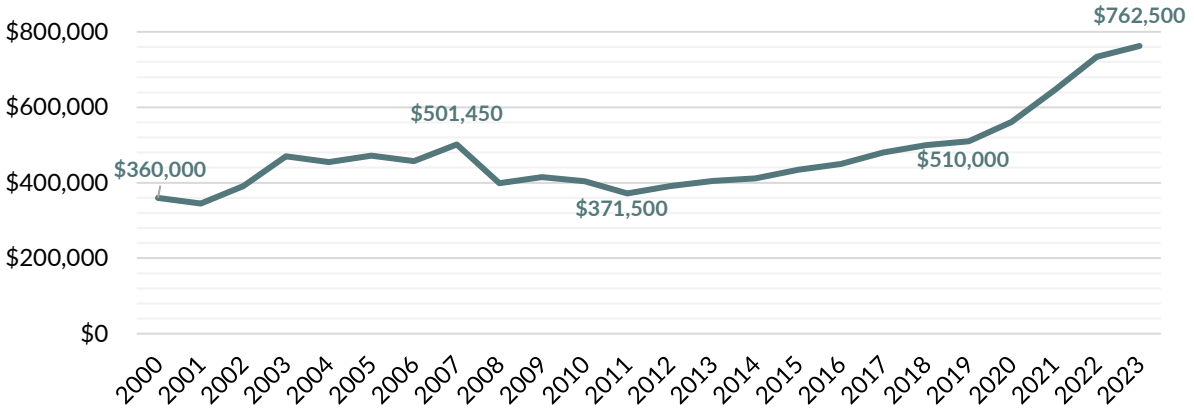


Figure 3.5.11 displays the value for all owner-occupied housing units in Groton, totaling 3,353 units, and illustrates a slight left skew. These figures are based on the 2021 census estimates and indicate a decline in owner households from census estimates of 3,510 owner households in 2020. Over half of these homes are valued at \$500,000 or more. However, based on the continued increase in the median values of single-family homes up to 2023, the percentage of home values over \$500,000 is likely to have increased.

Figure 3.5.11 Home Value Distribution

Source: U.S. Census Bureau, American Community Survey Five-Year Estimates, 2021
Table B25075

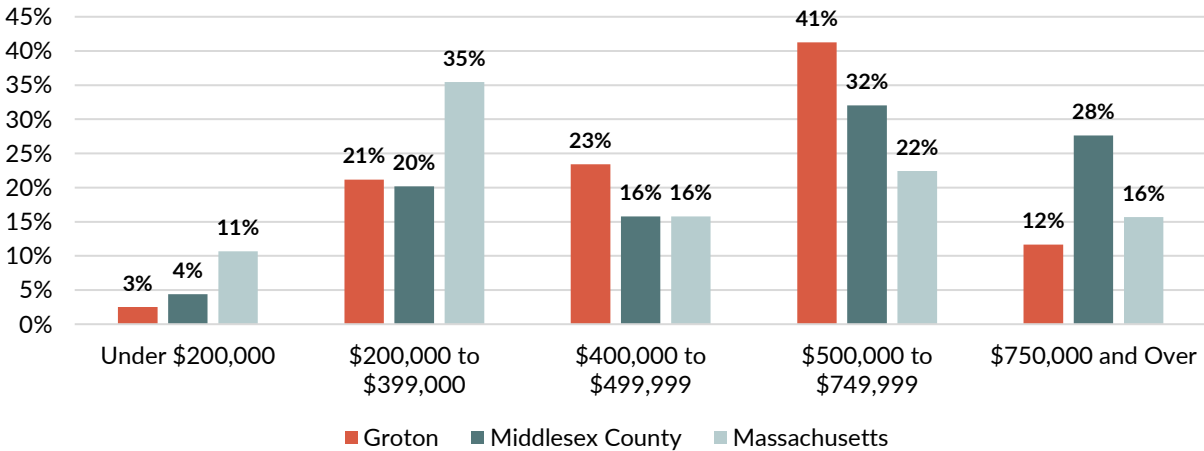
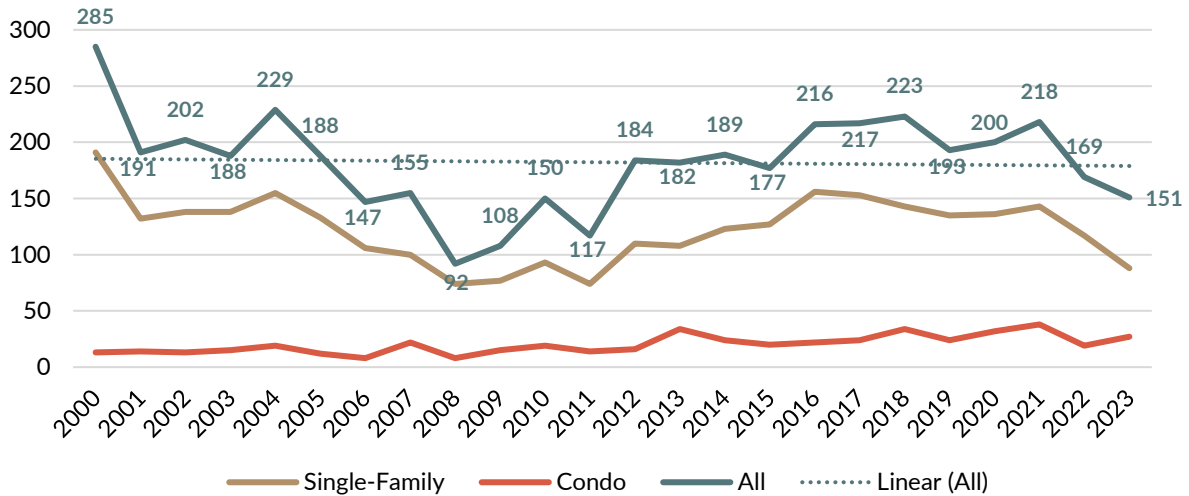


Figure 3.5.12 shows the number of home sales each year from 2000 to 2023, and they have remained constant since peak sales in 2000, as indicated by the nearly flat trendline. The housing market reached a low point in 2008 during the Great Recession before recovering to normal levels. This aligns with stagnant population trends and moderate housing production levels. However, home sales prices increased drastically during this period.

Figure 3.5.12 Number of Home Sales in Groton

Source: Banker & Tradesman, Town Stats

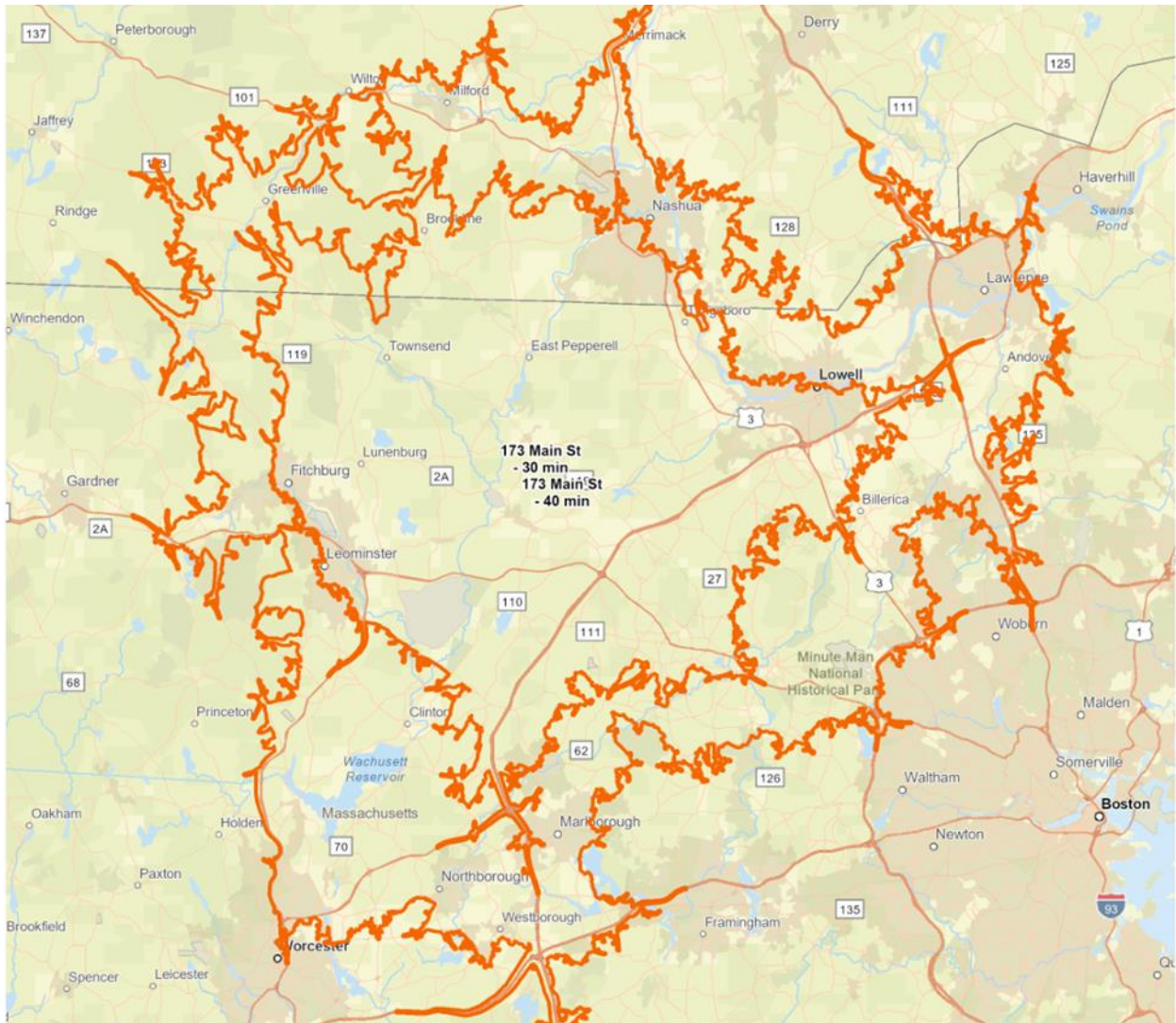


Rental Housing Demand

FXM’s *Housing Demand Model* is designed to capture rental demand by householder age and ability to pay, which are key characteristics of demand. It uses those data, plus data on mobility and new growth projections within a designated market area, to estimate the types of households that might be attracted to the area, along with their estimated ability to pay, based on affordability norms. The model projects, over the next five years, the average annual demand for rental housing by age, income group, and affordable rental rates.

The model enables planners and developers to target types of rental units, in terms of cost, size, and amenities, to various age groups of potential renters. For example, households within the under 35 and 55 to 74 age groups are frequently targeted by developers for urban and specialty rental housing, such as the re-use of formerly commercial and institutional structures, because they are less likely to have school-age children and, therefore more open to units with fewer bedrooms in locations that are not necessarily ideal environments for children. They are also likely to be attracted to environments that allow walking to restaurants and retail shops. Households in other age groups, however, also comprise demand for housing within the market area, and this section also assesses overall potential demand for all age groups.

The market area is shown in Graphic 3.5.1. The map shows both a 30-minute and 40-minute drive time area. The 40-minute drive time area was selected as the best definition of the market area for housing in Groton, consistent with Groton’s average commute time of 39 minutes and the average commute time for Groton and surrounding towns of 38 minutes.



Graphic 3.5.1: 30- and 40-minute drive time areas.

FXM used its *Housing Demand Model* to estimate demand for rental housing within this 40-minute drive time from the center of Groton. For the geographic area, FXM obtained proprietary 2023 data from Claritas, Spotlight Reports, estimating the number of households by age of householder and income ranges in 2023 and projected to 2028. Table 3.5.4 shows the context for demand within this market area.

Table 3.5.4 Housing Demand Context

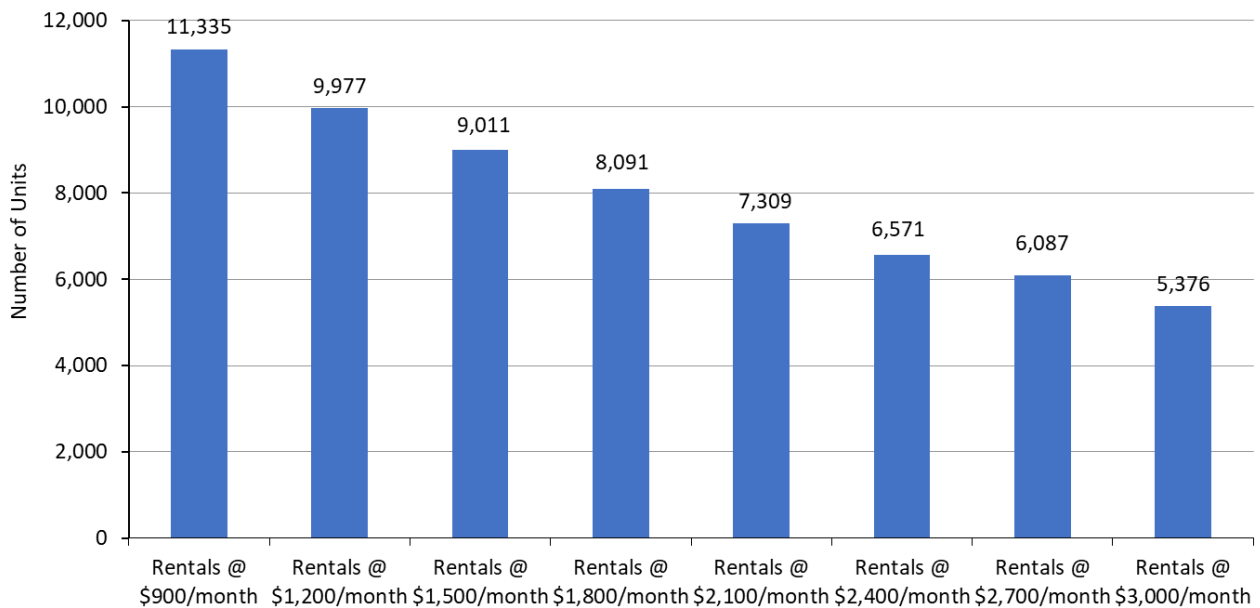
Groton 40-Minute Market Area	
2023 Population	1,121,787
Households	420,282
Renter Households	143,963
% Renters	34.3%
Renters Moving in Average Year	12,812
% of All Households	3.0%
Median Household Income	\$100,614

Source: Claritas Inc., Spotlight Reports, Demographic Snapshot, 2023 Estimates, and FXM Associates

Model results are shown in the figures below. The source for all data used in the model and figures is Claritas, Inc., 2023. Following the figures and model narrative, the results are compared to rents for units currently listed on Zillow.com in Groton and surrounding towns. This sample indicates what rents the market is offering for various sizes and types of units in newer, high-quality developments and serves as a further dimension to the affordability estimates produced by the model. Figure 3.5.13 shows the average annual demand for all rentals by all age groups in the Groton Market Area, taking into consideration affordability, propensity to move in any given year, and propensity to rent. Note that the numbers are cumulative, not additive.

Figure 3.5.13 Average Annual Demand for Rentals: All Age Groups

Groton 40-Minute Market Area, 2023-2028



For example, according to the above figure, of the total number of households expected to move to rental housing each year within the 40-minute market area and able to afford at least \$900 per month rent (11,335 households), approximately 8,091 would be able to afford monthly rents of up to \$1,800.

As shown in Table 3.5.5, based on Groton’s current *share of rental housing in the market area*, an estimated 23 households able to afford up to \$1,800 a month rent might be absorbed by additional rental development in a competitive rental property in this location each year. The table also shows the number of households at each rental point that might be absorbed based on Groton’s *share of rental housing in the market area*. Table 3.5.5 presents these estimates for each of the rental points shown in Figure 3.5.13.⁶⁴ Some number of these units, in the lower price

⁶⁴ The figures in the demand columns are not additive. They are cumulative, with the “Rentals @ \$900” figure representing total estimated average annual demand in both Figure 3.5.13 and Table 3.5.5.

points, could add to the Town’s affordable housing stock. The actual number of units that might be captured at these rental prices in a rehabilitation or new construction project in Groton will depend on the quality and size of the units, site and building amenities, pricing, marketing, and other factors.

The information in Figure 3.5.13 can be further broken down into age groups since rental housing developments often seek to attract households such as retirees and young singles. Figure 3.5.14

presents demand data for all age groups. The graph reflects the greater propensity of younger households to rent and the frequency of their moving compared to older households, as well as the sensitivity of levels of demand to varying rental prices. Note that the largest demand for units at all price levels comes from householders younger than age 35.

Table 3.5.5 Groton’s Average Annual Demand for Rental Units

	Total Average Annual Demand in 40 min Market Area	Groton Share of Total Average Demand @ capture rate in market area (0.3%)
Rentals @ \$900	11,335	33
Rentals @ \$1,200	9,977	29
Rentals @ \$1,500	9,011	26
Rentals @ \$1,800	8,091	23
Rentals @ \$2,100	7,309	21
Rentals @ \$2,400	6,571	19
Rentals @ \$2,700	6,087	18
Rentals @ \$3,000	5,376	16

Source: Claritas Spotlight Reports, 2023, and FXM Associates

Figure 3.5.14 Average Annual Demand by Rent and Age Group

Groton 40-Minute Market Area, 2023-2028

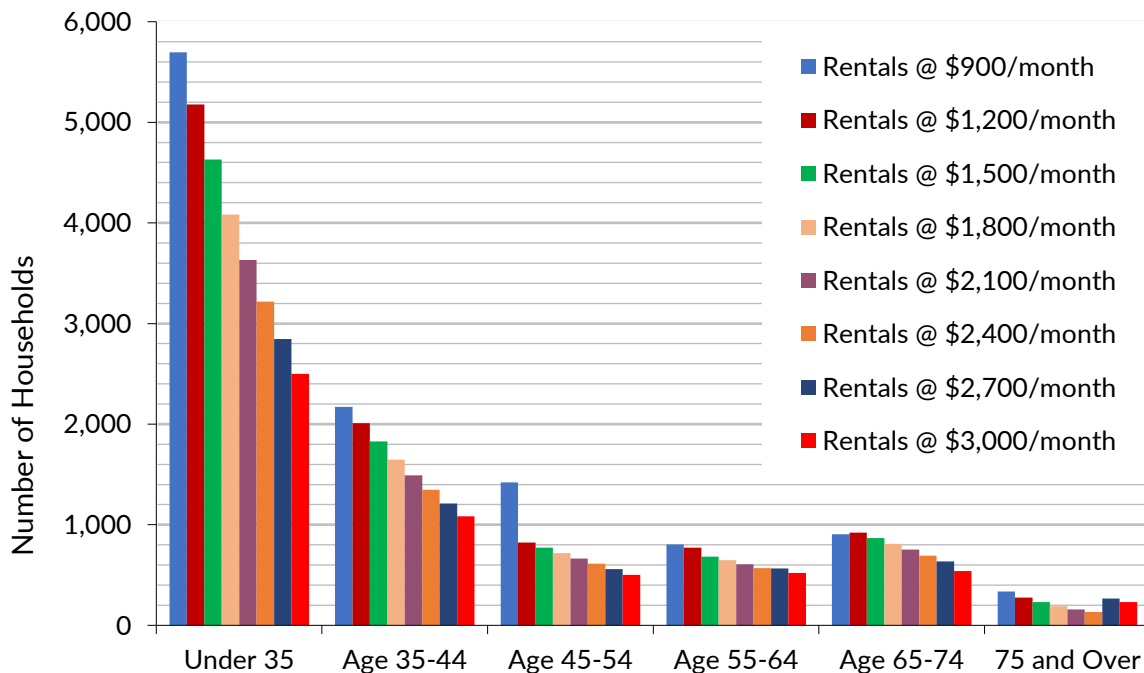
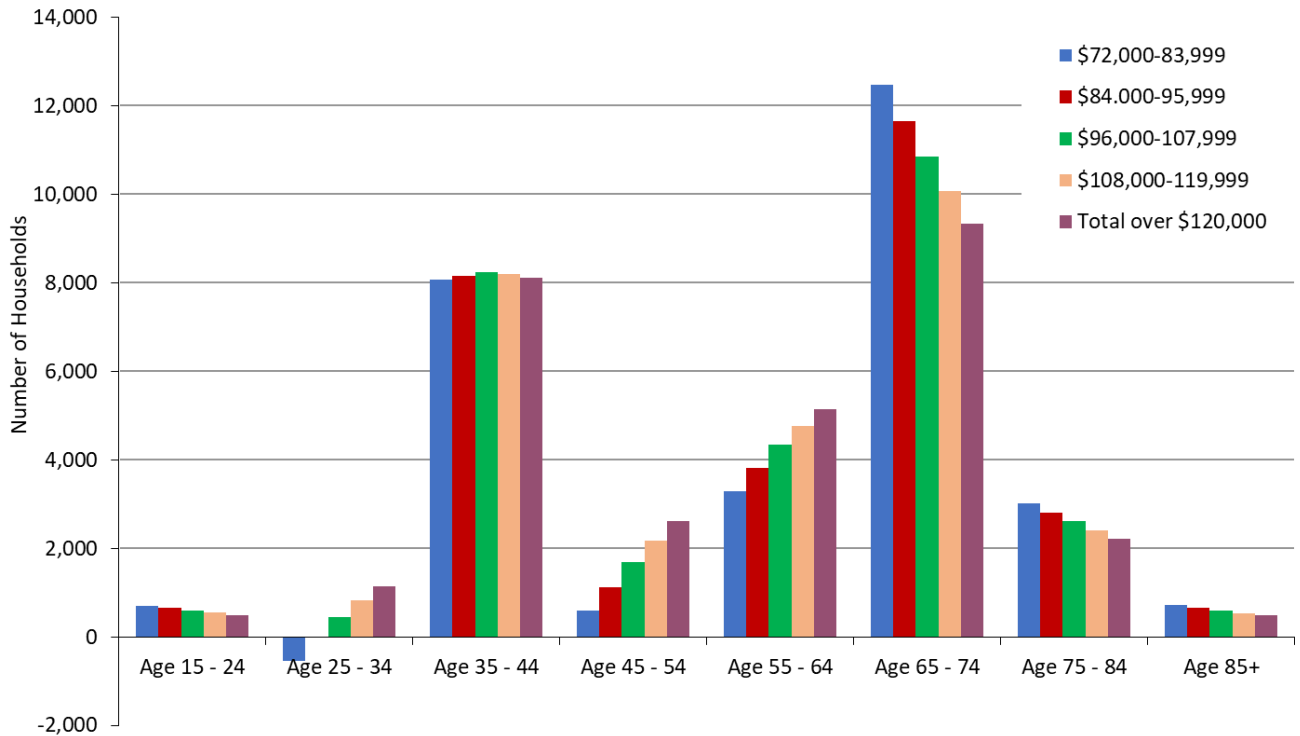


Figure 3.5.15 shows another dimension to the estimation of future rental demand: the changes projected over the next five years in the numbers of households by both age and income. The incomes chosen are in the upper ranges since these households are more likely to have the means to pay the higher affordable rents necessary to support market-rate rehabilitated or newly constructed housing.

Figure 3.5.15 Change in Number of Households by Age and Income
Groton 40-Minute Market Area, 2023-2028



Particularly striking is the projection of changes in upper-income age cohorts in the market area over the next five years: the greatest gains across all five upper-income categories are estimated to be in the age 65 to 74 cohort, compared to much smaller increases in the 45 to 54 and 55 to 64 age cohorts, the latter containing the youngest of the baby boomers (those born between 1946 and 1964). Also noteworthy is the indication that households in the income category over \$120,000—who could afford rent up to \$3,000 per month—are robust in the age 65-74 boomer cohort, only dropping off after age 75. Baby boomer households have shown an increasing propensity to rent in recent years as they become empty nesters and sell their single-family homes for smaller, more manageable units. Others want to cash in on the equity of their former dwellings because they need liquid income in the absence of the pensions enjoyed by prior generations of retirees. Many also continue to work part-time.

Some developers in recent years have targeted rental units, especially within denser areas, to households under age 35 and age 55 to 74, who often mix well within the same developments. There are fewer school-age children within both age categories than in those aged 35 to 54. Both

groups show a higher propensity to live within walking distance of retail stores, restaurants, and transit if possible. Households under age 35 are more mobile on average and more likely to rent, but they are a very small group in Groton and will be so over the next five years. Market-rate housing targeted at seniors could be an appropriate investment in Groton.

The model projects demand for market-rate rental housing. Groton's housing stock is predominantly single-family detached and owner-occupied. Current zoning for such housing requires two-acre lots. Yet there is a capacity for the Groton market to absorb some rental units: if the focus is only on the households able to pay rents from \$1,800 to \$3,000, twenty-three households a year from the 40-minute market area could be absorbed by new or rehabilitated rental housing if it were available. Rents at these levels would be sufficient to attract developers of market-rate units.

Age-Friendly Readiness

When a community is "age-friendly," it holds aspects that support and promote livability for residents of all ages, with an emphasis on older residents. In partnership with AARP, the state developed the Age-Friendly Massachusetts Action Plan that outlines its values, goals, and strategies to make the state more age-friendly.⁶⁵ AARP, a prominent organization focusing on the interests of older Americans, categorized eight areas in the built and social environments that contribute to the livability and well-being of older adults.⁶⁶ These are:

1. Outdoor Spaces and Buildings
2. Transportation
3. Housing
4. Social Participation
5. Respect and Social Inclusion
6. Civic Participation and Employment
7. Communication and Information
8. Community and Healthy Service

According to their livability index, as shown in Table 3.5.6, AARP scored Groton 55 out of 100, which is just over the typical score for a municipality. For the housing category, the town scored only 31 out of 100, which is much less than the median score for housing and is Groton's lowest score out of the eight categories. The town scored low in housing due to its low percentage of units with zero-step entrances and high averages of monthly housing costs and percentage of income spent on housing. The town also lacks several policies that would support housing availability and provision for older residents, save for Groton's Affordable Housing Trust and the state's Age-Friendly Massachusetts Action Plan. Compared to the typical municipality, though, Groton has higher percentages of multi-family and subsidized housing. However, as mentioned previously, these numbers are still insufficient to address housing affordability issues in Groton.

⁶⁵ Executive Office of Elder Affairs, "Age-Friendly Massachusetts."

⁶⁶ AARP, Network of Age-Friendly States and Communities, "Groton, Massachusetts," 2023.

Table 3.5.6 AARP Livability Index 2023

	Groton	Median County Subdivision	Unit
Overall Score	55	50	/100
Housing Score	31	55	/100
Metrics			
Zero-step entrances	35.0%	53.8%	of units
Availability of multi-family housing	12.7%	6.2%	of units
Housing costs	\$2,256	\$765	per month
Housing cost burden	19.7%	12.4%	of income spent on housing
Availability of subsidized housing	44.2	20.3	units per 10,000 people
Policies			
State and local inclusive design laws	No		
State and local housing trust funds	Yes		
State-manufactured housing protections	No		
State foreclosure prevention and protection	No		
State accessory dwelling unit support	No*		
State and local plans to create age-friendly communities	Yes		

Source: AARP Livability Index, 2023

*There are local bylaws that support accessory dwelling units in Groton, as of March 2024.

Local Capacity, Policies, and Regulations

Zoning Bylaws

The Town’s most recent Housing Production Plan (HPP) in 2020 outlines a few zoning bylaws that regulate and promote production, design, and development for housing and commercial growth.⁶⁷

Town Center Overlay District (TCOD)

The TCOD is the Town’s zoning designation that promotes Groton center as the heart of civic, commercial, institutional, and residential activity. It removes some development restrictions typically found in other zoning districts in Groton and offers landowners more flexibility in developing their properties as long as they follow the town’s TCOD Design Guidelines.⁶⁸ For example, developments under TCOD have no minimum lot area or frontage regulations. The maximum residential density allowed is ten units per acre but can be up to 14 units per acre if using Transfer of Development Rights (TDR) lots.

⁶⁷ Groton Housing Production Plan, 2020-2025.

⁶⁸ Groton, “Groton Center Design Guidelines,” 2014.

Flexible Development Bylaw

This bylaw promotes the development of housing affordable to low-, moderate- and median-income families; it also promotes the development of housing for older adults (over the age of 55). If a development is more than ten units, it is required to provide, at a minimum, 15 percent of the units to be affordable for households with low or moderate incomes. Flexible development also allows single, two-family, and multifamily units up to a maximum of five units per building.

Accessory Dwelling Units (ADU)

Attached accessory dwelling units (ADU) are allowed by-right as of 2020 zoning amendments, and *detached* ADUs must have a Special Permit from the Zoning Board of Appeals. Special consideration may be given to a rental apartment unit, which will be restricted to a rent affordable to a person or household with a low or moderate income. The ADU is required to be located within the existing residential structure on the lot, and the owner must occupy one of the two units as a permanent residence.⁶⁹

Groton Housing Authority

Groton has a five-member Housing Authority that was established in 1982. The Housing Authority owns and operates twenty units of subsidized rental housing for the elderly and disabled, as well as seven housing units for families. Additionally, they offer affordable units in Groton Commons, Winthrop Place, and Brookfield Commons for a total of 66 units that are subsidized by state and federal agencies.⁷⁰ According to their website, the Housing Authority:

- Identifies and addresses the need for affordable housing in Groton and develops policies and strategies to meet those needs.
- Is responsible for management policy and oversight of the Town's Elderly and Family Housing Programs.
- Negotiates with developers for affordable housing units in return for an increase in density of particular developments.
- May receive title to actual housing units, parcels of land, or cash in lieu of units or land from developers.

⁶⁹ Groton, "Article 20: Amend Zoning Bylaw – Attached Accessory Apartment." Accessed March 2024, <https://www.grotonma.gov/wp-content/uploads/2021/02/Accessory-Structures-2021-01-18.pdf>

⁷⁰ Groton Housing Authority.

Affordable Housing Trust

In 2008, the town accepted G.L. c. 44, § 55C to establish a municipal Affordable Housing Trust (AHT) fund. The purpose of the AHT is to provide for the preservation and creation of affordable housing in the Town of Groton for the benefit of low and moderate-income households. The AHT membership includes broad expertise in subject matters of real estate law, housing, development, finance, and housing advocacy as well as representation from relevant municipal boards.⁷¹

For the past several years, the AHT has been implementing the Town's Housing Production Plan (HPP), which identified several publicly owned parcels with development potential. The AHT is engaged in site assessment to explore the feasibility of using one or more of these properties for new construction affordable housing. The Trust has received Community Preservation Act (CPA) funding to spend on-site assessment.

Housing Production Plan

Groton's Housing Production Plan (HPP) 2020-2025 displays a housing needs assessment that presents a thorough analysis of existing conditions, demographic trends, and local and regional market forces, as well as anticipated future conditions and goals for housing development. It is designed to guide the expansion of affordable housing opportunities, plan for future needs and concerns of the community, and educate the public on past and present trends for housing in Groton. This plan represents a management tool for ensuring that timely progress is made toward meeting the town's housing goals.⁷²

MBTA Community

G.L. c. 40A, § 3A, or the "MBTA Communities Multi-Family Housing Law," mandates "MBTA Communities" to have at least one zoning district for the development of multi-family housing by-right. The zoning criteria include a minimum gross density of 15 units per acre, being located within a half-mile from an MBTA station (commuter rail station, subway station, ferry terminal, or bus station), having no age restrictions, and being suitable for families with children. An "MBTA Community" is any city or town that hosts MBTA service or abuts a community that hosts MBTA service. In most cases, the communities subject to the law must adopt a compliant multi-family zoning district by the end of 2024.⁷³

Groton is an MBTA Community under the "adjacent small town" subcategory. As an "adjacent small town," Groton is not required to set aside 50 acres of land for a compliant zoning district(s), the mandate for all other MBTA Community subcategories, but must set aside at least 1.5 percent of the town's developable land area for multi-family zoning to create a minimum of 208 units, according to EOHLC's calculations. As of May 2024, Groton had not yet adopted a multifamily zoning district to comply with Section 3A, but as an adjacent small town, Groton is not required to comply until December 31, 2025.

⁷¹ Groton Affordable Housing Trust.

⁷² Groton Housing Production Plan 2020-2025.

⁷³ Executive Office of Housing and Livable Communities, "Multi-Family Zoning Requirement for MBTA Communities," accessed May 2024, <https://www.mass.gov/info-details/multi-family-zoning-requirement-for-mbta-communities>.

3.6. Economic Development

Introduction

Strengthening Groton's economic base is necessary to meet increasing financial pressures for the Town, but it requires sensitivity to Groton's character and its citizens' degree of desire for change. In 2016, the Town Economic Development Committee presented its vision for the town's future:

To enhance the character, culture, and commerce of Groton, Massachusetts, as a destination community supporting the quintessential "New England" experience through such activities as outdoor recreation, music, arts, and education for the enjoyment of residents and visitors alike.

The Committee proposed to fulfill that vision by making Groton a destination for ecotourism, recreation, education, and the town's many other cultural opportunities. Its mission, however, was to encourage the development of the town's tax base by expanding its local businesses and attracting new ones, primarily for the benefits a strong economic and financial base would offer both town residents and visitors. This means paying attention to the types of development that fit within the town's existing character, which is so important to its residents and is attractive to visitors and tourists.

This section of the Master Plan presents the existing economic conditions at the time of plan preparation. This inventory will be the basis for the subsequent analyses of development opportunities that are well situated within the town's goals and objectives to ensure that growth maintains the town's character. (See (Section 4.X/Appendix X) for the Economic Development Supplement to this section.)

Summary Findings

Groton and the surrounding towns are affluent communities. They have similar demographic and economic characteristics. From the data analyzed, Groton is on a sound competitive footing with those communities, but to compete for economic development opportunities, it needs to act.

Groton continues to suffer from its image as a town that is not business-friendly, whether to businesses seeking to locate in the area or to existing businesses in the town, according to several persons interviewed thus far in the planning process. Changing this perception will require a stronger effort to promote and support businesses in the town and sectors, such as agriculture, that the town wants to retain. It will require re-zoning of some land for commercial use and for small-scale multi-family rental development in neighborhood centers. It will require the extension of infrastructure to commercial land with development potential.

Existing Conditions

- Groton's median age of 42 is only slightly higher than the average of all communities, but these medians are high. Worker shortages are already happening in some sectors and are likely to continue. The competitive position of towns and cities in attracting workers will determine how well they are able to adjust to workforce changes.
- Groton's aging workforce, coupled with a projected lack of long-term growth in population and households, is a concern for the sustainability of its fiscal base. Yet Groton has considerable resources on which to draw for economic development: a well-educated, affluent population, with younger (<25) residents and households with children providing both potential additions to the labor force. This potential means keeping younger residents in the community, however.
- Interviews with Groton residents and officials, while not a representative sample, produced some common themes. The town wants businesses that fit within Groton's unique characteristics: its rural character, small-town feel, dramatic landscapes, and educational and cultural resources. Large-scale development, whether residential or commercial, is not welcome. Residents have also expressed a desire for more diversity in housing choices, which are now almost entirely single-family owner-occupied units. That long-standing desire would require changes in zoning and other regulations that the town so far has not been willing to make.
- The results of a retail opportunity gap/surplus analysis estimate that, based on business sales and consumer expenditures, Groton could capture enough demand to support at least 12 new or expanded stores, generating demand for at least 37,000 square feet of retail and restaurant space and possibly much more. Jewelry stores, art dealers, garden centers, and restaurants are among those that could be attracted if the town is willing to support them by recruiting new businesses or encouraging the expansion of existing businesses. This means increasing the supply of commercially zoned land and promoting local businesses. Contrary to popular perception, brick-and-mortar retailing still accounts for more than 75 percent of retail sales.
- Another very powerful way in which the town can affect economic development is in its fiscal policies. Tax rates and tax policies are competitive factors for both business and resident location decisions. Groton is one of the least expensive business locations from a tax standpoint. Its commercial tax rates are also highly competitive. Groton is in a favorable competitive position to expand its commercial tax base if it takes the actions needed to make it happen.
- The lack of land zoned for commercial development hinders the growth of Groton's economic and fiscal base. The contributions to the town's tax base that commercial development could make cannot be realized without the zoning changes that have been difficult for the town to make.

The sections below present the inventory of demographic and business conditions describing Groton’s position relative to bordering communities. The surrounding towns used as comparators are Ayer, Dunstable, Littleton, Pepperell, Shirley, Townsend, Tyngsborough, and Westford.

Demographics

Population and Households

Population and household growth are basic factors in economic development. The household is the basic unit of consumption and demand, and their numbers are important to an understanding of the market for development. The following two tables show Groton’s population and households as compared to those of surrounding towns over the period 2000 to 2023. The final two rows of Tables 3.6.1 and 3.6.2 show the average values and Groton’s percentage of those averages.

In terms of the number of people, Groton is a little larger than the average of all towns. It experienced its highest rate of growth between 2000 and 2010. Groton’s population and households are estimated to have lost population in the three years since the 2020 Census, and its loss exceeds the average of the towns’ estimated losses for 2020-2023. Changes in the number of households follow a different pattern, with Pepperell losing the most households since 2020 and Groton’s loss rates the lowest among those losing households. In all cases, the estimated losses of the population are very small. The losses in households are larger, especially for Pepperell and Tyngsborough. Only Ayer and Shirley experienced growth in households between 2020 and 2023.

Table 3.6.1 Population - Groton and Surrounding Towns, 2000-2023

Town	Census 2000	Census 2010	% Δ 2000-2010	Census 2020	% Δ 2010-2020	2023 Estimate	% Δ 2020-2023
Groton	9,547	10,646	11.5%	11,315	6%	11,226	-0.8%
Ayer	7,287	7,427	2%	8,479	14%	8,511	0.4%
Dunstable	2,829	3,179	12%	3,358	6%	3,306	-2%
Littleton	8,184	8,924	9%	10,141	14%	10,201	1%
Pepperell	11,142	11,497	3%	11,604	1%	11,421	-2%
Shirley	6,373	7,211	13%	7,431	3%	7,359	-1%
Townsend	9,198	8,926	-3%	9,127	2%	8,994	-1%
Tyngsborough	11,081	11,292	2%	12,380	10%	12,247	-1%
Westford	20,754	21,951	6%	24,643	12%	24,674	0.1%
Average	9,599	10,117	6.2%	10,942	0.1	10,882	-0.7%
Groton % of Average	99%	105%	185%	103%	83%	103%	112%

Source: University of Massachusetts, Donahue institute; Environics Analytics, Claritas Spotlight Reports; FXM Associates

Table 3.6.2 Households, Groton and Surrounding Towns, 2000-2023

Town	Census 2000	Census 2010	% Δ 2000-2010	Census 2020	% Δ 2010-2020	2023 Estimate	% Δ 2020-2023
Groton	3,268	3,753	15%	3,972	6%	3,937	-1%
Ayer	2,982	3,118	5%	3,405	9%	3,581	5%
Dunstable	923	1,063	15%	1,200	13%	1,111	-7%
Littleton	2,960	3,297	11%	4,165	26%	3,772	-9%
Pepperell	3,847	4,197	9%	5,136	22%	4,362	-15%
Shirley	2,067	2,264	10%	2,433	7%	2,452	1%
Townsend	3,110	3,240	4%	3,659	13%	3,410	-7%
Tyngsborough	3,731	3,999	7%	5,020	26%	4,481	-11%
Westford	6,808	7,498	10%	9,042	21%	8,570	-5%
Average	3,300	3,603	9%	4,226	16%	3,964	-6%
Groton % of Average	99%	104%	161%	94%	37%	99%	16%

Source: University of Massachusetts, Donahue Institute; Environics Analytics, Claritas Spotlight Reports; FXM Associates

Demographic Profiles Compared

By most demographic measures, Groton has considerable resources on which to draw for economic development: a well-educated, affluent population, with younger (<25) residents and households with children providing both potential additions to the labor force and demand for a well-balanced economic base that offers opportunities for young people to remain in the community, assuming sound growth policies and strategies are implemented.

In the age categories, the towns are very close in median age. The median age in Massachusetts is 39.6 years. Groton has more residents over 65 than the all-towns average and more households with children under 18. It has fewer residents in the age 25 to 44 cohort, a group that is in the family and career-building years but slightly more than average in the peak earning years of 45 to 64.

The aging of the workforce is a factor shared by the state of Massachusetts and, indeed, the entire US. It is driven by the aging of the boomer and echo-boomer generations. Groton's median age of 42 is only slightly higher than the average of all communities, but all these medians are high. The Comprehensive Economic Development Strategy (CEDS) for the region notes the aging of the workforce as a threat to future economic development.⁷⁴ Worker shortages are already happening in some sectors and are likely to continue. The competitive position of towns and cities in attracting workers will determine how well they are able to adjust to workforce changes. Housing prices, quality of education, and accessibility to jobs are the most important but by no means the only features that will bring workers to communities.

The following table compares Groton to surrounding communities regarding key demographic characteristics. Groton's relevant demographics exceed the average of those of its neighbors in almost every category, as shown in the tables below.

⁷⁴ Montachusett Regional Planning Commission, *Comprehensive Economic Development Strategy*, 2019-2024.

Table 3.6.3 Key Demographic Characteristics, Groton and Surrounding Towns

	Groton	Ayer	Dunstable	Littleton	Pepperell	Shirley	Townsend	Tyngsborough	Westford	Average	Groton % of Average
Demographic Characteristics											
Age (%)											
< 25 (Gen Z)	29%	30%	28%	31%	27%	24%	26%	27%	31%	28%	103%
25-44 (Millennials)	24%	27%	25%	22%	27%	35%	27%	28%	23%	26%	91%
45-64	30%	27%	30%	29%	29%	27%	29%	29%	30%	29%	104%
65 and over	17%	16%	18%	18%	17%	15%	17%	16%	17%	17%	101%
Households with children <18	42%	31%	44%	39%	38%	33%	37%	39%	46%	39%	108%
median (years)	42	40	42	41	42	38	42	41	41	41	102%
Single Race (%) Classification											
White	84%	75%	85%	82%	87%	74%	88%	70%	69%	79%	106%
African American	1.4%	5%	1%	2%	1.5%	8%	1%	3%	1%	3%	53%
Hispanic or Latino	4%	7%	4%	4%	4%	11%	5%	5%	3%	5%	77%
Asian	6%	5%	5%	9%	2%	3%	1%	9%	23%	7%	86%
Income (\$)											
median - all	\$ 168,329	\$ 119,497	\$ 173,475	\$ 144,025	\$ 121,675	\$ 106,542	\$ 107,579	\$ 126,167	\$ 166,978	\$ 137,141	123%
average -all	\$ 218,842	\$ 155,667	\$ 223,193	\$ 194,475	\$ 142,413	\$ 134,688	\$ 130,984	\$ 155,113	\$ 214,429	\$ 174,423	125%
poverty rate (%)	2%	2%	1%	4%	3%	1%	3%	4%	2%	2%	63%
Education (%)											
high school diploma	17%	21%	16%	20%	25%	35%	27%	26%	13%	22%	77%
Bachelor's degree or higher	64%	48%	57%	56%	40%	31%	38%	44%	69%	50%	129%

Source: EnvironicsAnalytics, Spotlight Reports, 2023 estimates; FXM Associates

The next table compares Groton’s data on housing, employment, and modes of transportation to work with those of surrounding communities.

Most housing in all communities is owner-occupied, with Groton having higher-than-average ownership. Groton’s home values are higher than average. Dunstable, Littleton, and Westford’s are also high. These high values can be an asset for owners and for the town revenues or an obstacle for attracting or retaining workers.

Most employment is white collar, and Groton has a slightly larger proportion than average. The pattern of occupations across the towns is similar: a plurality of occupations is in Management and in Office/Administrative Support. Because of the large number of categories in the data, individual shares are quite small. The occupations in which Groton has a higher-than-average share include Management, Legal, Life/Physical/Social Science, Arts/Design/Entertainment/Sports Media, Computer/Mathematical, and Food Preparation/Serving Related. Of some interest is the very low number of Farming/Fishing/ Forestry occupations across all towns in this rural area of Massachusetts, and Groton’s share is far below the average. This might be due to data collection or classification issues since Groton and the region are home to many farmstands and farms. This is an area that some Groton residents have identified as an important feature of the town’s character and one that they would like to see grow.

Travel times to work across the towns are similar: an average of 38 minutes compared to Groton’s 39. Five percent of Groton households have no vehicle, higher than the three percent average. Not as many Groton workers rely on driving alone to get to work as do workers in other towns: they carpool, take public transportation, and walk (or work at home) more frequently than the average.

Table 3.6.4 Housing, Employment, Occupations, and Transportation to Work, Groton and Surrounding Towns

	Groton	Ayer	Dunstable	Littleton	Pepperell	Shirley	Townsend	Tyngsborough	Westford	Average	Groton % of Average
Housing											
tenure (%)											
own	89%	68%	94%	88%	80%	80%	86%	81%	88%	84%	106%
rent	11%	32%	6%	12%	20%	20%	14%	19%	12%	16%	68%
length of residence (years)											
own	17	15	19	17	18	16	18	19	17	17	98%
rent	11	7	6	8	8	13	7	7	6	8	136%
median value owner occupied units	\$ 647,058	\$ 455,445	\$ 673,625	\$ 651,843	\$ 477,897	\$ 425,033	\$ 375,363	\$ 548,224	\$ 727,580	\$ 553,563	117%
structure built 2000 or later (%)	20%	18%	17%	17%	11%	22%	13%	22%	19%	18%	113%
Employment (%)											
white collar	77%	75%	71%	77%	69%	70%	66%	68%	82%	73%	106%
blue collar	12%	14%	17%	13%	18%	16%	20%	18%	9%	15%	79%
service and farming	10%	10%	11%	10%	13%	13%	14%	14%	9%	12%	87%
Transportation											
travel time to work (minutes)	39	38	35	40	40	37	44	32	38	38	102%
households with no vehicle (%)	5%	3%	1.2%	1.60%	4%	1.40%	3%	3%	2%	3%	186%
means of transport to work (%)											
drove alone	78%	87%	87%	78%	87%	85%	87%	81%	81%	83%	93%
carpooled	8%	4%	5%	6%	4%	3%	4%	11%	4%	5%	147%
public transport	3%	3%	0.50%	4%	1%	3%	1%	1%	4%	2%	132%
walked or worked at home	11%	6%	7%	13%	7%	8%	7%	6%	10%	8%	132%
bicycle	0%	0.02%	0%	0	0.02%	0	0.02%	0	0.03%	0%	0%
other	0.03%	0.69%	0.05%	0.02%	0.40%	0.60%	0.50%	0.04%	0.18%	0%	11%

Source: EnvironicsAnalytics, Spotlight Reports, 2023 estimates; FXM Associates

Business Profile

Table 3.6.5⁷⁵ provides basic information on Groton’s businesses by sector: number of establishments, number of employees, and sales. The Health Care and Social Assistance sector is the largest employer, with Educational Service in second place, followed by Manufacturing. Most jobs in the Health Care and Social Assistance sector are in offices of physicians, dentists, and skilled nursing facilities. Employment in the Manufacturing sector is dominated by pulp and paper mills and industrial machinery manufacturing. Most of the employment in Accommodation and Food Services is in food services and drinking places.

The Retail Trade sector is an important component of a vibrant local economy, even if it is not the largest. In Groton, the sector employs 315 people, ranking it fifth among sectors, but it generates almost \$68 million in sales. Most of the employees are in supermarkets, other grocery stores, and recreation retailers. Current growth opportunities in this sector are explored in the *Retail Opportunity Gap/Surplus* section below.

⁷⁵ EnvironicsAnalytics obtains privacy-compliant, de-identified, anonymous, and aggregated data from reliable data partners.

Table 3.6.5 Groton Business Profile, Major Sectors

Sectors	Number of Establishments	Number of Jobs	Sales
11: Agriculture, Forestry, Fishing and Hunting	3	24	\$ 2,365,000
22: Utilities	4	23	\$ 13,582,000
23: Construction	39	268	\$ 93,654,000
31-33: Manufacturing	13	579	\$ 163,009,000
42: Wholesale Trade	4	15	\$ 17,420,000
44-45: Retail Trade	33	315	\$ 67,753,094
48-49: Transportation and Warehousing	7	47	\$ 9,537,595
51: Information	9	80	\$ 30,123,000
52: Finance and Insurance	25	45	\$ 13,600,000
53: Real Estate and Rental and Leasing	16	68	\$ 8,993,000
54: Professional, Scientific, and Technical Services	44	164	\$ 26,094,908
56: Administrative and Support and Waste Management	17	75	\$ 9,639,000
61: Educational Services	18	737	\$ 7,691,133
62: Health Care and Social Assistance	95	885	\$ 116,958,582
71: Arts, Entertainment, and Recreation	7	60	\$ 4,423,000
72: Accommodation and Food Services	21	519	\$ 31,782,000
81: Other Services (except Public Administration)	38	163	\$ 13,033,877
Totals	393	4,067	\$ 629,659,189

Source: EnvironicsAnalytics Claritas Spotlight reports, 2023, and FXM Associates

Agriculture

The 2011 Master Plan devoted considerable attention to the agriculture sector, its farms, and farmstands, which continue to form an important part of Groton's character and stunning landscapes. The number of employees in the sector is relatively low, as shown in the above table, making analysis of the sector difficult, but its contribution to the town's rural character and land use gives it an importance beyond employment numbers. Graphic 3.6.1 was provided by Groton's Sustainability Commission and is the most complete inventory available (See Map 3.6.1 Local Farms for the locations of each farm).

SUPPORT OUR LOCAL FARMS & ORCHARDS!



<p>In GROTON:</p> <p>Autumn Hills Orchards, 495 Chicopee Row Blood Farm, 94 West Main Street Spiczka Farm / Kirk Farm, 21 Wyman Rd Common View Farm, 13 Common Street Council on Aging Gardens, 163 W. Maine Street Excalibur Farm, 150 Mill Street Fairview Orchard, 9 Higley St Gibbet Hill Farm, 61 Lowell Road</p>	<p>Gilson Farm / Herb Lyceum, 368 Main Street Groton Farm School, 65 Common Street Luina Greine Farm 65 Common Street Maple Shade Farm, 284 Old Ayer Road Shattuck Farm, 134 Maple Avenue Top Secret Orchard, 100 Whitman Road Winn Gardens, 28 Chestnut Hill Road</p>
<p>In NEIGHBORING TOWNS:</p> <p>Theo's Market Gardens, Littleton Tully Dairy Farm, Dunstable Bear Hill Farm, Tyngsborough Carlson Orchards, Harvard Conant's Custom Cuts, Dunstable Doe Orchards, Harvard Gary's Farm & Gary's Too, Littleton & Townsend Green Family Farms, Dunstable Griffin Hall Farms, Microgreens, Townsend Johnny Putt Farm, Salad Greens, Littleton Littleton Community Farm, Littleton</p>	<p>Upswing Farm, Pepperell McGovern Dairy Farm, Dunstable Meadowbrook Orchards, Sterling Meridian Farm, Littleton Old Frog Pond Farm - Harvard Patenaude Farm, Dunstable Parlee Farm, Tyngsboro R. Wilkins Farm Stand, Pepperell Spring Brook Farms, Littleton & Shirley William Park Farm, Harvard Wool & Withers Farm, Littleton Westward Orchards, Harvard</p>

SUSTAINABLE GROTON

BROUGHT TO YOU BY THE GROTON SUSTAINABILITY COMMISSION



Graphic 3.6.1: Local farm inventory

The Agricultural Commission is responsible for promoting agricultural interests and had a major role in making Groton a Right-to-Farm community in 2007. Interviewees for this update to the 2011 plan, however, noted that the Commission was no longer active. The Commission's site on the town website lists three members, but no meeting notes have been posted since 2019. This lack of a basic agricultural support organization calls into question the degree of support the sector has in Groton on an administrative level.

However, there is a local farmers' organization in town. The Groton Grange is the oldest functioning Grange in Massachusetts, having been in operation for over 150 years since 1873. It does not, however, engage in agriculture, as is commonly understood as the business of farming and related activities. There are currently no farmers among its 40-plus members. The Grange itself consists only of volunteer staff serving primarily backyard vegetable gardeners, with workshops and training programs in areas such as seed starting and food preservation. Although these home gardeners do not generate enough surplus to sell their produce directly to consumers,

they do purchase gardening supplies from local farms and garden stores. Beyond that, the Grange offers a broad array of social and other community activities. While they may not fit the economic development mold, their work does support one of the aspects of life in Groton valued by the town's residents: its rural character, with farms contributing to the town's feeling of open space and "atmosphere." The Grange aims to educate the public, most of whom have no farming experience, on the basics of agriculture and farming. Notably, the Grange has engaged in some agricultural promotional advertising. They are also linked to the state and national Granges, the latter of whom lobbies for agricultural issues in Washington, D.C.⁷⁶

The earlier plan included recommendations, such as the adoption of agricultural policies and a more systematic approach to promoting the sector, also have not been developed. Respondents in team interviews saw agritourism as important to increasing business activity while not degrading the resources underlying it. Without a major change in Town policies and support mechanisms, this potential is unlikely to be realized. Action by farm businesses to organize and promote their role in agritourism is also essential.

Retail Opportunity Gap/Surplus Analysis

Retail is such an important component of a busy and thriving town center that it is worth looking for immediate opportunities to grow the sector. One approach to assessing potential opportunities for expanding retailing is a retail opportunity gap/surplus analysis, a tool used by major retailers and chain restaurants to gauge market demand and competition within a specified geographic area. The analysis presents a snapshot of current consumer spending on various retail categories alongside actual retail store sales in those same categories within the same geographic area. Where expenditures by households in the market area exceed sales in that market area, a gap or opportunity exists for existing or new stores within the market area to "capture" more of those household expenditures. (This loss of potential sales is also called "leakage.")

Conversely, where market area household expenditures are less than actual sales categories, it indicates that stores in that retail category in the market area already attract consumer dollars from outside the market area, and opportunities for additional retail activity might be more limited, or their success might offer opportunities for expansion.

Retailers typically define market areas in terms of drive times, with a 20-minute drive time considered the maximum time consumers would be willing to drive for all but the largest stores and store types in less populated areas like Groton. Market support within a 10-minute drive time is considered the maximum time consumers would be willing to drive to smaller, convenience-type retailers, and market demand within a 15-minute drive time is considered essential for most medium-sized stores and restaurants. If a specific category of retail sales opportunity were shown for a 10-minute drive-time market area and held up at the 20-minute market area, then most retailers would consider market conditions favorable – from a demand standpoint – to locating or expanding a store within that market area.

⁷⁶ Scott, A. & Fischer, C., Groton Grange Presidents, Interview by FXM Associates, May 2024.

Claritas *Spotlight Reports* supply estimates of expenditures and sales by NAICS code, information widely used in the real estate industry and by professional analysts. This source estimates that within a 15-minute drive time of Groton, these expenditures totaled over \$1 billion (including purchases at restaurants and other food services in addition to retail stores) in 2023, as shown in Table 3.6.6 below. At all three distances, residents are spending more than stores in those areas are selling, indicating sales dollars are going to businesses outside the area. These are sales that could potentially be captured by new or expanded businesses within Groton’s market area.

Table 3.6.6 Retail Opportunity Gap/Surplus Market Overview

	10-min	15-min	20-min	
Households		3,788	15,003	30,005
Total Retail & Restaurant Expenditures		282,623,699	1,085,746,001	2,227,784,919
Total Actual Store Sales		237,636,411	747,993,317	1,478,744,023
Retail Opportunity Gap	\$	44,987,288	\$ 337,752,684	\$ 749,040,896

Source: EnvironicsAnalytics, Claritas *Spotlight Reports*, 2023, and FXM Associates

More useful, however, is the following table, which shows which retail sectors (by NAICS code) are “leaking” sales to outside areas. The gap is translated into square feet using industry norms, and then the number of stores is estimated based on store sizes. Finally, the number of stores that might reasonably be captured by Groton is shown in the last column. It is important to note that there are many uncertainties in these estimates. Average store size and sales per square foot are very difficult to determine and vary widely based on the source. The purpose of the analysis is to suggest areas in which Groton might want to attract more consumer spending. This might be via recruiting new businesses or encouraging expansion of existing businesses. Based on business sales and consumer expenditures and a conservative capture rate of current leakage, Groton could capture enough demand to support a total of 12 stores, generating demand for almost 37,000 square feet of retail and restaurant space.

Table 3.6.7: Retail Opportunities in the Groton Retail Market Area

Retail Stores	Market Area Gap	Supportable SF	Potentially Captured SF	Potentially Supportable Stores
Floor covering stores (NAICS 44221)	9,233,841	19,785	4,100	1
Electronics stores (NAICS 443142)	3,920,615	6,848	2,800	1
Nursery, garden center, and farm supply stores (NAICS 44422)	7,723,956	26,520	10,000	1
Cosmetics, beauty supplies, and perfume stores (NAICS 44612)	2,028,416	3,740	1,527	1
Other health and personal care stores (NAICS 44619)	1,829,306	4,931	1,807	1
Shoe stores (NAICS 4482)	5,591,997	15,642	3,000	1
Jewelry stores (NAICS 44831)	7,711,009	8,354	2,400	2
Art dealers (NAICS 45392)	4,633,916	15,498	4,600	2
Full-service restaurants (NAICS 722511)	14,540,374	18,285	5,204	1
Limited-service restaurants (NAICS 722513)	3,664,590	5,240	1,750	1
	60,878,020	124,844	37,188	12

Source: EnvironicsAnalytics, Claritas Site Reports, 2023 estimates; FXM Associates

The desirability of more development in the business areas shown is something that the town would consider and would vary based on the locations available for development. Interviews with knowledgeable residents, local organizations, and officials suggest that increased retail activity would be welcome if it fits and enhances the existing character of the town.

Furthermore, both Four Corners and Mill Run Plaza have the potential for increased commercial activity and growth. The former has four vacant commercial spaces as of May 2024, and the commercial properties are now connected to the Town Sewer, eliminating past infrastructural restrictions. Mill Run Plaza is located directly across the street from the upcoming 200-unit Groton Farms residential development. MassDOT also constructed a new sidewalk along Main Street to connect Mill Run Plaza to the town center, increasing pedestrian access to the plaza. Both sites present opportunities for the Town to promote economic growth and expand Groton's commercial tax base.

Tax Policies

A very powerful way in which the town can affect economic development is in its fiscal policies. This section presents an analysis of where Groton stands in terms of its existing tax policy compared to that of surrounding communities. Tax rates and tax policies are competitive factors for both business and resident location decisions.

Groton and Dunstable recently proposed a Proposition 2½ tax limit override to increase Groton's tax levy by \$5.5 million and Dunstable's tax levy by \$2.1 million over three years in order to fund the school budget and other operational expenses. However, residents of both towns rejected the proposal in April 2024.⁷⁷ Groton is heavily reliant on and constrained by the residential tax base, as there is a limited commercial tax base in town.

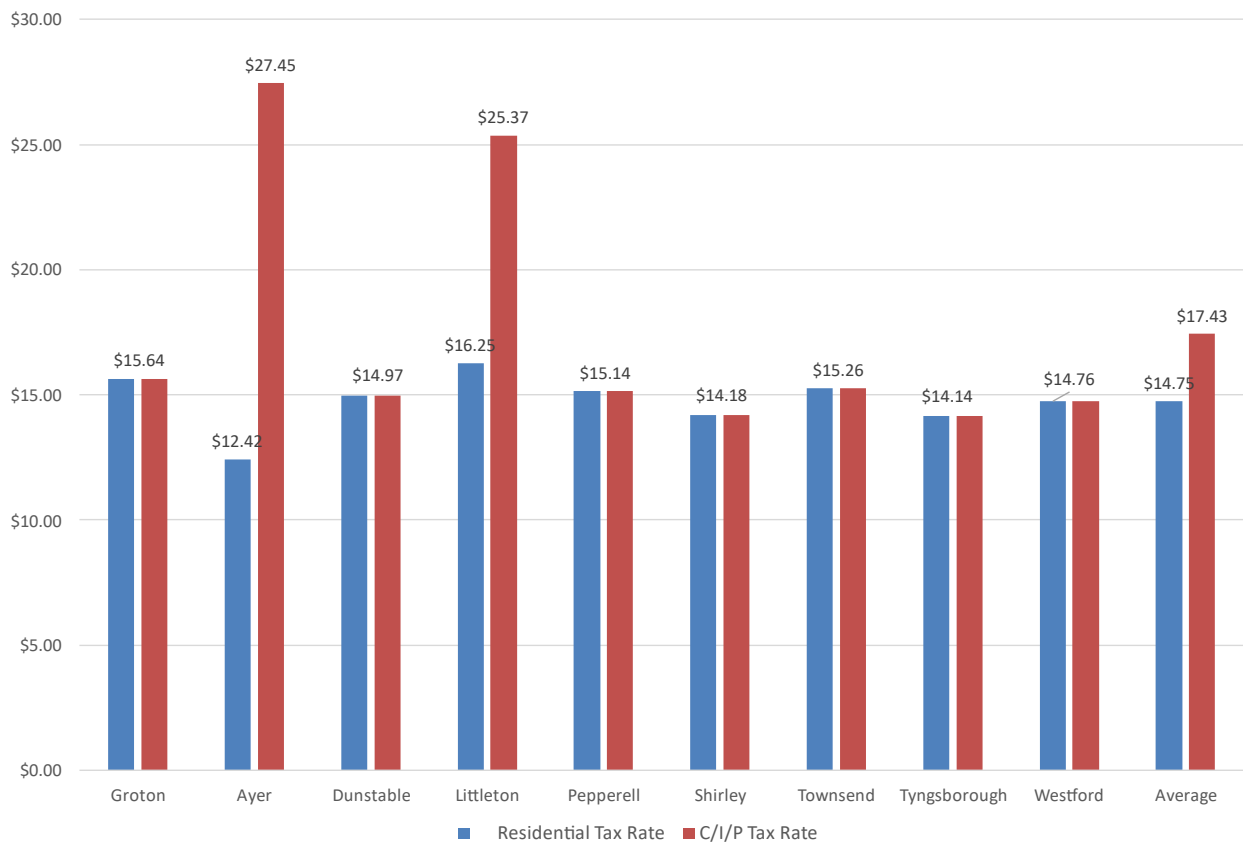
⁷⁷ The Lowell Sun, "Groton-Dunstable override defeated", April 4, 2024, <https://www.lowellsun.com/2024/04/04/groton-dunstable-override-defeated/>.

Tax Rates

As shown in the figure below, Groton’s 2023 commercial/industrial and residential tax rates are very much in line with those of all surrounding communities except for Ayer and Littleton, whose rates are much higher. Groton’s rate is slightly below average for C/I/P. This puts Groton in a competitive position for attracting new business.

Figure 3.6.1 Tax Rates (Per \$1,000 Valuation), FY 2024

Source: Mass. Department of Revenue, Division of Local Services, Community Comparison Reports, 2023, and FXM Associates

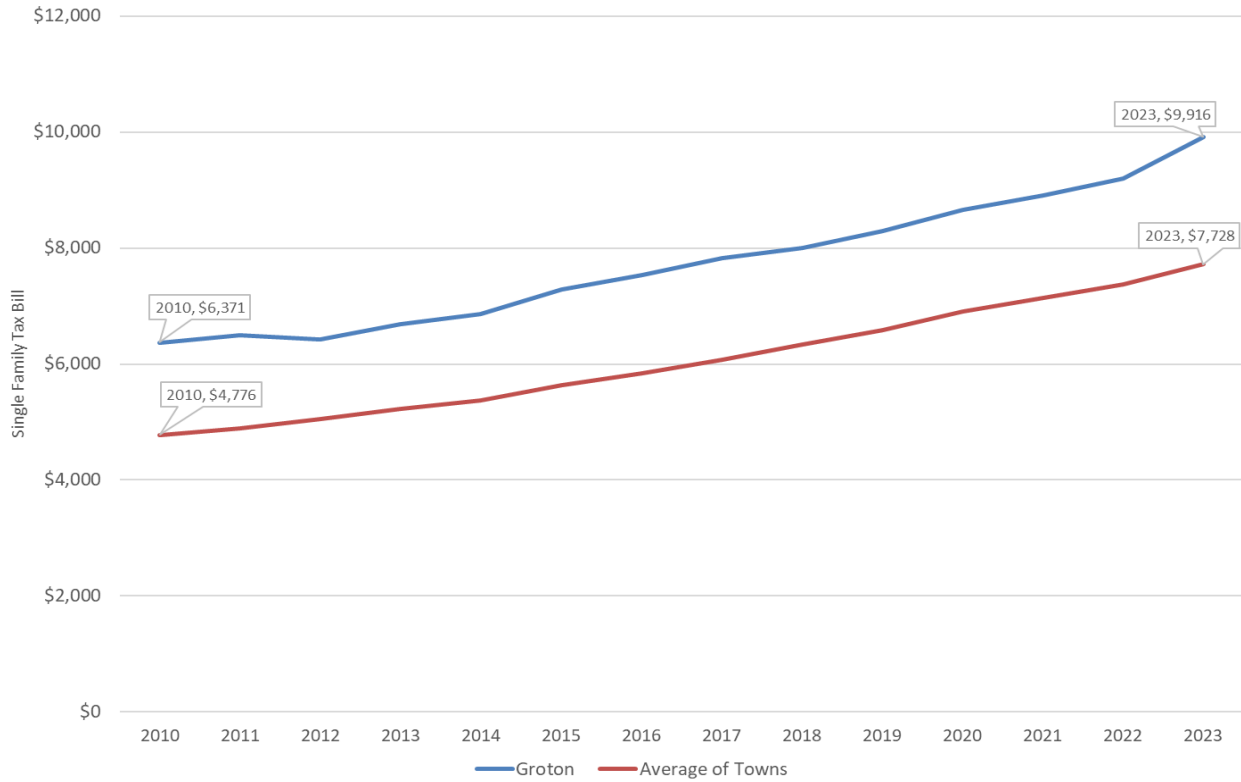


Average Single-Family Tax Bills

Figure 3.6.2 shows trends in average single-family tax bills over time for Groton and for the average of all communities. Groton's bills are much higher than the average.

Figure 3.6.2 Single Family Tax Bills: Groton and Average of All Towns, 2010-2023

Source: Mass. Department of Revenue, Division of Local Services, Community Comparison Reports, 2023, and FXM Associates

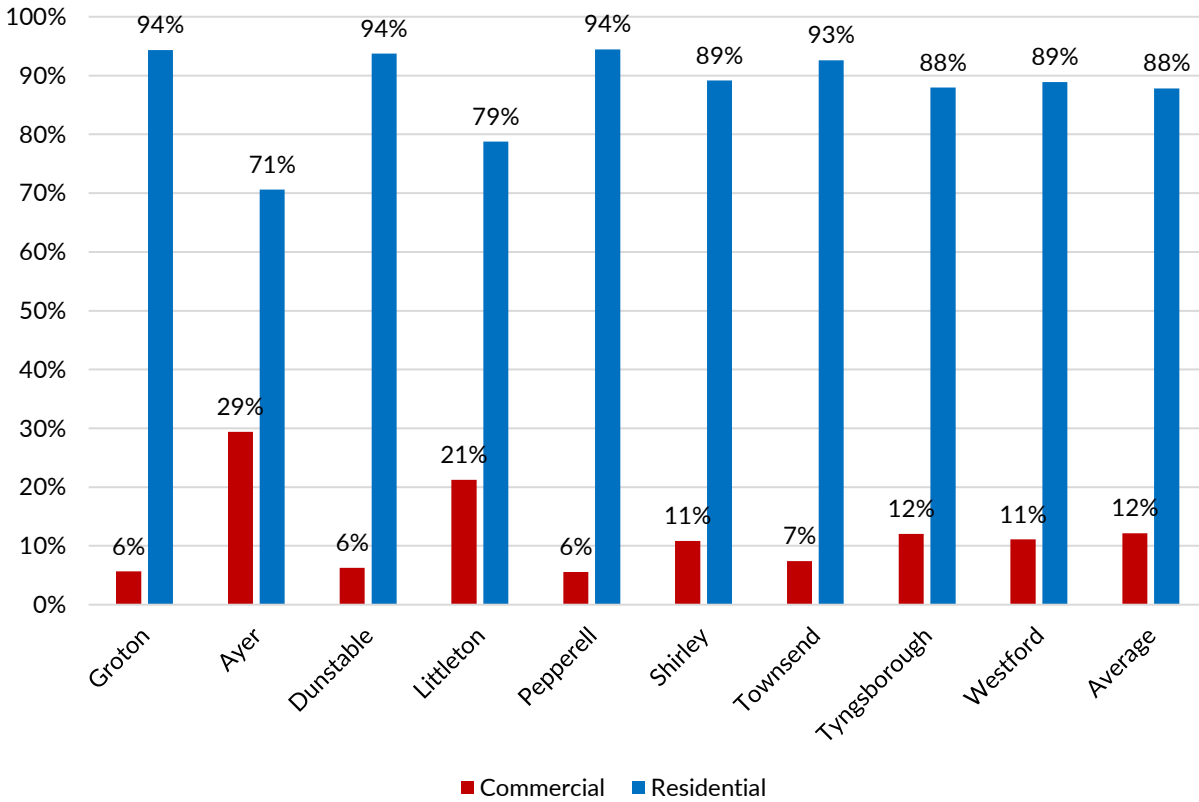


Residential and Commercial Property as a Percent of Total Assessed Valuation

The following Figure illustrates that residential properties contribute the largest portion of the overall assessed value in Groton and all the other towns. Groton, with 94 percent dedicated to residential properties, shares the highest level with Dunstable and Pepperell. In contrast, Groton has the smallest proportion of commercial property valuation. Ayer and Littleton, on the other hand, rely more heavily on commercial properties for their tax base and have the lowest percentage allocated to residential properties.

Figure 3.6.3 Residential & Commercial Property % of Total Assessed Valuation, FY 2024

Source: Mass. Department of Revenue, Division of Local Services, Community Comparison Reports, 2023, and FXM Associates

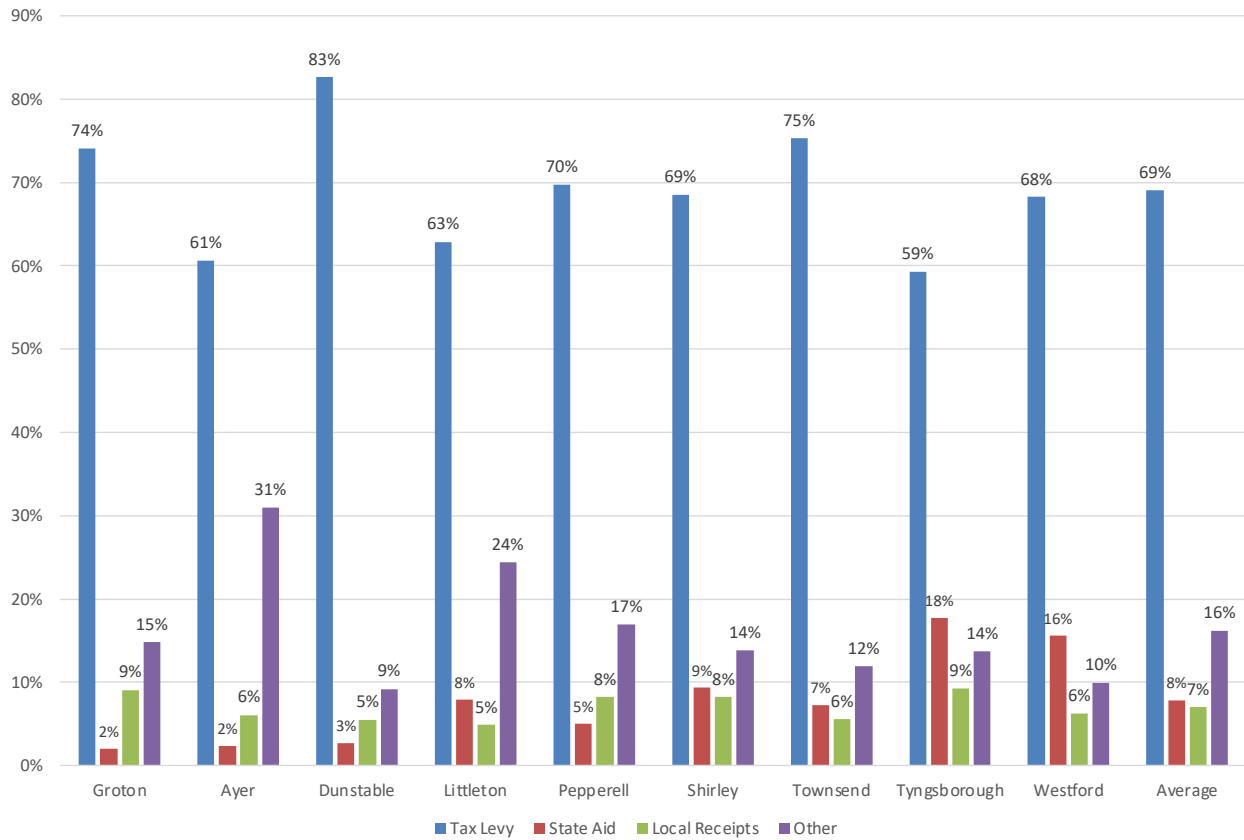


Revenue by Source

This graph shows the sources of local budget funds. Groton is more reliant than average on the tax levy, with only Dunstable and Townsend higher. Its state aid is among the lowest of the communities, and local receipts, at 2 percent, are the lowest proportion of all the towns.

Figure 3.6.4 Revenue by Source, FY 2024

Source: Mass. Department of Revenue, Division of Local Services, Community Comparison Reports, 2023, and FXM Associates



Local Non-Profit Institutions

Groton Hill Music Center

The new Groton Hill Music Center, funded by an anonymous donor at a cost estimated to be between \$50 and \$100 million, opened in 2022. Its 126,000-square foot facility includes a 1,000-seat concert hall plus a 300-seat hall with views of the surrounding countryside, 35 rehearsal and teaching spaces, classrooms for students, a lobby, dining room, and concessions situated on 110 acres. The center was designed by architects Alan Joslin and Deborah Epstein, who designed the Seiji Ozawa Hall at Tanglewood. The acoustic quality has been noted as “exceptional” and “remarkable” and is a major feature of the complex, which has already garnered considerable publicity. The purpose of this analysis is to estimate the potential contribution of the Groton Hill Music Center to the town’s economic development.⁷⁸ The impact of the Center as it develops will go beyond the financial aspects and into the cultural character of Groton as well as its surroundings.

Because the Center opened so recently, any estimates of its current economic impact can only be indicative. Attendance numbers, in particular, are indicative only of the current situation. At full operation, the numbers would be higher. For the upcoming season, an estimated 44,000 ticket holders are expected to attend events at the Center. Beyond ticket sales, the Center derives revenues from student tuition and food and beverage sales.

To gauge the potential economic impact of 44,000 visitors on local businesses, visitor per capita spending for food, retail shopping, services, and transportation is estimated at \$87.⁷⁹ Multiplying the per-cap spending by the expected number of visitors yields a potential impact of nearly \$4 million on town businesses from the expenditures of attendees to concerts.

To date, the Center has contributed \$48,000 to the Town. The Town also receives a \$2 fee for each ticket sold. The majority of ticket types are subject to this fee. FY 2024 expenditures for services and supplies are currently estimated at \$2 million, much of which would likely be spent in Groton. The estimated \$4.2 million in FY 2024 salaries and wages could generate \$2.2 million in the purchase of goods and services locally by employees.

The two private educational institutions described below have offered much more than economic benefits to the Town of Groton. The schools also contribute to the prestige and character of the town, offering events that draw local residents as well as tourists. The numbers in the descriptions are, therefore, only a part of their contributions but are those most relevant to economic development.⁸⁰

⁷⁸ The estimates of visitors and of Music Center expenditures and contributions to the municipal government were provide by CEO Lisa Fiorentino.

⁷⁹ Stephen Sheppard, *The Economic Impact of the Boston Symphony Orchestra*, Williams College, 2017.

⁸⁰ Information on the schools’ economic contribution to Groton was provided by their legal counsel, Robert L. Collins.

The Groton School

The Groton School is a private school founded in 1884 by Endicott Peabody. It was originally a boys-only school, but it became coed in 1975.

Currently, it has 380 students, 12 of whom live in Groton, and 186 employees, 94 of whom live in Groton. The school makes important contributions to the Town and its economy. With average annual wages of about \$76,000, total payments to the 94 employees who live in Groton total \$7.2 million, of which about \$3.6 million would likely be for local goods and services. Expenditures for municipal services total almost \$1 million, in addition to which the school makes regular voluntary contributions to the town and additional payments on request. Spending at local businesses for transportation and for parent and alumni events totals an estimated \$55,000 annually. Visitors spend money on Groton lodgings, restaurants, shops, and galleries. Student spending is mostly at local eating places and shops. Additionally, the Groton School participates in the Payment In Lieu Of Tax (PILOT) program and has contributed \$240,000 to the Town in the 2023-2024 Fiscal Year as of May 2024.

The Groton School has its own sewage treatment plant and considerable infrastructure. It uses local contractors, plumbers, electricians, etc., as well as legal services. Spending on these has total as much as \$14 million.

The school also leases extensive acreage to local farmers for nominal rents and hires those farmers for the maintenance of field areas.

Lawrence Academy

Founded in 1793 by Samuel Lawrence as an independent, coeducational academy, the school became a boys-only prep school in 1900. In 1971, Lawrence Academy once again admitted girls. The current enrollment is 414 students, 40 of whom are from Groton, and 143 employees, 60 of whom live in Groton. With average annual wages of \$76,000, about \$4.4 million total, local expenditures would likely be about \$2.2 million per year. The school pays almost \$650,000 for municipal utilities. Like The Groton School, Lawrence Academy makes regular voluntary contributions to the town and *ad hoc* support as needed. Spending on local transportation totals approximately \$220,000 annually. Parents and alumni events at local restaurants are estimated at \$25,000 a year. They also spend money at shops and galleries, as do students. Furthermore, the Academy's PILOT contribution amounted to \$75,000 in the 2023-2024 Fiscal Year as of May 2024.

The school relies on local suppliers for building maintenance and on local legal services. The amounts expended vary but can range from \$1 million to \$20 million.

3.7. Community Facilities and Services

Introduction

A strong municipal system, with usable facilities, a supportive governmental structure, and strong leadership and committees, is the foundation on which this plan will be implemented over its lifetime. Public facilities are municipally owned properties that provide space for the administration of local government and public services. Public services are systems and programming that address the needs of the community and may be administered through public agencies or with public funding. Given their interconnected nature, it is best to view these two concepts through a holistic lens and assess them together.

Investing in public facilities and services can be costly. As a result, local governments should make their best effort to allocate and prioritize spending carefully. The master planning process provides an opportunity to identify immediate needs, coordinate capital planning efforts, plan for sustainable development, and inform budgeting.

Recommendations take the existing condition of facilities into consideration and build upon previous planning efforts, including, but not limited to, the 2011 Master Plan, the 2020 Hazard Mitigation Plan, and the Town's annual reports. These documents are referenced throughout this section of the Plan.

Existing Conditions

Municipal Organization

The Town of Groton follows the Massachusetts Open Town Meeting law for their local government structure, which gives all registered voters within the town the right to debate and vote on budgets, bylaws, and all matters brought forth during town meetings. These town meetings act as the legislative body of the Town. The executive branch of the government consists of elected positions, including the Town Manager and the Select Board. The Town of Groton holds two annual town meetings each year, including a spring Annual Town Meeting required by State law and a fall Special Town Meeting. The law also allows for special meetings to be called by the Select Board or via resident petition.

Boards and Committees

Groton's Boards and Committees allow more specialized discussion and decision-making on town matters. These boards and committees are wide-ranging, covering everything from town services and operations to stewardship of the environment and its people. See Table 3.7.1 for a list of the elected committees and their size.

Table 3.7.1 Elected Boards, Committees, and Commissions

Board, Committee, or Commission	Number of Members
Board of Assessors	3
Electric Light Commission	3
Groton Dunstable Regional School District School Committee*	5
Board of Health	3
Housing Authority	5
Parks Commissioners	5
Planning Board	7
Select Board	5
Sewer Commissioners	3
Commissioners of Trust Funds	6
Water Commissioners	3

*Boards, Committees, and Commissions denoted with an asterisk are made up of broader appointees from other towns, with representatives from Groton.

Town Manager

Per the Town’s charter, the Town Manager is elected by the Select Board for three-year terms. The Town Manager is the Town’s chief administrator. The Town Manager is responsible for maintaining the day-to-day operations of the Town and appointing and nominating residents to the Town’s Boards and Committees. The Town Manager is assisted by a full-time Assistant Town Manager. Table 3.7.2 shows the Boards, Committees, and Commissions appointed directly by the Town Manager.

Table 3.7.2 Boards, Committees, and Commissions Appointed by the Town Manager

Board, Committee, or Commission	Number of Members
Cable Advisory Committee	5
Historic District Commission	6
Insurance Advisory Committee	10
Local Emergency Management Committee	7

The following Boards, Committees, and Commissions are nominated by the Town Manager and appointed by a Select Board vote:

Table 3.7.3 Boards, Committees, and Commissions Nominated for Appointment by the Town Manager

Board, Committee, or Commission	Number of Members
Agricultural Committee	4
Board of Survey	3
Commission on Accessibility	6
Community Emergency Response Coordinator	3
Conductorlab Oversight Committee	5
Earth Removal Stormwater Advisory Committee	5
Emergency Management Agency	26
Great Pond Advisory Committee	6
Greenway Committee	5
Historical Commission	7

Table 3.7.3 Boards, Committees, and Commissions Nominated for Appointment by the Town Manager

Old Burying Ground Commission	5
Recycling Committee	5
Sign Committee	3
Town Forest Committee	3
Trails Committee	11
Weed Harvester Committee	7
Williams Barn Committee	10

Select Board

As Groton’s principal elected officers, the Select Board members are responsible for making decisions on all matters not specifically delegated in the Town’s Charter. The Select Board members are the only officers empowered to enter contracts on behalf of the Town. The Select Board has the authority and responsibility to:

- Provide general policy direction and issue administrative orders.
- Appoint and serve as hiring authority for the Town’s Boards and Committees, as well as officials who administer Town government.
- Issue Annual and Special Town Meeting Warrants.
- Engage and supervise Town Legal Counsel and approve actions in litigation.
- Authorize all borrowing and all expenditures, including payroll.
- Act as the Town licensing board, issuing alcohol, livery, auctioneer, new and used car sales licenses, common victualers, underground storage, and earth removal permits.
- Adjudicate dog complaints that have not been resolved by the Dog Officer.
- Publish the Annual Town Report.
- Oversee municipal property and risk management for the Town.

Table 3.7.4 Boards, Committees, and Commissions Appointed by the Select Board

Board, Committee, or Commission	Number of Members
Affordable Housing Trust	5
Board of Registrars	4
Capital Planning Advisory Committee	5
Commemorations & Celebrations Committee	4
Community Preservation Committee	7
Complete Streets Committee	8
Conservation Commission	7
Council on Aging	9
Destination Groton Committee	5
Diversity, Equity, and Inclusion Committee	7
Finance Committee	7
Housing Partnership	5
Invasive Species Committee	9
Local Cultural Council	6
Lowell Regional Transit Authority	1
MBTA Advisory Board*	1
Montachusett Joint Transportation Committee*	10
Montachusett Regional Planning Committee*	10
Nashoba Valley Regional Technical School Committee*	21
Personnel Board	3
Sargisson Beach Committee	6
Scholarship Committee	6
Sustainability Commission	11
Tax Relief for Elders and the Disabled Committee	5
Zoning Board of Appeals	8

*Boards, Committees, and Commissions denoted with an asterisk are made up of broader appointees from other towns, with representatives from Groton

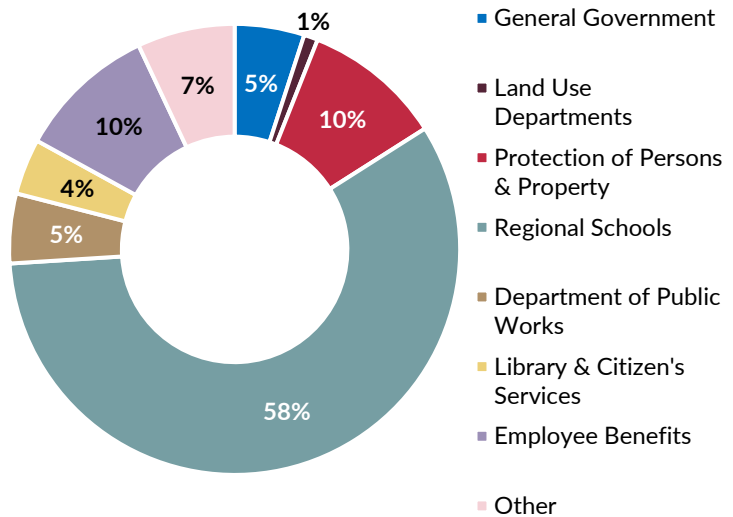
Building Department

The Building Commissioner/Zoning Officer for the Town of Groton works under the supervision of the Select Board, enforcing the state and local zoning and subdivision control laws as well as the state building code. Working in conjunction with the Fire Chief and Town officials, the Building Commissioner ensures that public safety standards are met in all public and private buildings and in the development that occurs within the Town. Under the provisions of G.L. c. 142, § 11, they appoint the Plumbing and Gas Inspectors and supervise their work, as well as that of the Assistant Zoning Officer and the Wiring Inspector.

Finance Department

Groton’s finance department is responsible for the performance of all the town's fiscal and financial activities. The department consists of the town accountant, a treasurer-collector, and a principal assistant assessor, all of whom are appointed by the Town Manager for three-year terms. Below is the voted Municipal Operational Organization and Expenditure by Budget Category for the 2022 fiscal year.

Figure 3.7.1 Town Operating Budget



Town Clerk

In 2022, Groton residents voted to change the Town Clerk’s position from an elected to an appointed position. The Town Clerk is responsible for:

- Serving as Chief Election Officer, Public Information and Legislative Administrator, and Local Registrar of Vital Records and Statistics.
- Ensuring that appropriate notification and procedure are adhered to in the making of legislative policy by the Town and managing public access to information.
- Issuing various licenses (i.e., marriage and dog licenses).
- Serving as a member of the Board of Registrars and assisting the Board in the preparation, publication, and circulation of voter lists.
- Preparing the annual street listing of Groton residents and submitting all bylaws passed by Town Meeting to the state Attorney General for approval.

Trust Funds

One unique facet of Groton’s funding is the maintenance of twenty-four trust funds bequeathed by donors for the benefit of the Town. The trust funds are overseen by a three-person elected commission. In accordance with the wishes of the donors, trust funds are used to provide free lectures, shows, and

Table 3.7.5 Trust Fund Allocation

Category	Percent Allocation
Medical/Health	0%
Library	52%
Scholarships/Education	39%
Property Management	0%
Charity for Low-Income	9%

Source: Town of Groton 2022 Annual Report

presentations to Groton residents; benefit the Groton Public Library; assist Groton residents during financial crises; provide scholarships to graduating high school seniors and adults looking for re-training; and provide evening care, including assistance with classes. Trust fund balances consist of two categories: non-expendable (principal) and expendable (accumulated earnings). Only the expendable portion may be disbursed. In 2022, all trust funds totaled \$22,368,725 and were allocated to various trust funds that fall under the following categories (See Table 3.7.5)

Land Use Department

The Land Use Department is an organizational structure consisting of other departments related to land use, including the Building Commissioner, Conservation Commission, Planning Board, Board of Health, Zoning Board of Appeals, and the Historic Districts Commission. Administrative staff for the land use department is overseen by the Land Use Director/Town Planner.

Conservation Commission

The Conservation Commission is made up of seven appointed members and is staffed by a Conservation Administrator. Per the Massachusetts General Law, the purpose of the commission is “for the promotion and development of natural resources and the protection of watershed resources” of the Town (G.L. c. 40, § 8C). The Commission administers the Wetlands Protection Act and the Town of Groton Wetlands Protection Bylaw. Additionally, the Commission and staff advise other municipal officials and boards on conservation issues.

Planning Board

The Planning Board consists of seven elected members who serve three-year terms. Per State law, the Planning Board is mandated to prepare and maintain the Town’s Master Plan and Official Map; administer Subdivision Rules and Regulations; prepare and present zoning amendments at town meetings; act as Special Permitting Granting Authority where designated by the Groton Zoning Bylaw; and review site plans.

Zoning Board of Appeals

The Zoning Board of Appeals consists of five appointed regular members and four appointed associate members, all of whom serve three-year terms. The Zoning Board of Appeals has statutory authority for the issuance of certain special permit applications, petitions for variances, and appeals from acts of the Building Inspector.

Historic District Commission

The Town’s Historic Districts Commission consists of five appointed members and is responsible for protecting and preserving the Groton Center Historic District. Members review all applications for building and renovation in the district.

Information Technology

The Information Technology (IT) department grew from the former Web and IT Committees, which consisted entirely of volunteers. Currently, the department has two full-time employees: a Director and Server & Desktop Support Specialist.

Police Department

The Groton Police Department employs twenty-five officers, including four sergeants, one detective, eleven patrol officers, and five reserve officers. Both the Town's Police Department and Emergency Medical Services (EMS) operate in the Groton Public Safety Building on Pleasant Street—the Public Safety Building's proximity to adjacent wetlands limits expansion opportunities despite the need for additional facilities.



Graphic 3.7.1: Groton Police Department. Source: Groton Police Department

The police department provides various community safety services. One of the programs they offer is the RAD program, which is the Rape Aggression Defense System, where women ages 14-59 are taught self-defense tactics and techniques. They also offer advice and an evaluation of children's car seats regarding their fit, size, proper installation, and the future needs of the child to ensure children are properly restrained while driving. Other programs include property perimeter checks while people are on vacation, a domestic abuse hotline, shelter, and legal assistance and resources for reporting elder abuse.

Fire Department

The Groton Fire Department consists of a combination of thirty-five on-call and eight career firefighters, Emergency Medical Technicians (EMTs), and volunteer firefighters. There are three fire stations in Town: Center Station, West Groton, and Lost Lake. The fire department facilitates the Student Awareness of Fire Education (S.A.F.E.) program for grades K-12, enabling students to recognize the dangers of fire and how to respond. The department also hosts an Explorer program where people between the ages of 15-20 who are interested in becoming firefighters can experience what it is like through training exercises. The fire department also shares resources for residents to educate them on emergency preparedness.



Graphic 3.7.2:
Top: Center Fire Station
Bottom Left: Lost Lake Fire Station
Bottom Right: West Groton Fire Station
Source: Groton Fire Department, Author

Board of Health

The Groton Board of Health consists of three elected members. The Nashoba Associated Boards of Health, a not-for-profit agency that oversees sixteen communities in North Central Massachusetts, also provides Title V permitting and code enforcement support.

Healthcare Access

Located on the border of Ayer and Groton, the Nashoba Valley Medical Center is an acute care hospital with an emergency department. Within Groton, the Seven Hills Pediatric Center offers skilled nursing care for children and young adults. Additional urgent care facilities are located in the surrounding communities of Littleton, Fitchburg, Leominster, and Westford. As of the time of this plan, the future of the Nashoba Valley Medical Center is in question, as it has been placed up for sale by its ownership. The closure of this hospital would significantly disrupt healthcare access for the town.

Veteran Services

Groton's veterans and their family members have access to support and services through the Town's Veterans' Service Officer. The Service Officer provides information about veterans' benefits (under both Chapter 15 of the Massachusetts General Laws and the Department of Veterans Affairs), assists in the preparation of ceremonies and monthly events, and helps with general assistance requests. The Service Officer operates out of the Town's American Legion Hall and holds regular weekly office hours.

Municipal Facilities⁸¹

Municipal facilities support the operations and community amenities provided to the Town. The following public buildings support the Town operations and amenities: Groton Senior Center, Peter Twomey Youth Center, the Groton Country Club, Groton Public Library, Florence Roche Elementary School, Groton-Dunstable Regional Middle School, and Groton-Dunstable Regional High School.

The primary building that houses staff and municipal operations, hosts meetings, and hosts elections is the historic Town Hall, built in 1859. The Town Hall also stores public records and archives and is where residents go to apply for various registrations, permits, and certificates.

⁸¹ See Map 3.7.1 Municipal Facilities and Amenities.

Parks & Commons

The Town's parks, commons, and recreational facilities are overseen by the Groton Park Commission, a five-member elected board. Groton has five parks: Hazel Grove Park, Carol Wheeler Park, the Smith Social Pavilion, George and Agnes Rider Park, and Cutler Memorial Park. Groton also has eight town commons: Badger, Fireman's, Legion, Minuteman, New Town, Prescott, Orchard, and Sawyer. These parks and commons were gifted to the Town by various families. Gifted Town recreational facilities include Christine Hanson Memorial Playground, Lawrence Memorial Playground, Voitowicz Tennis Courts, and Town Fields (Alvin Sawyer Baseball Field, Voitowicz Field, Cow Pond, and Legion). The Park Commission manages Town fields, and general maintenance, such as mowing, is completed by the DPW.



Graphic 3.7.3: Cow Pond Fields,
Source: Author

Recreation and Leagues

These parks, commons, and recreational centers create community atmospheres and provide facilities for residents to participate in various indoor/outdoor recreational activities. Recreational groups in Groton include youth baseball/softball, men's baseball/softball, youth basketball, youth football, youth hockey, youth lacrosse, youth soccer, running/track & field, various summer camps, and other programs.

Cemeteries

The Town of Groton has one historic public cemetery, the Old Burying Ground, at Groton Center. There is a committee tasked with the preservation of the burying ground, which includes overseeing all repairs to stone markers, issuing permits for gravestone rubbings, and educating the public about the Old Burying Ground. A scanned public record of the Samuel Green Book of Epitaphs is kept accessible online so people can find most of the gravestones located on site. This book contains records from 1717 to 1877.



Graphic 3.7.4: The Groton Cemetery,
Source: Town of Groton

The Groton Cemetery was founded in 1847 and was originally 11 acres. The cemetery has grown over the years to incorporate land donations, as the cemetery now consists of 54 acres of land. The Groton Cemetery Association, which includes twelve trustees, manages the day-to-day operations and landscape management.

Municipal Infrastructure

Department of Public Works

The Town's Department of Public Works manages roads and the transfer station, performs building maintenance, mows and maintains public fields and commons, and provides support to the following municipal departments:

Highway Division⁸²

The Highway Division oversees the design, construction, maintenance, and operation of the community streets, bridges, and other infrastructure.

Tree Warden

The Tree Warden is responsible for removing public shade trees and replacing trees along the public ways. Under state law, removing public shade trees is illegal for anyone but the Tree Warden. The Town's Scenic Road Bylaw was enacted in 1974 to protect Groton's public shade trees. This bylaw designates all roads in Groton to be scenic roads, excluding Routes 119, 225, 40, and 111.

Transfer Station

The transfer station is located at 600 Cow Pond Brook Road and is open Wednesday through Saturday. The residents of Groton dispose of their recycling and trash at the transfer station. Residents must first purchase a yearly vehicle sticker and special trash disposal bags. There are no trash bags required for recycling. Stickers can be obtained at the Town Clerk's office, while the bags can be obtained at the Town Clerk's office, the Transfer Station, Groton Shaw's, and Shop n' Save in Ayer. The Town of Groton provides many opportunities to recycle different materials. The transfer station also provides educational videos and graphics on what can be recycled and where it goes at the transfer station. Recycling is mandated and required by the Town. Various large items, such as furniture and construction debris, are accepted by the Groton transfer station. Hazardous materials and appliances are accepted by the Devens Household Hazardous Waste Collection Center.

In addition to recyclables and trash, the transfer station also collects food scraps, where Black Earth Compost manages the site and creates compost for the residents to use. The Town also provides compost bins for residents to purchase to compost on their own.

Stormwater

The Town conducts stormwater management under a local ordinance and stormwater control plan that follows federal and state regulations. Under the EPA, Groton is a Massachusetts-regulated MS4 community. As such, Groton must comply with the National Pollutant Discharge Elimination System (NPDES) Phase II permit. Alongside the Town's DPW, the Earth Removal

⁸² For more information on the Highway Division, see Section 3.4 Transportation.

and Stormwater Advisory Committee is responsible for ensuring compliance with these standards. In 2020, the Town established a Stormwater Utility Enterprise Fund to aid in compliance with the stormwater standards. These funds can be used for capital projects and tracking compliance with the Town's MS4 permit and stormwater standards. The Town's stormwater infrastructure is focused on the main thoroughfares and subdivisions. Most of the Town's roads and parcels sheet flow onto the surrounding lands.⁸³

In Groton, the extensive wetland systems and proximity to the Nashua and Squannacook Rivers significantly contribute to flooding. With climate change causing more frequent and intense rainstorms, the town is likely to experience increased stormwater flooding. To address these vulnerabilities and enhance drainage, the 2020 Hazard Mitigation Plan recommends that town staff update existing regulations and develop new stormwater management guidelines.

Groton Water Facilities

In Groton, water service is provided by two distinct entities: the West Groton Water Supply District and the Groton Water Department. An estimated seventy-eight percent of residents receive water from these entities, and the remainder of residents rely on private wells. The Lost Lake neighborhood, located in the southeastern corner of the Town, relies entirely on private wells.

The West Groton Water Supply District

The West Groton Water Supply District was originally formed in 1911 by local families wanting to start their own water district. Today, it supplies safe drinking water to over 650 homes and businesses in West Groton. The water is supplied by wells that produce 850,000 gallons per day. Since the original well production, the West Groton Water Supply District constructed a 600,000-gallon storage tank and developed the Town Forest well to enable this supply.

To advance water conservation goals in Groton, the District imposes an annual mandatory water restriction between May and September, which limits residents to outdoor watering to twice a week. Gardens and businesses reliant on water use are exempt from this restriction.

The Groton Water Department

The Groton Water Department—originally the Groton Water Company—was established in 1897 through an act of the Massachusetts General Court and was formally acquired by the Town of Groton in 1982. In 2022, the Groton Water Department provided water service to over 2,200 customers. Today, the water system consists of nearly 53 miles of water mains, 1,900 water accounts, and 400 hydrants. Water is supplied by four groundwater wells located at Baddacook and Whitney Ponds.

⁸³ Existing Stormwater Utilities Map, 2013, Source: Town of Groton

To fulfill Massachusetts Department of Environmental Protection (MassDEP) requirements, the Groton Water Department completed the construction of a new water treatment facility designed specifically to treat and remove manganese from the water at the Whitney Pond wells.

In 2022, the Groton Dunstable Regional High School (GDRHS) tested PFAS6 in their well. MassDEP also sampled the well and notified the GDRHS that they are responsible for providing a solution to all impacted residents. The Groton Water Department is taking steps towards providing a solution. They hired a consultant who provided two alternatives for a water system expansion to the GDRHS and surrounding residents. One alternative involves expansion from Dunstable-Pepperell, and the other involves expansion of the Groton water system. A regional approach to bring water down Chicopee Road all the way out to the Dunstable line and loop back around, as well as additional and emergency interconnections, was decided upon. At the Spring 2023 Town Meeting, Groton voters approved up to \$16.8 million towards remediation efforts.

The Groton Water Department is also currently working on efforts to connect to the MWRA to obtain more water resources for the town. Groton is being considered in the MWRA Water System Expansion Evaluation to MetroWest Communities study published in July 2023. The conceptual expansion plan demonstrates how to provide water service to Groton to meet its existing maximum daily demand. This would be achieved by constructing a proposed pipe route through multiple communities north of the MetroWest Water Tunnel via the Bruce Freeman Rail Trail. A pump station would also be installed in Groton for this effort. The estimated timeline for this connection project is 25-30 years.

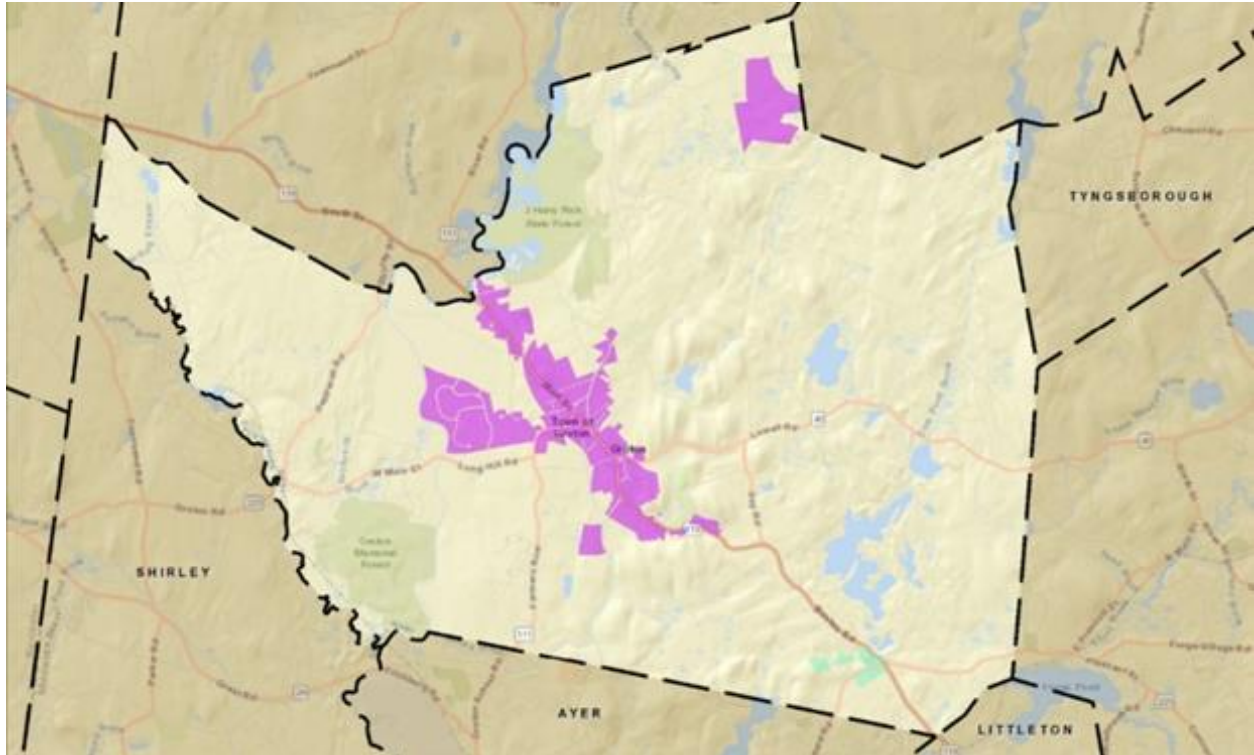
Groton Sewer Commission

The Groton Sewer Districts include the Groton Center Sewer District and the Four Corners Sewer District. These districts service portions of the town, as seen in Graphic 3.7.5, and the remainder utilize septic systems.

In 2019, the Four Corners Sewer District (represented by the teal area in the southeastern portion of town) was established via an inter-municipal agreement (IMA) with the Town of Ayer to provide additional sewer service. Ayer treats and discharges the treated wastewater to the Nashua River Basin. The IMA permits the transfer of 40,050 gallons per day to the Town of Ayer wastewater treatment plant. The Four Corners Sewer District does not currently have any capacity restrictions.

The Center Sewer district (see pink areas in Graphic 3.7.5) was established in 1985. This inter-municipal agreement allowed Groton to outsource its wastewater treatment to a plant located in the Town of Pepperell, which also discharges to the Nashua River Basin. The IMA allows for 275,000 gallons per day to be sent to the Pepperell Wastewater Treatment Plant. The current demands, estimated at 236,000 gallons per day, are approaching this capacity agreement, as well as the Nod Road pump station capacity. The Nod Road pumps were last upgraded in 2013. In March of 2023, the Groton Sewer Commission awarded a contract to specify requirements for upgrading the pumps to meet optimum flow for the existing outflow pipes. As of April 19, 2023,

the Groton Sewer Districts Expansion Policy was approved by the Board of Sewer Commissioners, which does not approve the expansion of the sewer districts due to limited “upside” system capacity. This policy includes aggressively monitoring and eliminating “inflow and infiltration” in the sewer system to reclaim available capacity, service the needs of the in-district facilities as best possible, and to consider sewer district expansion to properties only to service a failed septic system with no economically feasible replacement option.



Graphic 3.7.5: Sewer District Areas in purple, Source: Town of Groton

Groton Electric Light Department (GELD)

GELD has serviced the Town of Groton since 1909 when Henry K. Richards, "Father of Groton Electric Plant," initiated the installation of 570 light poles connected by over 200,000 ft of copper wire. For decades, GELD has been on the cutting edge of the technological revolution, which has given GELD historical data to improve its infrastructure and lead the way forward with time-of-use rates.

Today, GELD’s mission is – “to provide our customers with reliable power and excellent customer service at affordable prices.” Excellent customer service and reliable power are GELD’s priorities. GELD has a diversified power portfolio of over 68 percent carbon-free and over 24 percent renewable, with residential rates significantly less

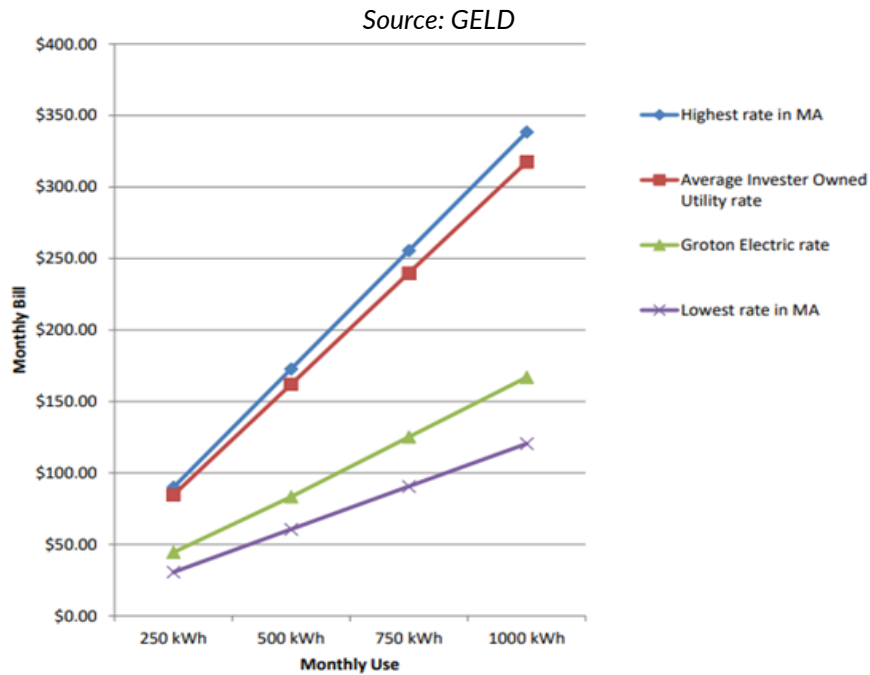


Graphic 3.7.6: Groton Electric Light Department Offices and Garage, Source: Author

than neighboring towns served by investor-owned utilities. The diversified portfolio contains many pieces; some of them are GELD’s ownership interest in wind projects, various hydro contracts, the solar farm on the former town landfill, which provides up to 25 percent of electricity during certain hours of the spring and fall, and a sizeable amount of carbon-free power from nuclear power plants.

GELD is owned by the residents of the Town and is therefore able to offer one of the lowest rates in the state. See Figure 3.7.2 for a comparison of other state rates.

Figure 3.7.2 Comparison of GELD Rates to Competitors at Various Residential Use Levels, 2022



Profits from the electric municipal utility company go back to the community through improvements to the system and lower rates. Educational information is provided on the GELD website about power outages, surge protection, the importance of tree trimming, storm preparedness, and storm recovery. In a larger storm recovery event, GELD focuses on critical care facilities and large areas of homes that can be restored by primary lines.

Currently, most of Groton is serviced by overhead wires. To bolster resilience, both the 2020 Hazard Mitigation and the 2011 Master Plans encourage the installation of utilities underground.

Broadband and Internet Access

Cable and internet services are mainly contracted with Verizon or Spectrum. Residents can set up an account with these providers to obtain the necessary connections and equipment.

Education

Groton-Dunstable Regional School District

Since its formation in 1967, the Town has been served by the Groton-Dunstable Regional School District. The district includes five schools: Boutwell Early Childhood Center, Swallow Union Elementary School, Florence Roche Elementary School, Groton-Dunstable Regional Middle School, and Groton-Dunstable Regional High School (Table 3.7.6). As of the 2023-2024 school year, the Groton-Dunstable School District has an enrollment of 2,305 students.

Table 3.7.6 School Facilities Inventory in Groton-Dunstable Regional School District

Building	Location	Approximate Size (sq ft)	Year Constructed (renovations or additions)	Site Acreage	Grades	2023-2024 Enrollment
Groton-Dunstable Regional High School	Groton	165,000	2003	186	9-12	689
Groton-Dunstable Regional Middle School	Groton	187,000	1962 (2004)	35	5-8	713
Florence Roche Elementary School	Groton	110,000	Anticipated 2024	36	K-4	508
Swallow Union Elementary School	Dunstable	61,000	1895 (1995)	1.1	K-4	320
Boutwell Early Childhood Center	Groton	8,200	1914 (1991)	1.8	Pre-K	75

Source: Groton-Dunstable Regional School District; Massachusetts School Building Authority; Massachusetts Department of Elementary and Secondary Education (DESE), School and District Profiles.

Table 3.73.7.7 Groton-Dunstable Regional School District Enrollment (2012-2024)

School Year	Enrollment	Change
2012-2013	2,632	(49)
2013-2014	2,625	(7)
2014-2015	2,563	(52)
2015-2016	2,399	(174)
2016-2017	2,425	26
2017-2018	2,417	(8)
2018-2019	2,400	(17)
2019-2020	2,353	(47)
2020-2021	2,262	(91)
2021-2022	2,315	35
2022-2023	2,351	36
2023-2024	2,305	(46)

Source: Massachusetts Department of Elementary and Secondary Education (DESE), School and District Profiles.

The Groton-Dunstable Regional School Committee consists of seven elected members; membership is allocated in proportion to population. Since 1997, five members have been elected by Groton residents, and two members are elected by Dunstable residents. Responsibilities of the committee include developing educational policy and goals, approving the annual budget, and negotiating contracts for bargaining units.

Florence Roche Elementary School, the Groton-Dunstable Middle School, and the Groton-Dunstable High School are identified as emergency shelters in the 2020 Hazard Mitigation Plan.

Florence Roche Elementary School

This new elementary school is a two-story 110,000 square foot building that is replacing the old elementary school building, including site improvements and a new 400-meter running track. This Massachusetts School Board Authority-supported project will provide 645 students with enrollment from kindergarten through the fourth grade to the Town of Groton and the Groton-Dunstable Regional School District. Construction started in April 2022, and the school is anticipated to be completed and opened in the spring of 2024, with field construction and a demo of the old building continuing until the spring of 2025.



Graphic 3.7.7: Rendering of Florence Roche Elementary School, Source: Studio G Architects



Graphic 3.7.8: Groton-Dunstable Regional Middle School, Source: Author

Groton-Dunstable Regional Middle School

In the 2023-2024 school year, the Groton-Dunstable Regional Middle School (GDRMS) had an enrollment of 713 students in fifth to eighth grade. GDRMS offers recreational programming, including basketball, cross country, field hockey, and football.

Groton-Dunstable Regional High School

Constructed in 2003, the Groton-Dunstable Regional High School (GDRHS) sits on 179 acres between Groton and Dunstable. In the 2023-2024 school year, GDRHS had an enrollment of 689 students. GDRHS encourages student involvement in school organizations, offering thirteen sports programs and the Groton Players theater group. Additionally, GDRHS serves as a community resource for both Groton and Dunstable, with a 300-seat auditorium and 800-seat gymnasium used for wider community events.



Graphic 3.7.9: Groton-Dunstable Regional High School, Source: HMFH Architects

Other School Facilities

Groton also belongs to the Nashoba Valley Technical Regional School District, which provides access to vocational education to residents in the towns of Ayer, Chelmsford, Groton, Littleton, Pepperell, Shirley, Townsend, and Westford. There are two private schools located in Groton: Lawrence Academy and the Groton School. Lawrence Academy is a boarding school serving grades 9-12, with an enrollment of 400 students in 2023; the Groton School is a boarding-optional school serving grades 8-12, with an enrollment of 387 students in 2023.⁸⁴ Groton is also served by two charter schools that serve several towns in the area: Francis W. Parker School in Devens, with 400 students enrolled, and Innovation Academy Charter School in Tyngsborough, with 600 students enrolled.

Culture and Recreational Facilities

Groton Public Library

The Groton Public Library has the highest users-per-capita in the state of Massachusetts. They offer various programs, including book and other discussion groups; summer reading programs for kids, teens, and adults; winter reading programs for kids and teens; and museum passes; as well as free online databases and download or streaming digital content (books, audiobooks, videos, music, comics, magazines). The library also offers study rooms and quiet spaces that are available for booking. The space is home to artwork, including paintings and sculptures. Residents and surrounding community members are encouraged to submit their artwork for display. The Groton Public Library is a communal hub for learning, collaboration, and discovery available to all residents and surrounding town residents.

⁸⁴ For more details on these private schools, see Section 3.6 Economic Development.

The Groton Center | Groton Council on Aging

The center supports and promotes older adults' independence by providing resources for referral, support, health and wellness, socialization, and education. The center provides transportation, offering door-to-door pick-up and drop-off within Groton, neighboring towns, and even hospitals in the Boston area. The facility hosts a fitness center with workout equipment and classes. The center also has an open art studio, cards and games, educational opportunities, and health clinics. Occasionally, the center will organize and provide transport for tours and trips for the residents. The Groton Center is an excellent opportunity for the aging population to socialize, learn, revitalize, and enjoy themselves.

According to the 2020 Hazard Mitigation Plan, the Groton Senior Center is the Town's primary emergency shelter and is equipped with a backup generator.

The Council on Aging consists of nine members appointed by the Select Board. The Council coordinates and carries out Groton Center programming designed to meet the needs of senior citizens. The Council is also responsible for the operation of the Town's Senior Center, and the Director of the Senior Center is an ex officio member of the Council.

The Groton Country Club

The Groton Country Club is a municipally owned facility open to the general public, with discounts on golf and swimming fees for residents. The 113-acre site includes a nine-hole golf course, swimming pool, outdoor pavilion, pickleball courts, and function hall.

Prescott School

Originally built as Groton's high school in 1927, the Prescott School is currently owned by the Town and leased to a non-profit, the Friends of The Prescott School. The Friends of the Prescott School operates the facility as a community center, offering a wide array of programming, including adult- and child-level classes, lectures, guest speakers, walking tours, and seminars. In response to a public forum to address community needs, the Prescott Community Center expanded its programming to include after-school programming in an Early Education Childcare (EEC) licensed classroom.

Peter Twomey Youth Center

Located at 348 Main Street adjacent to the Florence Roche and Groton-Dunstable Middle Schools, the Peter Twomey Youth Center is the base for Extended Day Programs for the Florence Roche, Swallow Union, and Boutwell Schools. Additionally, the Groton-Dunstable Regional School Committee oversees a Community Education program at the center, providing fitness, creative arts, skill development, and other classes (both adult and children's enrichment) for all Groton residents.



Graphic 3.7.10: Peter Twomey Youth Center, Source: Groton-Dunstable Regional School District

Groton Hill Music Center



Graphic: 3.7.11: Groton Hill Music Center, Source: Groton Hill Music Center

The Groton Hill Music Center opened in the fall of 2022 as a world-class performance and education hub. The center hosts musical performances and education for New England. The center features two music halls, 35 classrooms, a dining room, and other flexible learning, performing, and hospitality spaces. Their dining space is a farm-to-table experience, with Blood Farm in Groton being one of their partners. Groton Hill Music Center hosts performances from local artists and celebrities.

The center provides community engagement opportunities through public school and community partnerships, need-based scholarships to provide musical lessons, Threshold Singers who provide beside singing for individuals in hospice care, and lunch concerts for seniors and adults with disabilities.

3.8. Sustainability and Resilience

Introduction

Like many communities in Massachusetts, Groton is already experiencing the harmful impacts of climate change, including more frequent and severe storms, flooding, and extreme heat. Climate change is caused by increased levels of Greenhouse Gas (GHG) emissions, which trap heat in the Earth's atmosphere. Although natural factors affect the Earth's climate, humans are exacerbating these impacts by burning fossil fuels, such as coal, oil, and natural gas, and increasing the concentration of atmospheric carbon dioxide. Other industrial activities, including clearing forests, storing waste in landfills, fertilizing crops, and raising livestock, also emit GHGs.

Resilience will include preparing for, responding to, and adapting to the negative impacts of climate change. Currently, climate resilience efforts in Groton are stewarded by the Town's Sustainability Commission, an appointed twelve-member group charged with "assisting all generations of residents, town agencies and boards in the planning and implementation of their activities in a way that maximizes the preservation of natural resources, including climate, and integrates climate resilience and adaptation where appropriate."⁸⁵ Specific responsibilities of the Commission include incorporating sustainability metrics into Town plans, policies, operations, and bylaws, monitoring the Town's progress towards sustainability goals, identifying funding streams, collaborating with regional partners, and raising awareness of climate-related issues.

This element of the Comprehensive Plan summarizes the Town's existing vulnerabilities and related adaptation measures, as well as the Town's current sustainability efforts. Looking forward, the Town of Groton should identify both short- and long-term mitigation and adaptation strategies to reduce emissions and enable communities to be resilient to the impacts of climate change. Integrating sustainability into the comprehensive planning process will help the Town invest in resilient structures, policies, and systems for generations of residents to come.

Existing Conditions and Trends

Key Vulnerabilities

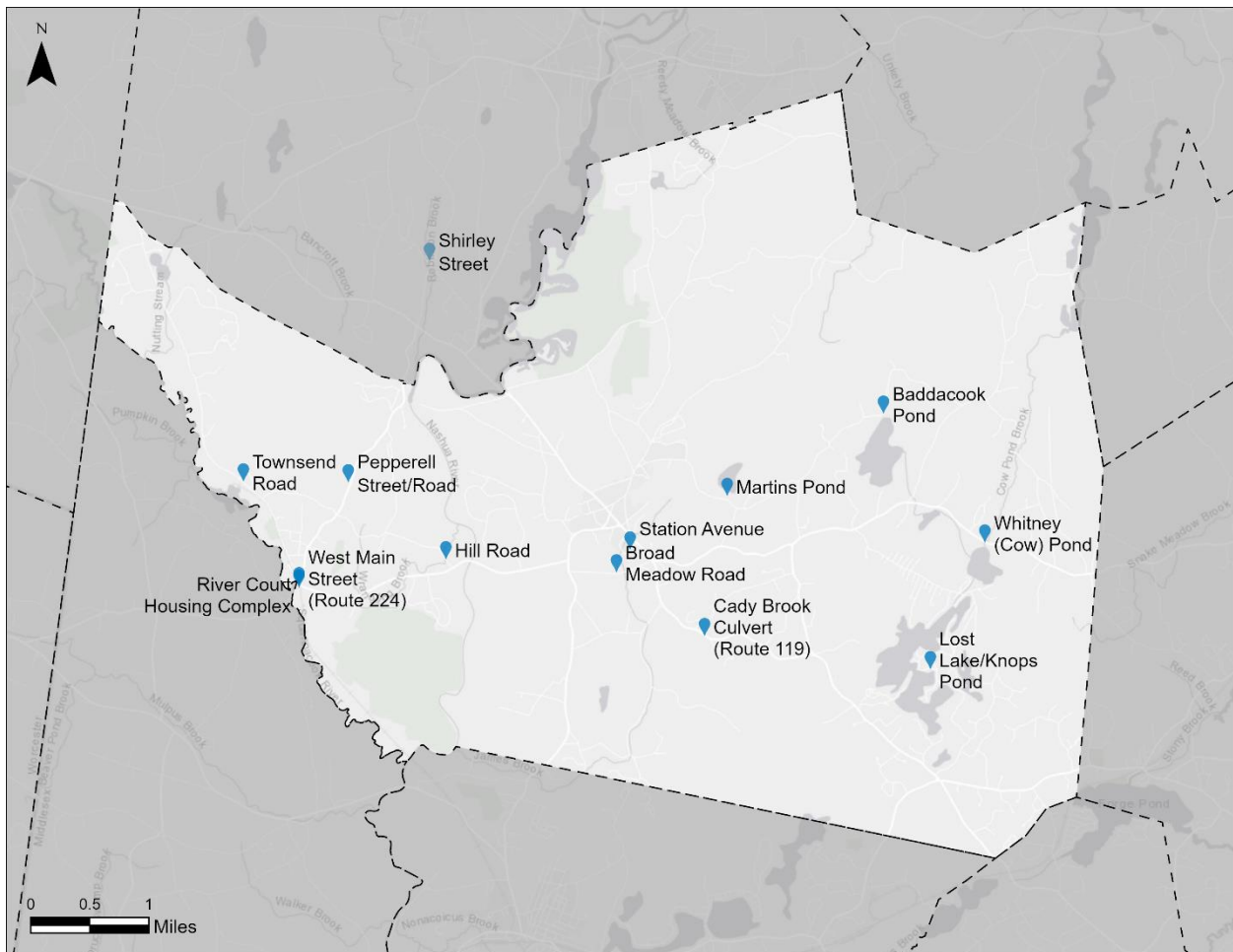
In 2020, the Town of Groton adopted a joint Hazard Mitigation Plan and Municipal Vulnerability Preparedness Plan (HMP-MVP Plan) to identify the impacts of natural hazards and climate change on the community. As a part of the HMP-MVP planning process, Groton undertook a Community Resilience Building (CRB) Workshop, which brought together community stakeholders to identify key risks and action items while considering Groton's unique characteristics. Throughout this process, stakeholders identified the four most pressing hazards:

⁸⁵ Town of Groton, "Sustainability Commission – Town of Groton", August 2023: <https://www.grotonma.gov/government/boards-and-committees/sustainability-commission/>.

flooding, extreme weather (e.g., Nor'easters, wind, and snow), **extreme temperatures**, and **fire and drought**.

Flooding

Typically, flooding is caused by weather events, including extreme precipitation, thunderstorms, nor'easters, winter storms, and hurricanes. Undersized infrastructure, poor drainage conditions, large areas of impervious surfaces, or lack of maintenance may also cause stormwater flooding. Most stormwater infrastructure in Massachusetts is aging and was designed with outdated rainfall data. As a result, large precipitation events can overwhelm stormwater management systems, causing roads and properties to be inundated with water. Low-lying areas and wetlands in Groton are subject to periodic flooding caused by the overflow of the Nashua and Squannacook Rivers, in addition to other waterbodies in town (Graphic 3.8.1).



Graphic 3.8.1: Local Areas of Flooding, as Identified in the 2020 HMP-MVP Plan, Source: Nitsch Engineering

One area of particular concern is Broadmeadow Road (Graphic 3.8.2), which crosses over James Brook, connects Main Street (Route 119) to Farmers Row (Route 111), and serves as a primary link to West Groton. During rain and snow events, flooding makes the road impassible and limits emergency access. Heavily used public facilities, including the Public Library, the Nashua River Rail Trail, and Lawrence Memorial Playground, are located along Broadmeadow Road.

In 2023, the Town hired a consultant to explore improvements to mitigate flooding on Broadmeadow Road, working in conjunction with the Town Manager, DPW Director, Land Use Director/Town Planner, Conservation Administrator, and Stormwater Inspector. Proposed improvements included elevating the roadway above the floodplain or removing and replacing the road with a pedestrian boardwalk.



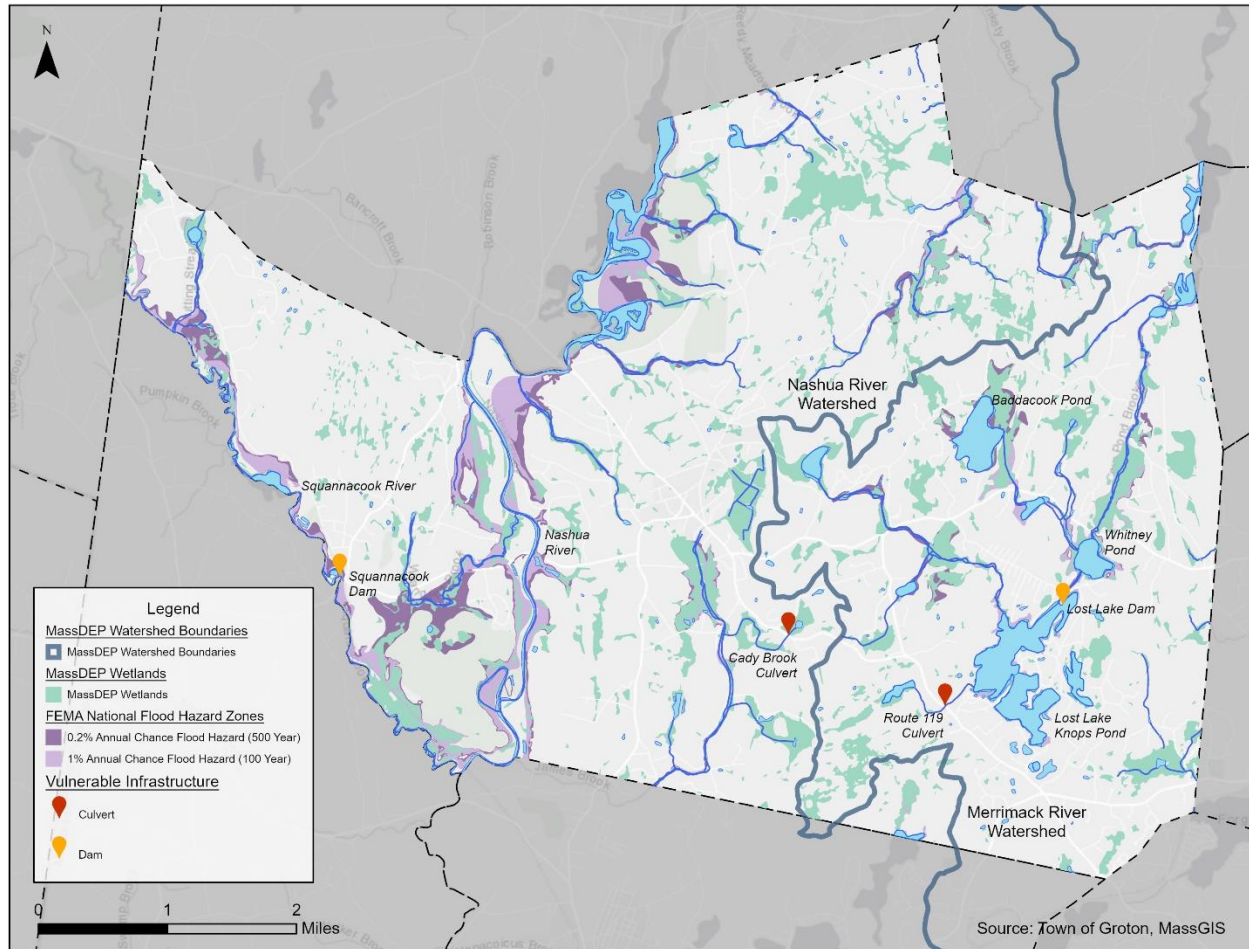
Graphic 3.8.2: Flooding on Broad Meadow Road after a minor rain event in April 2020. Source: Town of Groton 2020 Hazard Mitigation Plan - Municipal Vulnerability Preparedness Plan (2020)

As climate change exacerbates the risk of extreme flooding, there will be increased strain on infrastructure. The numerous rivers, brooks, and ponds in Groton (Graphic 3.8.4) make the Town particularly vulnerable to riverine flooding, which occurs when waterbodies overtop their banks. This can stress and overwhelm infrastructure, such as dams and culverts, which are used to store, direct, and manage the flow of water. The 2020 HMP-MVP identifies two undersized culverts in Groton: the Cady Pond Brook Culvert and the Route 119 Culvert. However, Groton has not



Graphic 3.8.3: Flooded culvert on West Main Street in September 2023, Source: Nitsch Engineering

undertaken a comprehensive town-wide assessment of culverts, and even small storms can trigger flooding. Graphic 3.8.3 shows a flooded culvert on West Main Street in September 2023 after 2.13 inches of precipitation over a twenty-four-hour period.⁸⁶



Graphic 3.8.4: Surface Water Resources in Groton, Source: Nitsch Engineering

The Massachusetts Department of Conservation and Recreation (DCR) Office of Dam Safety maintains records of dams across the state to ensure their compliance with environmental and structural standards. Similarly, the National Inventory of Dams (NID) is maintained by the U.S. Army Corps of Engineers (USACE) and collects information on the condition of dams from federal, state, and local agencies. Table 3.8.1 lists municipally owned dams in Groton and identifies their Hazard Potential Classification (via the DCR Office of Dam Safety) and their respective condition assessment (via the NID). In December of 2023, the Healey-Driscoll Administration awarded \$50,000 to Groton to perform a preliminary design study for the removal of the Squannacook River Dam.

⁸⁶ National Centers for Environmental Information National Oceanic and Atmospheric Administration, “Daily Summaries”, December 2023: <https://www.ncei.noaa.gov/maps/daily-summaries/>

Table 3.8.1 Hazard Potential of Municipally Owned Dams in Groton

Dam Name	Hazard Potential Classification and Description (DCR)		Condition Assessment (NID)
Lost Lake Dam	High Hazard Potential (Class I)	Dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s), or railroads.	Fair
Squannacook River Dam	Significant Hazard Potential (Class II)	Dams located where failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities.	Satisfactory

Source: National Inventory of Dams (NID), Dams of the Nation, December 2023: <https://nid.sec.usace.army.mil/#/>; Office of Dam Safety, December 2023: <https://www.mass.gov/office-of-dam-safety>.

Extreme Weather

The Environmental Protection Agency (EPA) defines extreme weather as events that are typically infrequent, vary from standard conditions, and have severe impacts. Extreme weather can include prolonged heatwaves, intense periods of precipitation, hurricanes, tornadoes, blizzards, and droughts. Climate change can exacerbate extreme weather by increasing its frequency, intensity, and duration, as well as skewing its timing to be earlier or later in the season⁸⁷. Although extreme weather has historically been rare, climate change is also increasing the likelihood that these events will occur. Extreme weather can have serious health impacts and damage critical infrastructure.

Table 3.8.2: Selected Storm Events 2012-2022, Northwest Middlesex County Zone

Event Type	Count
Blizzard	1
Drought	9
Extreme Cold/Wind Chill	2
Flash Flood	23*
Flood	111*
Heat	1
Heavy Snow	26
High Wind	28
Strong Wind	63
Winter Storm	9

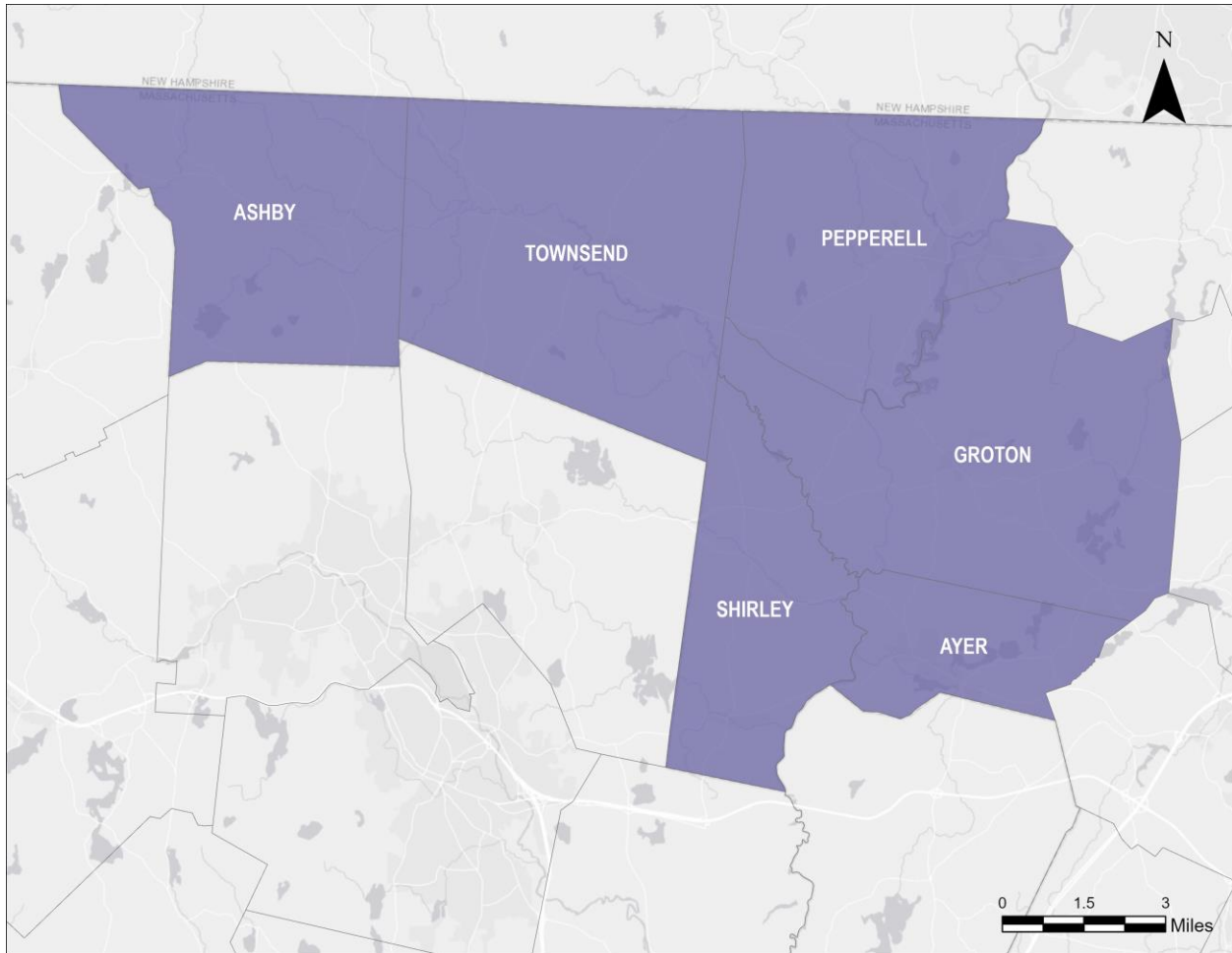
Source: National Oceanic and Atmospheric Administration (NOAA), Storm Events Database, December 2023:

<https://www.ncdc.noaa.gov/stormevents/>

*Counts denoted with an asterisk indicate storm events measured at the county scale.

The National Oceanic and Atmospheric Administration (NOAA) maintains a database of storm events occurring across the United States. Table 3.8.2 summarizes storm events occurring in the Northwest Middlesex County Zone (Graphic 3.8.5) between 2012 and 2022.

⁸⁷ Environmental Protection Agency, "Changes in Extreme Weather and Climate", January 2017: https://19january2017snapshot.epa.gov/climate-change-science/understanding-link-between-climate-change-and-extreme-weather_.html



Graphic 3.8.5: Municipalities in Northwest Middlesex County

According to the *2022 Massachusetts Climate Change Assessment*, Massachusetts is projected to get more rain overall because of climate change⁸⁸. Figures 3.8.1 and 3.8.2 illustrate projected changes in annual precipitation in Massachusetts, which could increase by over seven inches and eleven days by the end of the century. However, higher projected temperatures would increase the capacity of the atmosphere to hold moisture. As a result, precipitation events in Massachusetts will likely be more intense. These more intense precipitation events leave infrastructure vulnerable and can have severe impacts.

⁸⁸ Massachusetts Executive Office of Energy and Environmental Affairs, *Massachusetts Climate Change Assessment Volume II – Statewide Report*, December 2022: <https://www.mass.gov/doc/2022-massachusetts-climate-change-assessment-december-2022-volume-ii-statewide-report/download>

Figure 3.8.1 Historic and Projected Changes in Annual Precipitation in Massachusetts

Source: Massachusetts EEA, ResilientMass Climate Change Clearinghouse for the Commonwealth; Nitsch Engineering

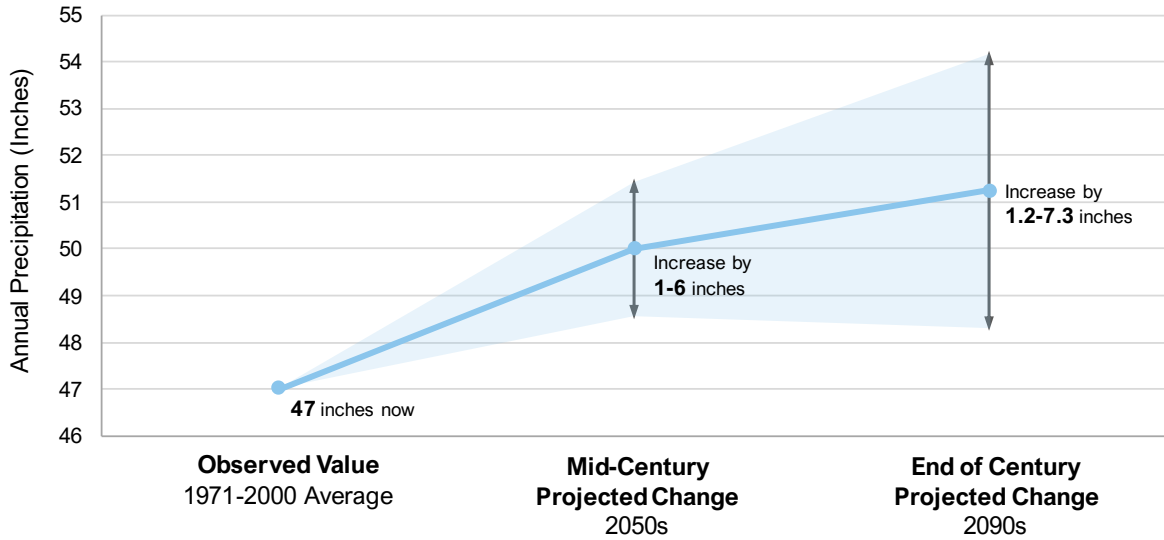
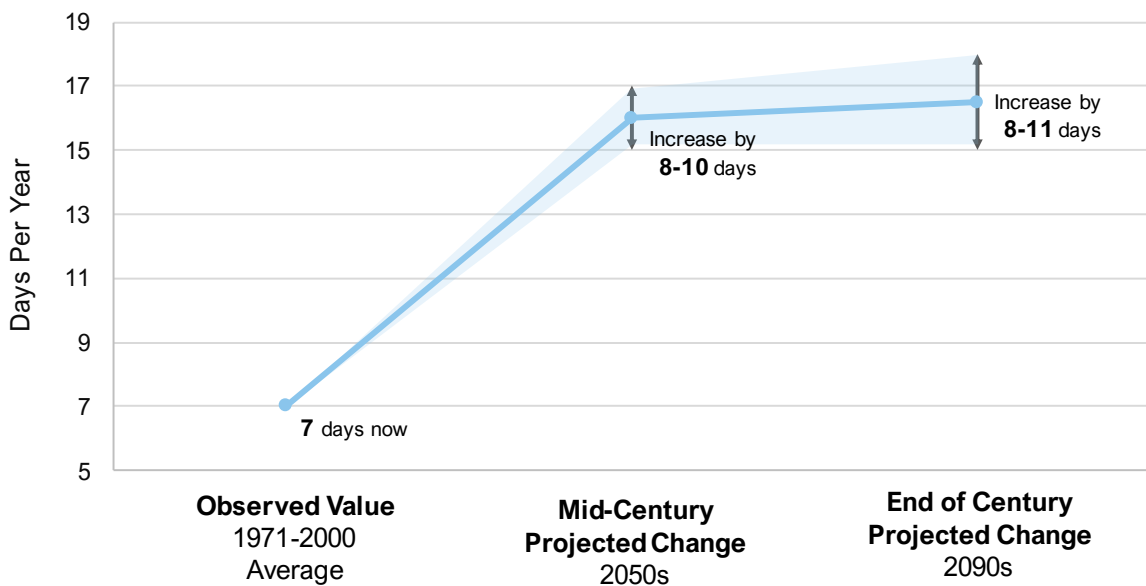


Figure 3.8.2 Historic and Projected Changes in Number of Days with More than 1-Inch of Precipitation in Massachusetts

Source: Massachusetts EEA, ResilientMass Climate Change Clearinghouse for the Commonwealth; Nitsch Engineering



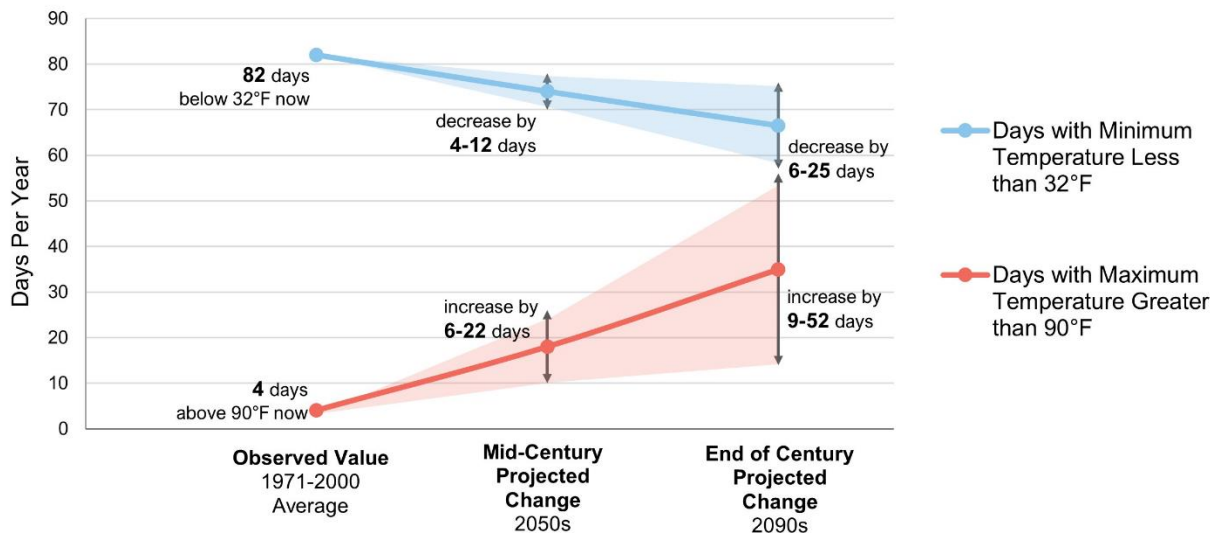
Extreme Temperatures

Increased GHG emissions are causing global temperatures to rise at a faster pace than at any other time in history. Since 1970, air temperatures in the Northeast have been increasing at an average rate of 0.5°F per decade⁸⁹. In Massachusetts, three or more consecutive days above 90°F is considered a heatwave. According to the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) ResilientMass database, the average Massachusetts summer in the years between 1971 and 2000 included four days over 90°F. By 2050, this number could increase to up to twenty-two days; by 2090, up to fifty-two days.⁹⁰ Similarly, the number of days with minimum temperatures less than 32°F is projected to decrease. Figure 3.8.3 describes these projections in more detail.

Extreme heat can pose serious health risks, especially for vulnerable populations, such as children, elderly residents, and those who have a chronic illness or do not have access to air conditioning. Another public health risk of increasing temperatures is an increase in vector-borne diseases. Increased temperatures have contributed to increased populations of black-legged ticks that can transmit pathogens causing serious illnesses, such as Lyme disease and anaplasmosis. This is of particular concern for a heavily wooded community like Groton.

Figure 3.8.3 Projected Future Temperatures Based on Medium and High Pathways of Future Greenhouse Gas Emissions

Source: Massachusetts EEA, ResilientMass Climate Change Clearinghouse for the Commonwealth; Nitsch Engineering



⁸⁹ Union of Concerned Scientists, *Confronting Climate Change in the U.S. Northeast*, July 2007: <https://www.ucsusa.org/sites/default/files/2019-09/confronting-climate-change-in-the-u-s-northeast.pdf>

⁹⁰ Massachusetts Executive Office of Energy and Environmental Affairs, *ResilientMass Climate Change Clearinghouse for the Commonwealth*: "Rising Temperatures," 2021: <https://resilient.mass.gov/changes/rising-temperatures>

Maintaining and increasing the Town’s tree canopy is one mitigation strategy employed to reduce ambient temperatures. In Groton, the Scenic Roads bylaw (Section 381-48) was enacted in 1974 to protect public shade trees. The purpose of this bylaw is to encourage more environmentally sensitive development along scenic roads and develop a growth of shade trees to reduce the cost of roadside maintenance. Per the bylaw, any tree removal requires the written approval of the Tree Warden.

Fire and Drought

As temperatures are projected to rise, seasonal drought risk is also projected to increase in the Northeast during the summer and fall months. Moreover, droughts and increased temperatures heighten the risk of wildfires by causing increased flammability in forested areas. According to the *2022 Massachusetts Climate Change Assessment*, inland areas in Massachusetts are particularly susceptible to increases in temperature when compared to coastal areas⁹¹.

Droughts can have serious impacts on both natural systems, such as tree cover and freshwater ecosystems, and infrastructural systems, such as loss of water pressure and supply. Groton’s public drinking water supply comes from three groundwater wells that draw from an aquifer sourced by Baddacook and Whitney Ponds; water is then treated at two water treatment plants. However, 22 percent of households in Groton rely on private wells (Table 3.8.3). Groundwater levels and depths of private wells are variable and shallow; hand-dug wells are more susceptible to drying out during periods of decreased precipitation.

Table 3.8.3 Water Service in Groton

Water Service	Households (Percentage)
Groton Water Department	60%
West Groton Water Supply District	18%
Private Wells	22%

Water quality is another key issue for the Town. In 2019, the Massachusetts Department of Environmental Protection (MassDEP) identified manganese at two Whitney Pond wells that exceeded specified Health Advisory Limits. In response, the Groton Water Department constructed a state-of-the-art treatment facility to treat iron and manganese in 2023.

Additionally, in 2022, testing at Groton Dunstable Regional High School indicated polyfluoroalkyl substances (PFAS) were present at concentrations exceeding the Massachusetts Maximum Contaminant Level (MMCL). PFAS are synthetic compounds that break down very slowly and can build up in people over time, potentially leading to negative health effects. The GDRHS is served by a public water supply operated by the Groton Dunstable Regional School District (GDRSD). After further testing, unacceptable concentrations of PFAS were also identified in several private wells located hydrologically downgradient to the High School. Currently, MassDEP requires that GDRHS undertake additional testing, provide bottled water at the High School and affected residences, and install Point-of-Entry Treatment (POET) systems. The GDRDS is also

⁹¹ Massachusetts Executive Office of Energy and Environmental Affairs, *Massachusetts Climate Change Assessment Volume II – Statewide Report*, December 2022: <https://www.mass.gov/doc/2022-massachusetts-climate-change-assessment-december-2022-volume-ii-statewide-report/download>

coordinating with MassDEP to explore long-term solutions, including the extension of the Town of Groton municipal water systems from the center of town or the utilization of the Town of Pepperell water system to source the area. At the Spring 2023 Town Meeting, Groton voters approved up to \$16.8 million towards remediation efforts.

Invasive Species

Invasive species are non-native organisms that are introduced to an ecosystem, reproduce quickly, and spread aggressively. Invasives push out native plantings and disrupt healthy ecosystems by decreasing biodiversity, adaptability, and resilience, leading to severe economic and ecological damage. In Groton, the Invasive Species Control Committee is a nine-member volunteer board that serves as the central point of contact for the reporting of invasive species and remediation actions. The Committee identified the following ten invasive species currently in Groton:

1. Spotted Lanternfly
2. Jumping Worm
3. Wall Lettuce
4. Hardy Kiwi
5. Kudzu
6. Tree of Heaven
7. Mile-a-Minute Vine
8. Japanese Stiltgrass
9. Browntail Moth
10. Giant Hogweed



**Graphic 3.8.6: Spotted Lanternfly,
Source: Massachusetts Department of
Agricultural Resources**

To increase awareness of the issue, the Invasive Species Control Committee developed brochures for each invasive species in Groton. Additionally, the Committee coordinated with the Massachusetts Department of Agricultural Resources to hold an educational seminar on the detection and management of the Emerald Ash Borer.

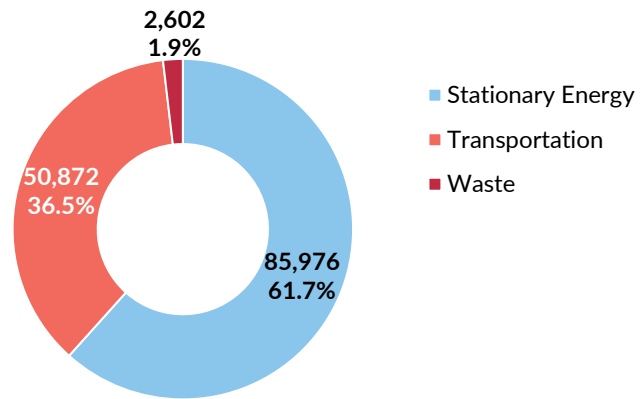
Energy and Greenhouse Gas Emissions

In 2023, the Net Zero 2050 Planning Subcommittee of the Sustainability Commission completed a town-wide Greenhouse Gas Emissions inventory to assess the largest emitting sectors in Groton and track the Town's progress towards the State's objectives of reaching Net Zero emissions by 2050. Currently, Groton has not set a town-specific energy reduction target. This inventory relied on estimates of household and municipal data using tools developed by the Metropolitan Area Planning Council (MAPC) and followed the 2014 Global Protocol for Community-Scale Greenhouse Gas Inventories. Due to a lack of accessible data, refrigerants and other industrial GHGs, indirect emissions, and emissions from agriculture and forestry were omitted from the inventory.

Town-wide emissions in 2019 totaled 139,450 metric tons of carbon dioxide equivalents (CO₂e). This results in per capita emissions of 12.3 MT CO₂e per year. Figure 3.8.4 summarizes town-wide emissions in 2019 by sector. Municipal operations, which include electricity use and on-site combustion of fossil fuels in all town buildings and vehicles, totaled 2.3 percent of this total, indicating that reducing community emissions will have the largest impact.

Figure 3.8.4 Town-Wide Emissions (MT CO₂e) by Sector, 2019

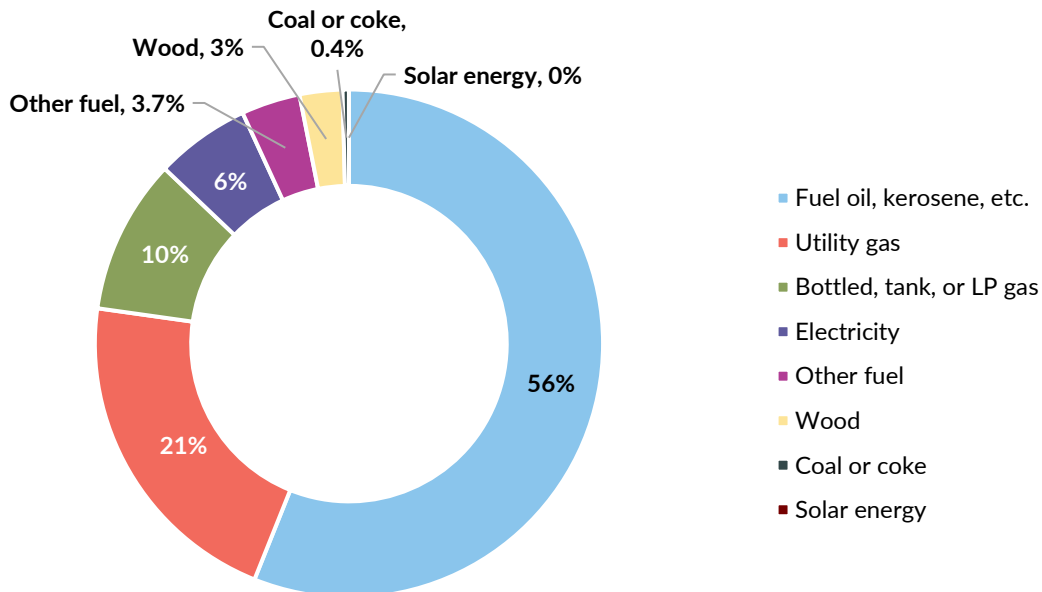
Source: Groton Sustainability Commission



According to the *2017-2022 American Community Survey 5-Year Estimates*, more than half of households in Groton heat their homes using fuel oil, kerosene, or a similar fuel type. The next most common heating fuel types are utility gas and bottled, tank, or LP gas, making up 21 percent and 10 percent of households, respectively.

Figure 3.8.5 Household Heating Fuel Type

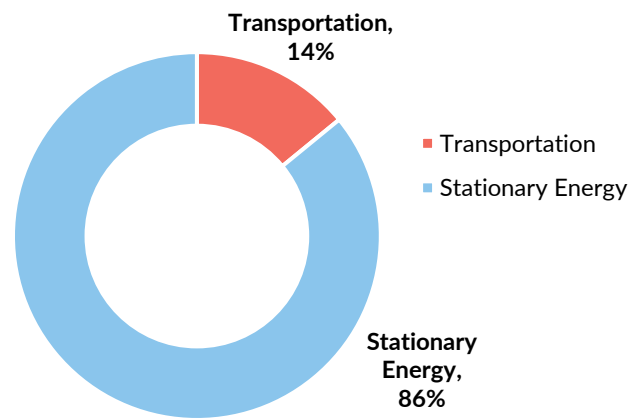
Source: U.S. Census Bureau, *American Community Survey Five-Year Estimates, 2022*; Nitsch Engineering



Although municipal operations make up a small percentage of overall GHG emissions in Groton, reducing emissions further and leading by example can have significant impacts town-wide. The majority of municipal emissions in Groton are caused by stationary energy, or energy used to maintain municipal buildings. Figure 3.8.6 details municipal emissions by sector. By department, the GDRHS accounts for over 75 percent of emissions caused by stationary energy. Most school buildings in Groton are fueled by natural gas, indicating an opportunity for a significant decrease in municipal emissions.

Figure 3.8.6 Municipal Emissions by Sector

Source: Groton Sustainability Commission



In 2020, the Department of Energy Resources (DOER) designated Groton as a Green Community. To become a designated Green Community, municipalities must meet five criteria that demonstrate their commitment to reducing energy consumption:

1. Pass zoning in designated locations for as-of-right siting of renewable or alternative energy generating facilities, research and development facilities, or manufacturing facilities;
2. Adopt an expedited permitting process for facilities interested in locating in renewable energy zones;
3. Inventory municipal energy use and approve an Energy Reduction Plan to chart a 20 percent energy reduction over five years;
4. Require all municipal departments to purchase fuel-efficient vehicles whenever such vehicles are commercially available and practical; and
5. Adopt Massachusetts' Board of Building Regulations and Standards (BBRS) Stretch Code (225 CMR 22 and 23).

As of 2023, Groton has received over \$238,000 in funding from the Green Communities Designation & Grant Program to implement energy conservation measures. Table 3.8.4 summarizes projects funded by this grant program.

Table 3.8.4 Green Communities Grants Awarded to Groton

Award Date	Award Amount	Project Description
February 2020	\$138,830	To fund energy conservation measures, LED lighting, weatherization, appliances, retro-commissioning, EC motors, and administrative costs in municipal facilities, including Town Hall, Center Fire and Police Stations, Country Club, and Public Library
January 2022	\$99,393	To fund energy conservation measures, LED lighting with controls and Building Operator Certification training, in municipal facilities, including Central Fire Station and Public Library

Source: Massachusetts Department of Energy Resources, *Map of Current Green Communities and Grant Summaries, May 2023*: <https://www.mass.gov/doc/map-of-current-green-communities-and-grant-summaries/download>

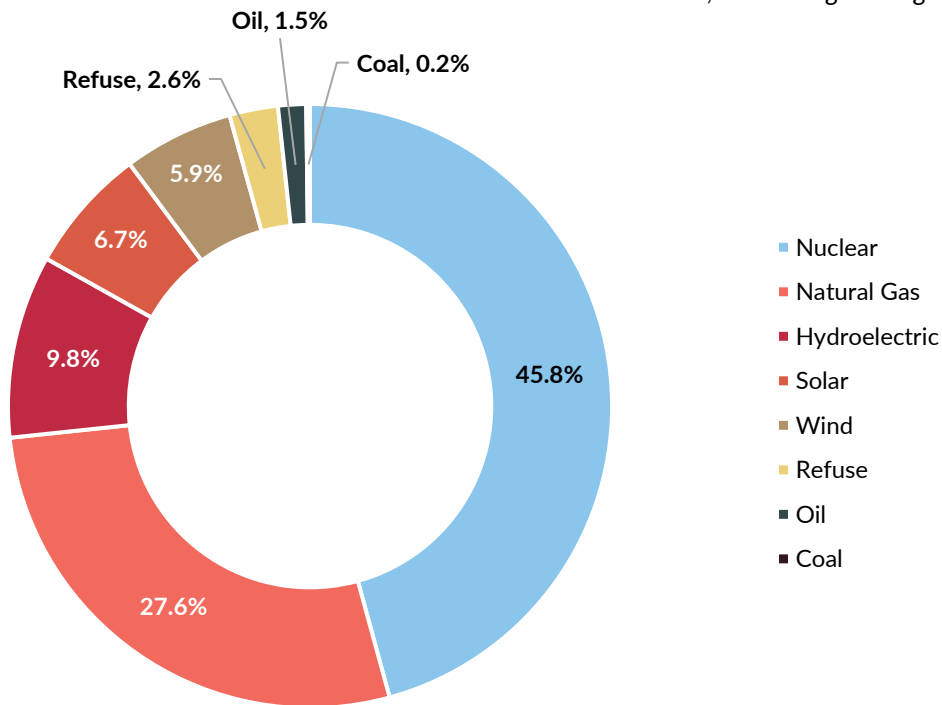
Local Capacity, Policies, and Regulations

Mitigation Strategies

To minimize the Town’s reliance on fossil fuels, the Groton Electric Light Department (GELD) has a diverse power mix. In 2022, GELD’s power mix was 68.2 percent carbon-free and 24.9 percent renewable. Figure 3.8.7 provides additional details on GELD’s power mix portfolio.

Figure 3.8.7 Groton Electric Light Department Power Mix, 2022

Source: GELD; Nitsch Engineering



To incentivize net-zero enabling technologies, the Groton Electric Light Department (GELD) offers a 10 percent rebate, up to \$500, for the installation of geothermal or air heat pumps, electric thermal storage systems, and mini-split heating and cooling systems.

Specific to solar energy, GELD offers two-way net metering; residents who have installed solar PV systems will receive credits towards their electric bills for any excess electricity produced. To offset transmission and distribution revenue losses associated with solar installations, GELD implemented an Infrastructure Charge per kilowatt per month based on the capacity of new solar installations over 10 kilowatts installed in 2019.

Table 3.8.5 Electric Vehicle Charging Stations on Municipal Parcels

Charging Location	Number of Plugs
Prescott School Community Center	2
Church Common	2
Country Club	2
Groton Senior Center	2

Source: U.S. Department of Energy, Alternative Fuels Data Center, December 2023:

<https://afdc.energy.gov/stations/#/find/nearest>

Currently, four electric vehicle charging stations are located on municipally owned properties (Table 3.8.5). All of these stations are Level 2 charging stations and cost between \$0.75 and \$4.50 per hour, depending on the time of day. To lessen the burden on GELD’s distribution system, GELD provides rebates of up to \$400 towards the purchase of WiFi-equipped Level 2 chargers.

Climate Resilience Efforts

A resilient community is one that can respond, recover, and adapt to hazardous events. To bolster resilience to the acute impacts of climate change, the Town of Groton has established a primary emergency shelter at the Groton Center. The Groton Center is ADA-accessible and is equipped with a backup generator. According to the 2020 HMP-MVP Plan, additional shelters include the Groton Dunstable Regional High School, the Groton Dunstable Regional Middle School, the Florence Roche School, and the Grotonwood Baptist Camp and Conference Shelter. During cold weather events, the Middle School serves as a warming center.

The Groton Center provides targeted programming to support senior citizens in Town, a population that is particularly vulnerable to the impacts of climate change. Additionally, the Groton Center maintains a list of vulnerable residents and a list of locals who are willing to help elderly residents with snow removal.

Stormwater Management

In 2006, Groton adopted Chapter 198 Stormwater Management – Low-Impact Development into the Town’s zoning bylaws. The chapter seeks to regulate land development to minimize stormwater pollution, protect water resources, and promote groundwater recharge. The bylaw requires all new development and redevelopment to maintain pre-development runoff characteristics and outlines standards that are in accordance with best practices for the Low Impact Development Standards.

Additionally, the Town also adopted a Wetlands Protection bylaw and an Earth Removal Bylaw. The Town’s wetland bylaw protects wetlands and areas related to water resources by restricting development within resource areas. Under the Earth Removal Bylaw, excavation is subject to standards and procedures designed to minimize interference with drainage systems and protect natural resources. Although the Select Board is the permit-granting authority, the Earth Removal and Stormwater Advisory Committee reviews applications, conducts site visits, and files written recommendations related to both bylaws to the Select Board.

More recently, in 2020, residents of Groton voted to approve the creation of a Stormwater Utility Enterprise Fund. Funds are generated through an annual fee on developed public and privately owned properties, including residential, commercial, town-owned, private educational, nonprofit, utility, and other tax-exempt properties; in 2023, this fee was \$52 per improved parcel. Under provisions of the Clean Water Act, the Environmental Protection Agency (EPA) requires towns to develop a stormwater management program that reduces pollutants to stormwater drainage systems and waterways, and the Town is required to comply with the Small Municipal Separate Storm Sewer Systems (MS4) Permit. Revenue from the Stormwater Utility Enterprise is used to maintain compliance with the MS4 Permit (Table 3.8.6).

Table 3.8.6 Stormwater Utility Enterprise Fund Budget for Fiscal Year 2023

Budget Item	Amount
Stormwater Wages/Benefits	\$74,155
Stormwater Equipment	\$20,000
Stormwater Capital Outlay	\$51,000
Stormwater Compliance Costs	\$49,000
Stormwater Disposal/Expenses	\$20,000

Source: Fiscal Year 2023 Town Managers Proposed Operating Budget, 2023:

[https://portal.grotonma.gov/storage/Select Board/Budgets/FY_2023_Town_Managers_Proposed_Operating_Budget.pdf](https://portal.grotonma.gov/storage/Select_Board/Budgets/FY_2023_Town_Managers_Proposed_Operating_Budget.pdf)

MVP Projects

In 2023, the Nashua River Watershed Association (NRWA) was awarded a \$400,000 MVP Action grant in collaboration with the Cities of Fitchburg and Leominster and the Towns of Ashburnham, Pepperell, and Groton. All five of these communities identified flooding, drought, and extreme temperatures as key issues exacerbated by the impacts of climate change. Over two years, this grant will fund the development of a watershed-wide plan to address these issues, including an interactive tool kit with maps showing locations of suggested Nature-Based Solutions, robust community engagement, and an educational program for fourth-grade students in all five communities.

Waste and Recycling

According to the 2022 Municipal Solid Waste & Recycling Survey overseen by MassDEP, 37 percent of households in Groton were served by the Municipal Trash Program, and 100 percent were served by the Municipal Recycling Program⁹². Trash and recycling services in the town are by drop-off at the Town’s Transfer Station only, but residents can contract curbside pick-up

⁹² Massachusetts Department of Environmental Protection, 2022 Municipal Solid Waste & Recycling Survey Responses, 2022: <https://www.mass.gov/lists/recycling-solid-waste-data-for-massachusetts-cities-towns>.

directly with private haulers, such as Waste Management, Waste Not, Allied, and DPS Trash & Recycling. In 2022, the Town’s diversion rate was 30 percent, meaning that for every ten tons of waste generated, three tons were recycled.

Table 3.8.7 Trash Disposal and Diversion Rates in 2022

Description	Rate
Trash Disposal Rate* (Tons/Household)	0.69
Diversion Rate (Percent)	30%

*Including bulky waste

Note: Number of households reflects only households served by municipal trash program.

The Town’s solid waste program is funded by property taxes and access fees to the Transfer Station. In an effort to reduce the amount of waste generated, the Town also has a Pay-As-You-Throw (PAYT)/Save-Money-And-Reduce-Trash (SMART) program, which requires residents to pay a fee per unit of waste disposed.

The Town also provides free compost bins and accepts food scraps at the Transfer Station. At a subsidized rate, the Town offers curbside collection of food scraps through Black Earth Compost. Additionally, the Town prohibits the use of polystyrene (Styrofoam) products and single-use plastic bags.

Zoning for Sustainability

Across Massachusetts, communities have incorporated sustainability into their zoning codes by designating protection areas with overlay districts, creating more stringent energy efficiency standards for buildings, allowing net-zero enabling technologies by-right, or promoting resilience and quality of life benefits through incentives, among other strategies.

Currently, the Town of Groton has two zoning overlay districts related to sustainability: the Floodplain District and the Water Resources Protection Overlay District, detailed in Sections 218-7.1 and 218-7.2 of the zoning bylaws, respectively. The Floodplain District regulates development within special flood hazard areas, as designated on the Middlesex County Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency (FEMA). Similarly, the Water Resource Protection Overlay District restricts certain land uses with the intent of protecting and preserving existing and potential sources of drinking water and other natural resources.

Additionally, the Town adopted Flexible Development standards (Section 2187-9.1) to encourage the preservation of open space and promote enhanced site development, among other benefits. Per these development standards, the Town’s Planning Board may award a density bonus to increase the number of housing units beyond the standard maximum for each additional 10 percent of the acre preserved as contiguous open space beyond the required 35 percent.

Currently, there are no renewable energy requirements or incentives for new developments. Large-scale ground-mounted solar photovoltaic facilities with nameplate capacities of 250 kilowatts or more are subject to Site Plan Review, and wind energy conversion facilities are regulated under Section 218-10.2 of the Town’s zoning bylaws.

4. Key Issues and Recommendations

[Reserved]

5. Implementation Program

[Reserved]

6. Appendix

[Reserved]

7. References

[Reserved]

8. Credits

[Reserved]