



# Acton 2020 Comprehensive Community Plan

April 2012

## Volume II APPENDICES

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## Acton 2020 Report Outline

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# APPENDIX 4:

## List of Action Steps Sorted by Plan Element



Today. Tomorrow. Together.



## Appendix 4. Action Steps by Primary Master Plan Element

The Action Steps in the Acton 2020 Comprehensive Community Plan are organized in the Implementation Plan by Goal, Objective, and Strategy. Each action step is identified by a number which corresponds to the goal, objective, and strategy. For example, “5.2.1.1: Housing Plan” is an action step under Goal 5 (Support Inclusion and Diversity), Objective 5.2 (Support households of all income levels), and Strategy 5.2.1 (Affordable housing strategy).

The following table lists these Action Steps by the master plan element – the eight elements listed in MGL Chapter 41 Section 81D. They are presented in the order that they appear in the Inventory Report (Appendix 4):

1. Population and Housing
2. Economic Development
3. Natural Resources
4. Cultural Resources
5. Open Space and recreation
6. Transportation and Circulation
7. Facilities and Services
8. Land Use
9. Sustainability

The Sustainability element is an important part of the Acton 2020 Plan even though it is not explicitly listed in Section 81D.

In addition to the primary master plan element, additional elements to which the action step relates are shown in the second column of the table.

These Action Steps can be viewed in the on-line Acton 2020 Implementation Plan at <http://implementation.acton2020.info/>



<b>Action Steps by Primary Master Plan Element</b>	<b>Other Inventory Elements</b>
1. Population and Housing	
<a href="#">5.1.1.1 : Housing for seniors</a>	Land Use
<a href="#">5.2.1.1 : Housing Plan</a>	
<a href="#">5.2.1.2 : Incentives for well-located affordable housing</a>	Land Use
<a href="#">5.2.1.3 : Purchase deed restrictions in existing housing</a>	
<a href="#">5.2.1.5 : Housing sites with open space purchases</a>	Open Space
<a href="#">5.3.2.3 : Document the changing needs of a multicultural population</a>	Cultural Resources, Facilities
<a href="#">5.4.2 : Universal Design / Housing</a>	Land Use
<a href="#">7.1.1.2 : Encourage empty nesters to stay in Acton</a>	Facilities
<a href="#">7.4.1 : Incentives to keep post-school-age households in town</a>	
2. Economic Development	
<a href="#">1.2.1.6 : Strategic plan for commercial properties</a>	Land Use
<a href="#">1.2.2.4 : Kelley's Corner Association</a>	
<a href="#">2.3.4.1 : Encourage the growth of local businesses that can provide local shopping opportunities and employment.</a>	Sustainability
<a href="#">3.4.3 : Encourage the business community to organize providing new residents with business information</a>	
<a href="#">7.1.1.1 : Enhance commercial tax base</a>	
<a href="#">7.2.1.1 : Employment-oriented development</a>	
<a href="#">7.2.1.2 : Actively recruit a small-scale movie theater to locate in Acton.</a>	
<a href="#">7.2.1.3 : New restaurants</a>	
<a href="#">7.2.1.4 : Balance regulatory burden between public benefits and business needs</a>	Land Use
<a href="#">7.2.1.5 : Buy Local campaign</a>	
<a href="#">7.2.1.6 : Develop and maintain good relationships with existing businesses</a>	
<a href="#">7.3.1.2 : Streamline business permitting</a>	
3. Natural Resources	
<a href="#">1.3.1.3 : Recognize waterbodies as part of Acton's heritage</a>	Cultural Resources, Open Space, Sustainability
<a href="#">2.1.1.1 : Monitor groundwater quantity and quality</a>	Facilities, Land Use, Sustainability
<a href="#">2.1.1.2 : EPA WaterSense fixtures</a>	Sustainability
<a href="#">2.1.2.2 : Advanced package wastewater treatment</a>	Facilities, Land Use, Sustainability

<b>Action Steps by Primary Master Plan Element</b>	<b>Other Inventory Elements</b>
<a href="#">2.1.2.3 : Enhance quality of water discharges.</a>	Sustainability
<a href="#">2.1.2.4 : Move industrial activity away from recharge areas</a>	Land Use
<a href="#">2.1.4.4 : Monitoring private wells</a>	Sustainability
<a href="#">2.1.4.5 : Update private well standards</a>	
<a href="#">2.1.4.8 : Acton Stream Teams</a>	
<a href="#">2.4.2.1 : Remove invasive plants</a>	Sustainability
<a href="#">2.4.2.2 : Promote healthy biological communities</a>	Open Space, Sustainability
<a href="#">2.4.2.3 : Discourage invasive plantings</a>	Sustainability
<a href="#">2.4.2.4 : Education on native plants and biodiversity</a>	Sustainability
<a href="#">2.4.2.5 : Tree-clearing bylaw</a>	Land Use
<a href="#">2.4.2.6 : Plant and protect large trees</a>	Facilities
<a href="#">6.1.2.2 : Forestry Management Plan</a>	Open Space, Sustainability
4. Cultural Resources	
<a href="#">1.3.1.1 : Scenic Roads Bylaw</a>	Transportation
<a href="#">1.3.1.2 : Freedom's Way Landscape Inventory</a>	Open Space
<a href="#">1.4.1.1 : Identify historic features</a>	Open Space
<a href="#">1.4.2.1 : Coordinate Historic District review process</a>	Land Use
<a href="#">1.4.2.2 : Protection outside of Historic Districts</a>	
<a href="#">1.4.2.3 : Outreach to private historic property owners</a>	
<a href="#">1.5.1.1 : Tourist infrastructure</a>	Economic Development
<a href="#">1.5.1.2 : Town gateways</a>	Economic Development
<a href="#">1.5.1.3 : Historic celebrations</a>	
<a href="#">1.5.1.4 : Include Native history</a>	
<a href="#">3.3.1.1 : Publicize town information sources</a>	
<a href="#">3.3.1.2 : Citizen's academy</a>	Facilities
<a href="#">4.3.1 : Non-commercial movie showings</a>	
<a href="#">4.3.4 : Support cultural activities via publicity and space</a>	
<a href="#">4.3.5 : Support expanding private fundraising efforts for cultural events.</a>	
<a href="#">5.3.1.2 : Acknowledge more holidays</a>	
<a href="#">5.3.1.3 : Consider establishing a Diversity Awareness Day with diversity training materials and programs.</a>	
<a href="#">5.3.1.6 : Recruit volunteers from ethnic and language minorities</a>	
5. Open Space and Recreation	
<a href="#">1.2.1.5 : Encourage developer contributions of public space to town centers</a>	Economic Development

Action Steps by Primary Master Plan Element	Other Inventory Elements
<a href="#">1.3.2.1 : Implement OSRP (Open Space portion)</a>	Natural Resources, Cultural Resources
<a href="#">1.3.2.3 : Funding of open space protection</a>	
<a href="#">1.3.2.4 : Other tools for protecting open space</a>	Sustainability
<a href="#">3.1.2.7 : Multi-use paths through open space</a>	Transportation
<a href="#">4.2.1.1 : Implement OSRP (Recreation portion)</a>	
<a href="#">4.2.1.2 : Playground for young children</a>	
<a href="#">4.2.1.3 : Improve playground and park amenities</a>	
<a href="#">4.2.1.5 : Playground committee</a>	
<a href="#">4.2.1.6 : Make play areas accessible</a>	
<a href="#">4.2.2.3 : Private and public funding mix for conservation lands</a>	Natural Resources
<a href="#">4.2.3.1 : Ensure that playing fields are available to both youth leagues and adult leagues.</a>	
<a href="#">4.2.3.2 : Explore methods to maximize the use of existing playing fields and create new playing fields.</a>	
<a href="#">5.1.2.1 : Continue to support services for younger Actonians at the T.J. O'Grady Skate Park and Danny's Place.</a>	Facilities
<a href="#">5.1.2.4 : Teen place</a>	Facilities
<a href="#">5.1.3.1 : Provide gathering places and recreational opportunities for families with young children.</a>	Facilities
<a href="#">5.4.5 : Expanding access to team sports</a>	
<a href="#">6.1.1.1 : Preserve and acquire open space</a>	
6. Transportation and Circulation	
<a href="#">1.2.1.4 : Village-specific sidewalk guidelines</a>	
<a href="#">3.1.1.1 : Maintain sidewalk priority list</a>	
<a href="#">3.1.1.2 : Construct more sidewalks</a>	
<a href="#">3.1.1.3 : CPA funding for some sidewalks</a>	
<a href="#">3.1.2.1 : Planning for bicycle improvements</a>	
<a href="#">3.1.2.2 : Assabet River Rail Trail</a>	Open Space
<a href="#">3.1.2.3 : Bruce Freeman Rail Trail</a>	Open Space
<a href="#">3.1.2.4 : Connect ARRT and BFRT</a>	Open Space
<a href="#">3.1.2.5 : Bike racks</a>	
<a href="#">3.1.2.6 : Multi-use path planning</a>	Open Space
<a href="#">3.1.3.1 : Pedestrian and bike maps</a>	
<a href="#">3.1.3.4 : Increase awareness regarding sharing the road issues</a>	
<a href="#">3.2.1.1 : Expand MinuteVan</a>	
<a href="#">3.2.1.2 : Coordinate MinuteVan and CoA Van</a>	

Action Steps by Primary Master Plan Element	Other Inventory Elements
<a href="#">3.2.1.3 : Coordinate shuttles with neighboring communities</a>	
<a href="#">3.2.1.4 : Public/private funding for shuttle</a>	
<a href="#">3.2.1.5 : Increase resident use of commuter rail</a>	Land Use
<a href="#">3.2.1.6 : Consider ways to increase the amount of parking at the train station</a>	
<a href="#">3.2.2.1 : Traffic and parking in centers</a>	Economic Development
<a href="#">3.2.2.2 : Reconfigure street layouts</a>	
<a href="#">3.2.2.3 : Traffic calming</a>	
<a href="#">3.2.2.4 : Improve business access.</a>	
7. Facilities and Services	
<a href="#">2.1.2.1 : West Acton Village sewers</a>	Natural Resources
<a href="#">2.1.3.1 : Stormwater planning to support 2020 plan</a>	Natural Resources, Land Use
<a href="#">2.1.4.2 : Continue and expand on Acton Water District water conservation encouragement programs.</a>	Natural Resources, Sustainability
<a href="#">2.1.4.3 : Support Acton Water District in enforcing and strengthening water use regulations.</a>	Natural Resources, Sustainability
<a href="#">2.3.2.2 : LEED certification</a>	Sustainability
<a href="#">2.3.3.3 : Energy retrofits on public buildings</a>	Sustainability
<a href="#">3.1.3.3 : Pedestrian safety at town facilities</a>	Transportation
<a href="#">3.3.1.3 : Usable video archives of key meetings</a>	
<a href="#">3.3.2.1 : Publicize volunteer opportunities</a>	
<a href="#">3.3.2.2 : More flexibility in volunteer opportunities</a>	
<a href="#">3.4.2 : Provide contact info for new residents to connect with organized neighborhood groups</a>	
<a href="#">4.1.1.1 : Design and Build a community/senior center</a>	
<a href="#">4.1.2.1 : Explore ideas for accommodating preschool children</a>	
<a href="#">4.1.3.1 : One-stop reservations and calendar</a>	
<a href="#">4.2.2.1 : Maintain conservation lands</a>	Natural Resources, Open Space, Sustainability
<a href="#">4.3.2 : Coordination for more multi-age activities</a>	
<a href="#">4.3.3 : Programs to connect those with shared interests</a>	Open Space
<a href="#">5.1.1.3 : Inter-generational programs</a>	
<a href="#">5.1.1.4 : Outreach to new seniors, especially across languages</a>	
<a href="#">5.1.1.5 : Senior tax abatement strategies</a>	
<a href="#">5.1.2.2 : Outreach to teens for planning</a>	Land Use
<a href="#">5.1.2.5 : Teens involved in town governance</a>	
<a href="#">5.1.4.1 : Document needs of an aging population</a>	

Action Steps by Primary Master Plan Element	Other Inventory Elements
<a href="#">5.1.4.2 : Identifying seniors at risk</a>	
<a href="#">5.2.2.1 : Match people in need with agencies</a>	
<a href="#">5.2.2.2 : Support agencies serving residents in need</a>	
<a href="#">5.3.1.1 : Town space for cultural activities</a>	
<a href="#">5.3.1.4 : More multilingual staff and materials</a>	
<a href="#">5.3.1.7 : Expand language offerings</a>	
<a href="#">5.3.2.1 : Extend multi-language support</a>	
<a href="#">5.3.2.2 : Focus groups to improve outreach</a>	
<a href="#">5.4.1 : Universal Design / Town facilities</a>	
<a href="#">5.4.3 : ADA Transition Plan</a>	Open Space
<a href="#">5.4.4 : Employment information for the disabled</a>	
<a href="#">6.2.1.1 : Minuteman renovation</a>	
<a href="#">6.2.1.2 : Support existing efforts to explore regionalization opportunities in the K-6 grades.</a>	
<a href="#">6.2.2.1 : Updating educational standards and practices</a>	
<a href="#">6.2.2.2 : Volunteers for schools</a>	
<a href="#">6.2.2.3 : Enhance community education programs</a>	Cultural Resources
<a href="#">6.3.1.1 : Preventive maintenance of buildings and grounds</a>	
<a href="#">6.3.1.2 : Evaluate underused buildings</a>	
<a href="#">6.3.1.3 : Implement the Comprehensive Water Resources Management Plan</a>	Economic Development, Natural Resources, Land Use, Sustainability
<a href="#">6.3.1.4 : Manage, preserve, and replace Acton's street trees.</a>	Natural Resources
<a href="#">6.4.1.1 : Technology for delivering services</a>	
<a href="#">6.5.1.1 : Explore efficiencies for public safety</a>	
<a href="#">6.5.1.2 : Public Safety staffing levels</a>	
<a href="#">6.5.1.3 : Nursing Service</a>	
<a href="#">7.1.1.3 : Fiscal balance between town and schools</a>	
<a href="#">7.1.1.4 : Long-range capital plan</a>	
<a href="#">7.1.1.5 : Planning for long term obligations</a>	
<a href="#">7.1.1.6 : Financially efficient town services</a>	
<a href="#">7.1.1.7 : Supplement revenues with grants, fees, etc.</a>	
<a href="#">7.1.1.9 : Explore other sources of funding town services</a>	
<a href="#">7.1.2.1 : Explore regionalization opportunities</a>	
<a href="#">7.1.2.2 : Create a grants and funding clearinghouse</a>	
8. Land Use	
<a href="#">1.1.1.1 : Concentrate growth</a>	

<b>Action Steps by Primary Master Plan Element</b>	<b>Other Inventory Elements</b>
<a href="#">1.1.2.1 : Review zoning in light of plan goals and buildout potential</a>	
<a href="#">1.1.2.2 : New development bylaws</a>	
<a href="#">1.1.2.3 : Regional cooperation on development issues</a>	Population and Housing, Open Space
<a href="#">1.1.2.4 : Legislation to increase local control over development</a>	Population and Housing
<a href="#">1.1.2.5 : Planning staff</a>	Economic Development
<a href="#">1.1.2.6 : Index of developable parcels</a>	Economic Development
<a href="#">1.1.3.1 : Extend design guidelines</a>	Economic Development, Cultural Resources
<a href="#">1.1.3.2 : Improve design review process</a>	Population and Housing, Economic Development, Natural Resources, Cultural Resources, Open Space, Transportation, Sustainability
<a href="#">1.2.1.1 : Key Centers Plan</a>	Population and Housing, Economic Development, Natural Resources, Cultural Resources, Open Space, Transportation, Sustainability
<a href="#">1.2.1.2 : Zoning to support Key Centers Plan</a>	Population and Housing, Economic Development, Open Space
<a href="#">1.2.1.3 : Town's financial participation in key center development</a>	Open Space
<a href="#">1.2.2.1 : Redevelop Kelley's Corner</a>	Population and Housing, Economic Development
<a href="#">1.2.2.2 : Concentrate town investments in Kelley's Corner</a>	Natural Resources, Transportation, Facilities
<a href="#">1.2.2.3 : Design studio or competition for Kelley's Corner</a>	Transportation
<a href="#">1.2.3.1 : West Acton □ Plan some growth</a>	Population and Housing, Economic Development, Natural Resources, Cultural Resources, Transportation, Facilities
<a href="#">1.2.3.2 : Concentrate investments in West Acton</a>	Transportation, Facilities
<a href="#">1.3.2.2 : Zoning to protect open space</a>	Open Space
<a href="#">2.1.1.3 : Zoning that includes water quality impacts</a>	Natural Resources, Sustainability
<a href="#">2.1.2.5 : Match Water District and Town protection zones</a>	Natural Resources

<b>Action Steps by Primary Master Plan Element</b>	<b>Other Inventory Elements</b>
<a href="#">2.1.2.6 : Protect AWD buffer zone along Mass Ave.</a>	Natural Resources
<a href="#">2.1.3.2 : Limit impervious surfaces</a>	Natural Resources
<a href="#">2.4.3.1 : Protect existing agricultural land</a>	Natural Resources, Open Space, Sustainability
<a href="#">2.4.3.4 : Zoning to encourage agriculture</a>	Sustainability
<a href="#">3.1.2.8 : Developers provide off-road multi-use paths</a>	Transportation
<a href="#">3.1.3.2 : Non-car access requirements in commercial development</a>	Transportation
<a href="#">4.2.1.4 : Encourage contributions toward construction of playgrounds and/or parks in new developments.</a>	Open Space
<a href="#">4.2.2.2 : New conservation lands with new development</a>	Natural Resources, Open Space
<a href="#">5.2.1.4 : Allow more dividing of existing lots for economical housing</a>	Population and Housing
<a href="#">7.1.3.1 : Ensure Zoning takes in to account the impact of new development.</a>	Economic Development
<a href="#">7.1.3.2 : Impact fees</a>	
<a href="#">7.3.1.1 : Simplify sign bylaw</a>	Economic Development
<a href="#">7.3.2.1 : Work with property owners to make improvements to existing commercial areas.</a>	Economic Development
9. Sustainability	
<a href="#">2.1.4.1 : Water education</a>	Natural Resources, Facilities
<a href="#">2.1.4.6 : Lawn replacement</a>	Facilities
<a href="#">2.1.4.7 : Rainwater harvesting</a>	Natural Resources, Facilities
<a href="#">2.2.1.1 : Education on disposal of unwanted items</a>	
<a href="#">2.2.1.2 : Create a Zero Waste Committee to promote recycling, reduction, and reuse.</a>	
<a href="#">2.2.1.3 : Recycling bins</a>	
<a href="#">2.2.1.4 : Reduce use of throw-aways.</a>	
<a href="#">2.2.1.5 : Packaging reduction incentives</a>	
<a href="#">2.2.1.6 : Support expanded bottle bill</a>	
<a href="#">2.2.2.1 : Transfer Station waste reduction</a>	Facilities
<a href="#">2.2.2.2 : Private trash haulers - waste reduction</a>	
<a href="#">2.2.2.3 : Encourage sports teams to use reusable sports bottles.</a>	
<a href="#">2.2.2.4 : Enact a bylaw to control where landscape contractors dispose of debris.</a>	Sustainability
<a href="#">2.2.2.5 : Composting</a>	
<a href="#">2.2.3.1 : Unwanted electronics (e-waste)</a>	
<a href="#">2.2.3.2 : Local hazardous waste days</a>	

<b>Action Steps by Primary Master Plan Element</b>	<b>Other Inventory Elements</b>
<a href="#">2.2.3.3 : Regional hazardous waste days</a>	
<a href="#">2.2.3.4 : Non-toxic products</a>	
<a href="#">2.3.1.1 : Renewable energy at transfer station</a>	Facilities
<a href="#">2.3.1.3 : District heating Land Use</a>	
<a href="#">2.3.1.4 : Geothermal energy</a>	
<a href="#">2.3.2.1 : Advice on energy reductions</a>	
<a href="#">2.3.3.1 : Sustainability coordinator</a>	
<a href="#">2.3.3.2 : PACE legislation</a>	
<a href="#">2.3.3.4 : Energy-efficient ("Cool") roofing</a>	Cultural Resources
<a href="#">2.3.4.2 : Organize web-based car pooling and ride sharing</a>	Transportation
<a href="#">2.3.4.3 : Reduce vehicle idling</a>	Transportation
<a href="#">2.3.5.1 : Educate and increase people's awareness of the need to reduce their carbon footprint</a>	
<a href="#">2.3.5.2 : Promote energy-efficiency upgrade programs</a>	
<a href="#">2.3.5.3 : Air-drying of clothing</a>	Land Use
<a href="#">2.3.5.4 : Energy 'barn raisings'</a>	
<a href="#">2.3.6.1 : Leverage Green Communities grants</a>	
<a href="#">2.3.6.2 : Expand GAB role</a>	
<a href="#">2.3.6.3 : Carbon Footprint measurement and reduction plan</a>	
<a href="#">2.3.6.4 : Joint community and town effort to use less fossil fuels</a>	
<a href="#">2.4.3.2 : Support new farming</a>	Natural Resources, Land Use
<a href="#">2.4.3.3 : Support the Morrison Farm plan</a>	
<a href="#">6.1.2.1 : Conserve farming on town-owned land</a>	Natural Resources, Open Space

# APPENDIX 5:

## Inventory of Existing Conditions



Today. Tomorrow. Together.



## Appendix 5. Description of Existing Conditions

This Appendix contains the reports prepared in 2011 documenting existing conditions for each of the nine master plan elements in the following order:

1. Population and Housing
2. Economic Development
3. Natural Resources
4. Cultural Resources
5. Open Space and recreation
6. Transportation and Circulation
7. Facilities and Services
8. Land Use
9. Sustainability

These reports document existing conditions as well as opportunities and challenges posed by the existing conditions. The first report in the series contains projections population and housing to the year 2030, and the report on facilities and services includes school enrollment projections prepared by the School Department. The results of the 2010 U.S. Census were not available by the publication date of the final report except for the total number of people and dwelling units; these data were added to the discussion of population and housing, but no other updates were possible at this time.



# Chapter 1: Population and Housing

This chapter covers the following topics:

- Relationship of Population and Housing to Planning Goals
- Inventory information on:
  - Population growth
  - Age, education, and ethnic composition of the population
  - Income
  - Number and size of households
  - Existing housing stock by type, age, size, and price
  - Housing vacancy rates
  - Housing density
  - Owner/renter housing tenure
  - Housing market indicators
  - Housing affordability and subsidized housing units
  - Taxes
- Opportunities and Challenges Posed by Existing Population and Housing Conditions

## **Why Population and Housing are Important to the Comprehensive Plan**

Population and housing are the prime measures and indicators of growth and stability in a community. If a community wants to be in control of its growth it takes steps to manage its rate of housing development – to slow or accelerate it, to encourage or discourage housing types, such as single- or multi-family housing, or steer housing to desired locations. Population, income, age structure and diversity are key indicators of community character. Type of housing stock is also an important community characteristic. Housing stock has various dimensions such as architectural types, density of residential development, and age, condition and historic importance of residential buildings.

## **Relationship of Population and Housing to Planning Goals**

Population and housing information is relevant to six of the seven Acton 2020 goals; (the exception is “Create Public Gathering Places,” to which it does not have a direct relationship).

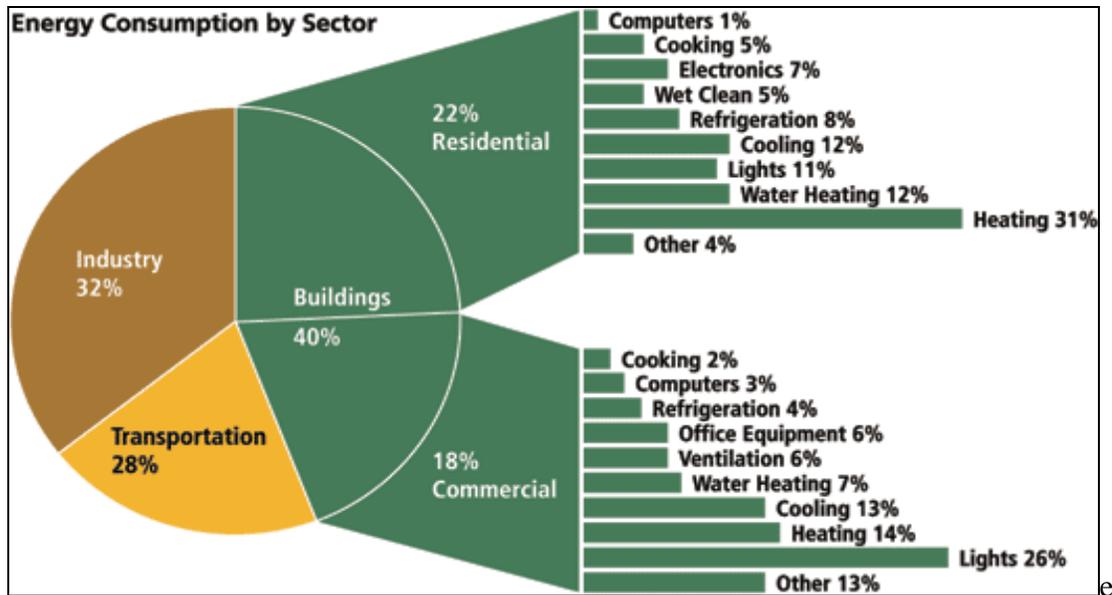
*Goal: Preserve and Enhance Town Character*

Housing, in its various aspects, is a key contributor to existing neighborhood character and its preservation and /or enhancement. Population attributes such as income, age and ethnic/racial diversity also contribute to neighborhood character.

*Goal: Ensure Environmental Sustainability*

The energy efficiency of housing is becoming increasingly important as communities, the nation and the world are increasingly concerned about critical environmental issues such as climate change and use of sustainable energy resources. Housing is especially important because typically over fifty percent (50%) of energy used in all buildings is used in homes. The diagram below illustrates the use of all energy by all activities.

Figure 1.1: Typical Components of Energy Use by Sector



Source: 2010 Arthur Morgan Institute for Community Solutions.

*Residential uses account for 22% of all energy consumption, presenting significant opportunities for energy savings.*

*Goal: Improve Connections*

Housing development can encourage pathway connections in and between residential areas. It is possible to retro-fit existing housing areas with pathways, using easements and land purchases. It is also possible to require new residential developments to install pathways and other connections within and between developments. Most desirably, pathways would be part of networks that connected residential areas with schools, recreation areas, town facilities, offices and shopping areas, and the pathways would be multi-purpose, for walking, biking and recreational activities.

*Goal: Enable Diversity and Inclusion*

The price of housing is critical in creating and maintaining affordable housing. Use of 40B provisions to create such housing is possible, as is application of new local zoning bylaws that would require “inclusionary” housing in new developments. 40B is the state law that allows developers to obtain a comprehensive permit to create housing over-riding local zoning

## Population and Housing

provisions, provided that 20% of the new units are “affordable” according to state and federal guidelines. 40B is one way to create affordable housing but not the only way. Acton has created 23 deed restricted home ownership units without using 40B. These local action units are approved by the Mass. Department of Housing and Community Development for counting toward the Town’s 10% (the level that protects the town against zoning overrides by developers). They have been provided by developers as conditions of special permits. The Acton Community Housing Corporation has funded the construction of new units and has subsidized the purchase of existing market units and made them deed restricted. Creation of more rental housing would also contribute to the goal of creating more affordable housing. Mixes of housing types in terms of architectural styles, square footage of homes and lots, numbers of bedrooms, and types of structure (single- or multi-family) would better enable diversity in population (ages, income, and household size).

### *Goal: Maintain and Enhance Town Assets*

Managing and expanding publically owned housing in Acton is an important part of maintaining town assets. The Acton Housing Authority owns and operates 158 units of public housing, and is responsible for managing the placement of subsidy-eligible residents in 170 units of privately owned housing. Keeping these publically and privately owned units up to nationally recognized standards is important. It is also important for the Town to maintain and increase its capacity to oversee the development of new affordable housing developments, and to monitor and maintain the affordability restrictions on privately owned affordable homeownership and rental units.

### *Goal: Maintain and Improve the Financial Well-being of the Town*

Population and housing are the major factors driving the overall need for Town services and facilities, and consequently the biggest determinant of the financial equation.

## **Summary of Key Points**

- Acton has a moderate overall housing density of about 0.4 acre per housing unit.
- At current and projected rates of residential growth Acton will come close to, but not exceed its buildout capacity by the year 2030, based on existing zoning.
- In 2010 the average selling price of a single-family home was \$498,750. The average selling price of a condominium unit was \$280,000.
- About 5% of Acton’s housing stock is sold each year. This has averaged about 400 sales per year, but has fallen in recent years owing to the economic downturn.
- About half of Acton’s households could not afford to buy an average priced house in town.
- Six and one-tenth percent (6.1%) of Acton’s housing stock is classified as officially affordable, meaning it is deed restricted into perpetuity, and counts toward the Town’s 10%.
- Between 1998 and 2010, 375 units of affordable housing have been created, a rate of 31 per year. Residential uses pay 87% of all property taxes in Acton.

### *Population*

- Population growth has slowed in recent years.
- There have been and will continue to be significant shifts in the age and ethnic structures of Acton.

## Population and Housing

- Acton's population is highly educated.

### *Housing and Households*

- The projected demand for new housing units is approximately 1,000 units over a 20 year period, although with the current economic downturn, this growth will start slowly and may not be realized until after 2030.
- There has been a shift in housing construction from 4 and 5 bedroom units to 2 to 3 bedroom units. This is likely to continue.
- The fastest growing category of households are those headed by females with children under age 18.

### *Existing Housing Stock*

- Seventy-six percent of Acton's housing stock has been built in the last 50 years.
- About 4% of Acton's housing units are vacant.
- Acton's housing stock is predominately single-family detached units.
- Since 2000 building permits for 773 new residential units have been issued.

### *Housing and Land Use*

- Acton has a moderate overall housing density of about 0.4 acre per housing unit.
- At current and projected rates of residential growth, by 2030 Acton will come close to, but not exceed its buildout capacity, based on existing zoning.

### *Housing Tenure*

- Seventy-four percent of Acton's housing is owner-occupied.
- The average length of stay for a household in owner-occupied units is 17 years.
- The average length of stay for a household in renter-occupied units is 7 years.

### *Housing Market*

- In 2010 the average selling price of a single-family home was \$498,750. The average selling price of a condominium unit was \$280,000.

### *Housing Affordability*

- About half of Acton's households could not afford to buy an average priced house in town.
- Six and one-tenth percent (6.1%) of Acton's housing stock is classified as affordable, meaning it is deed restricted into perpetuity, and counts toward the Town's 10%.

## Population and Housing

- Between 1998 and 2010, 375 units of affordable housing have been created, a rate of 31 per year. This includes public housing rental units administered by the Acton Housing Authority and privately developed rental and ownership units.

### Taxes

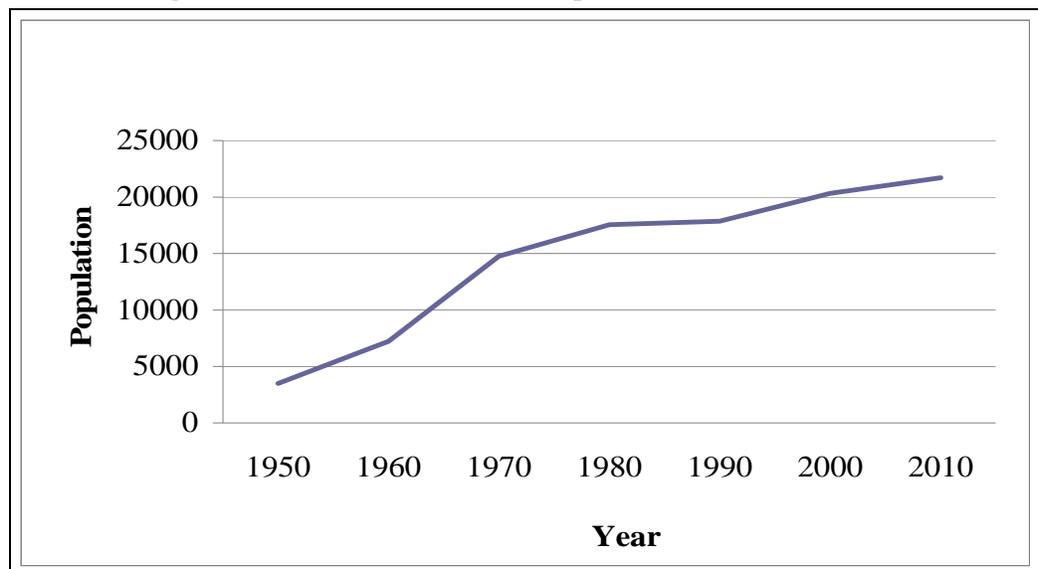
- Residential uses pay 87% of all property taxes in Acton.

## Population

**Note: Population and Housing data depend heavily on data from the U.S. Census Bureau. The 2010 Census of Population and Housing is only partially released (as of December, 2011). We have used the released data where we can. For other population and housing data we use estimates prepared for the year 2010 by Claritas, a data base and forecasting company. Sources are noted for each table.**

The following graph depicts population growth since 1950. The 2010 U.S. Census found a population of 21,924.

Figure 1.2: Acton's Historical Population Growth



Source: U.S. Census of Population, except for 2010 which is from the Town Census.

*The percentage of population growth by decade has slowed since 2000 but is still positive.*

Acton grew rapidly from 1950 to 1970, doubling each decade. Since 1970 growth has slowed to 19% to 2% to 14% to 7% for each of the following decades. Table 1.1 shows Acton's population from 1950 to 2030, as reported by the U. S, Census Bureau and forecast by the Metropolitan Area Planning Council (MAPC), the regional planning agency for 101 cities and towns around Boston. Acton's population is expected to continue to grow relatively slowly as it has in the recent past because it is running out of prime developable land and has serious wastewater disposal constraints.

The Acton Town Census reports a figure of 21,724 for July, 2010, which is very close to the U.S. Census number, which is the "official" population of Acton. This represents 7% growth since 2000. Between 1990 and 2000 Acton grew by 14%. In March, 2011 the Acton Town Census

## Population and Housing

reported 22,106 town residents, an increase of 382 people or 1.76% in the most recent 7 month period.

A cautionary note: Forecasts are only projections based on a set of assumptions. It is possible and desirable to change the future outcomes from projected levels by concerted actions to achieve desired goals.

Table 1.1: Past and Projected Population Growth 1970 – 2030

	1950	1960	1970	1980	1990	2000	2010	2020	2030
<b>Total Population</b>	3,510	7,238	14,770	17,544	17,872	20,331	21,924	22,487	23,139

Sources: U.S. Census of Population, 1950 -2010 and MAPC<sup>1</sup> for future years.

### Age Composition of the Population

Note: the rest of the discussion of Acton’s population characteristics is based on data from Claritas as discussed above. Detailed U.S. Census data will become available later in 2012.

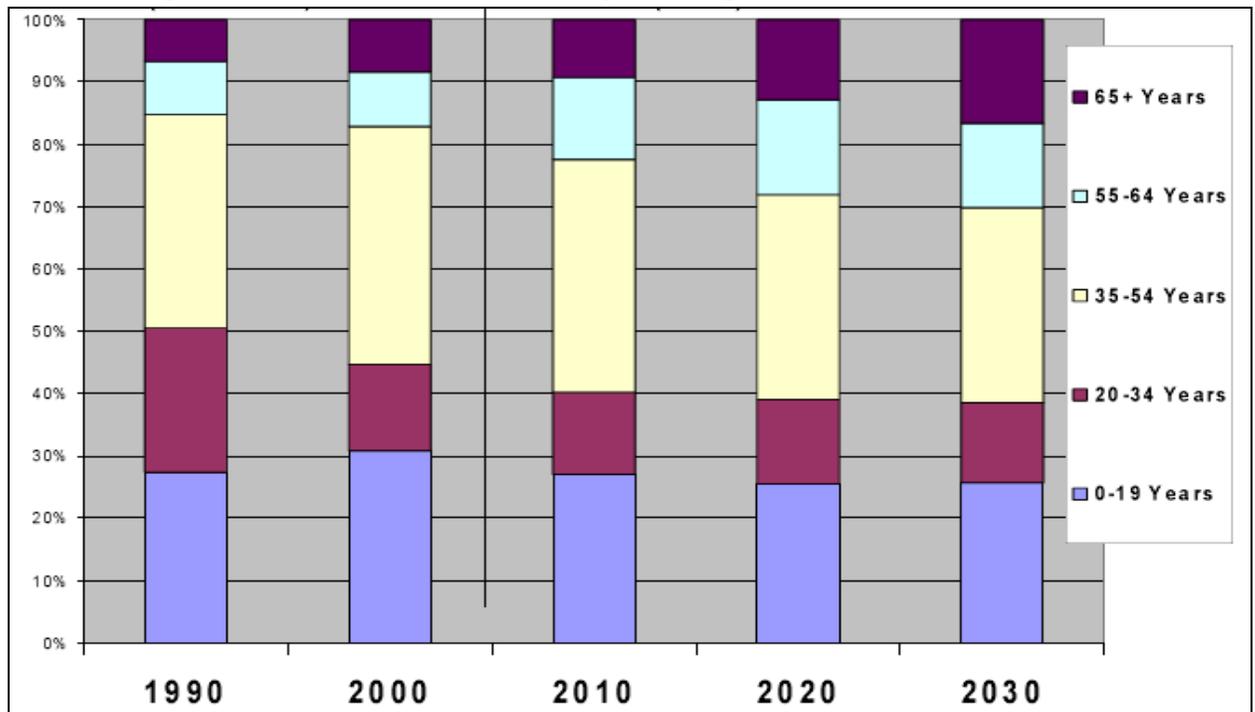
There are significant shifts in the age composition of Acton’s population. These shifts are important because they indicate what types of services and facilities and housing will be needed in the future. Figure 2 shows the proportions of people in various “life cycle” categories of population by age.

The increasing proportion of older people is quite evident in both the 55 to 64 age category and the 65 and over age category. This has implications for housing size (smaller units needed in terms of numbers of bedrooms) and the need for more senior services and facilities (senior centers, health and transportation services). The declining school age population (0-19) indicates a lesser need for new school facilities. The declining age category of 35 to 54 indicates that additional larger homes (in terms of numbers of bedrooms) will not be needed. The numbers used to create the graph in Figure 1.3 are shown in Table 1.2. Life cycle categories are also named in Table 1.2.

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<sup>1</sup> Metropolitan Area Planning Council (MAPC) the regional planning agency for 101 cities and towns, including Acton. The projections in this chapter were prepared by MAPC for 2020 and 2030.

Figure 1.3: Relative Shifts in Life Cycle Categories from 1990 to 2030



Sources: U.S. Census of Population, 1990 - 2010, and MAPC for future years.

*Elderly population is expected to grow substantially, while school age children will decline slightly in numbers.*

Table 1.2: Numbers of People in Each Life Cycle Category: 1990 to 2030

Life Cycle Category	Age Group	1990	2000	2010	2020	2030
Pre-School	0-4 Years	1,261	1,507	1,318	1,352	1,452
School Age	5-19 Years	3,648	4,770	4,543	4,393	4,493
Young Adult	20-34 Years	4,116	2,815	2,889	3,044	2,955
Family Formation	35-54 Years	6,122	7,754	8,193	7,389	7,277
Empty Nester	55-64 Years	1,531	1,784	2,899	3,427	3,101
Active Senior	65-74 Years	684	997	1,341	2,115	2,696
Older Senior	75+ Years	510	704	741	767	1,165
<b>Total</b>		<b>17,872</b>	<b>20,331</b>	<b>21,924</b>	<b>22,487</b>	<b>23,139</b>

Sources: U.S. Census of Population, 1990 -2010 and MAPC for future years.

*Demographic shifts in age categories will be significant for town services and facilities and housing.*

### Education

Acton's population is highly educated. Seventy-five percent (75%) of residents over age 25 are college graduates. Twenty-four percent (24%) have high school diplomas or have some college

or an associate’s degree. Only 1% have less than a high school education. Table 1.3 shows the estimated numbers of people in the various education categories.

Table 1.3: Numbers of People in Each Educational Category: Estimated for 2010

<b>Category</b>	<b>Number</b>	<b>Percent</b>
Less than 9th grade	53	<1
Some High School, no diploma	160	1
High School Graduate (or GED)	1,384	10
Some College, no degree	1,334	9
Associate Degree	643	5
Bachelor's Degree	4,970	36
Master's Degree	3,878	28
Professional School Degree	601	4
Doctor’s Degree	940	7
<b>Total Population Over Age 25</b>	<b>13,963</b>	<b>100</b>

Source: Claritas<sup>2</sup> estimate adjusted by Planners Collaborative based on U. S. Census data

*Nearly 89 percent of Acton’s residents over 25 have had education beyond the high school level.*

**Ethnicity/Race**

Acton’s population shows some increasing diversity in its ethnic/racial composition. While 83% is white, the Asian population has been growing and is now 14% of the total. Other minority groups constitute the remaining 3%. Table 1.4 shows the estimated numbers and percentages for 2010.

Table 1.4: Numbers of People in Each Major Ethnic/Racial Group

<b>Ethnic Category</b>	<b>Number</b>	<b>Percent</b>
Non-Hispanic White	16,555	75.5
Non-Hispanic Black	232	1.1
Non-Hispanic Asian	4,062	18.5
Non-Hispanic Native American	13	0.1
Other	502	2.3
Latino	560	2.6

Source: U. S. Census, 2010

*Non-Hispanic White is by far the predominant racial/ethnic category, but while the Non-Hispanic White population decreased by 6%, the Asian population increased by 131% between 2000 and 2010.*

The number of people of Hispanic or Latino origin was measured at 560 in 2010. This category cuts across the racial categories listed above. It is the second largest minority group but is

<sup>2</sup> Claritas is a widely used proprietary data estimating and forecasting service.

considerably lower than the Asian population. The Asian population is estimated to be about 53% East or Pacific Asian and 47% South Asian.

## **Housing**

### **Current/Projected Households and Housing Units**

The U.S. Census released the 2010 count of housing units, both occupied and unoccupied as of March 2010. A total of 8,530 housing units were counted, of which 8,187 were occupied; occupied housing units are equivalent to the number of households, which may be single individuals, families, or unrelated individuals living together. As noted for population, detailed characteristics for 2010 will be released by the Census later in 2012. In the absence of this detailed data, this section uses housing data provided by Claritas; this data is expected to be close to the actual Census data for various percentages of housing characteristics, e.g., the percentage of units of various types.

Households, which are prime indicators of housing demand, grew by about 0.9% per year (9.2% over the decade), from 7,495 in 2000 to 8,187; the previous estimate for 2010 was 8,415. The number of housing units always exceeds the number of households allowing for vacancies and seasonally occupied units. The projected future numbers of housing units are shown on Table 1.5. The projected demand for new housing units is over 600 new units by 2020 and an additional 400 units by 2030. (Given the current economic slowdown and depressed housing market, it can be assumed that demand will grow by a total of approximately 1,000 new units over 20 years, but that growth will be back-loaded and may not be fully realized by 2030.)

Table 1.6 shows the growth of households, which drives the demand for housing units. Households are expected to grow more quickly than population because household size is expected to continue to decline. [Note: while some housing is built on “speculation” without definite buyers identified, developers always make some sort of market analysis to determine whether potential buyers will exist. One key factor considered in such market analysis is growth in households.]

Table 1.5: Past and Projected Number of Households, Housing Size and Housing Units

	1990	2000	2010	2020	2030
Households	6,600	7,495	8,187	8,909	9,316
Housing Units	6,891	7,680	8,530	9,176	9,595
Population per Household	2.74	2.69	2.68	2.59	2.57

Source: U.S. Census Bureau and Planners Collaborative, future projections by MAPC.

*Estimates of housing units continue to increase in the future, and population per household is expected to continue to decline.*

Table 1.6 shows more detailed data on Acton’s households in 2000 and 2010.

Table 1.6: Households by Type in Acton: 2000 - 2010

	Year 2000	Year 2010	% Change
Total households	7,495	8,415	12.3
Family households	5,535	6,154	11.2
Married couple families	4,934	5,426	10.0
With own children under age 18	2,914	3,055	4.8
Female householder, no husband present	440	543	23.4
With own children under age 18	249	377	51.4
Male householder, no wife present	161	184	14.3
With own children under age 18	71	88	23.9
Non-family households	1,960	2,261	15.4
One person households	1,599	1,844	15.3
Average household size	2.69	2.64	-1.9

Source: Year 2000 U. S. Census of Population and Housing and Claritas Estimates for 2010 adjusted by Planners Collaborative (detailed characteristics from the 2010 Census were not yet available). Non-family households are one person or unrelated individuals living together.

*The greatest percentage increase since 2000 has been in female-headed households with children under age 18.*

A key housing indicator in this data is the 15% increase in non-family households (individuals living alone or in households made up of people who are not related to each other). The growth in one-person households is an indicator of the need for smaller 1 and 2 bedroom housing units. Average family size was estimated in 2009 at 3.27 by the U. S. Census Bureau; this indicates there is, and will probably continue to be, a market for 2 and 3 bedroom houses in the future. However, it is likely that Acton has all the 4 or more bedroom units it needs for the next 10 to 20 years. This is borne out by the life cycle projections shown in Table 1.2, in which the “family formation” group (ages 35 to 54) has peaked in 2010 and is expected to decline in 2020 and 2030. The “empty nesters” (ages 55 to 64) are expected to increase over this period, as are the active and older seniors (ages 65 and over). These people need fewer numbers of bedrooms in their homes.

**Housing Stock**

*Age:* Acton has a housing stock that is of relatively recent origin. Seventy-six percent (76%) of the housing units were built after 1960. Data in Table 1.7 shows the percentage of units built in each decade since 1940. Only 11% of the housing stock dates from before 1940.

Table 1.7: Age of Occupied Housing

<b>Year Housing Structure Built</b>	<b>Percent of Housing Units</b>
1939 or earlier	11
1940 – 1959	13
1960 – 1969	21
1970 – 1979	26
1980 – 1989	11
1990 – 1999	11
2000 – 2010	7
<b>Total</b>	<b>100%</b>

Source: U. S. Census of Housing and Claritas Estimates for 2010 adjusted by Planners Collaborative.

*The largest spurt in housing production in Acton was from 1960 to 1980 when 45% of all existing housing was built. Housing production has slowed down in recent years.*

*Tenure:* According to the 2010 Census of Housing data there are 8,530 housing units in Acton. There are 343 housing units unoccupied, resulting in a vacancy rate of about 4%. It is estimated that 74% of the occupied housing units are owner-occupied and 26% are renter-occupied. The estimated average length of tenure for owner-occupied units is 17 years, while it is 7 years for renter-occupied units of all types.

Table 1.8 shows how many units are in each size or type of structure.

Table 1.8: Number of Housing Units, by Size Estimated in 2010

<b>Type (Size) of Structure</b>	<b>Units in Structure</b>	<b>% of Housing Stock</b>
One Unit – Detached	5,374	63
One Unit – Attached	768	9
Two Units	171	2
Three or Four Units	256	3
Five to Nineteen Units	1,109	13
Twenty to Forty-Nine Units	682	8
Fifty or More Units	163	2
Mobile Home or Rec. Veh.	7	>1

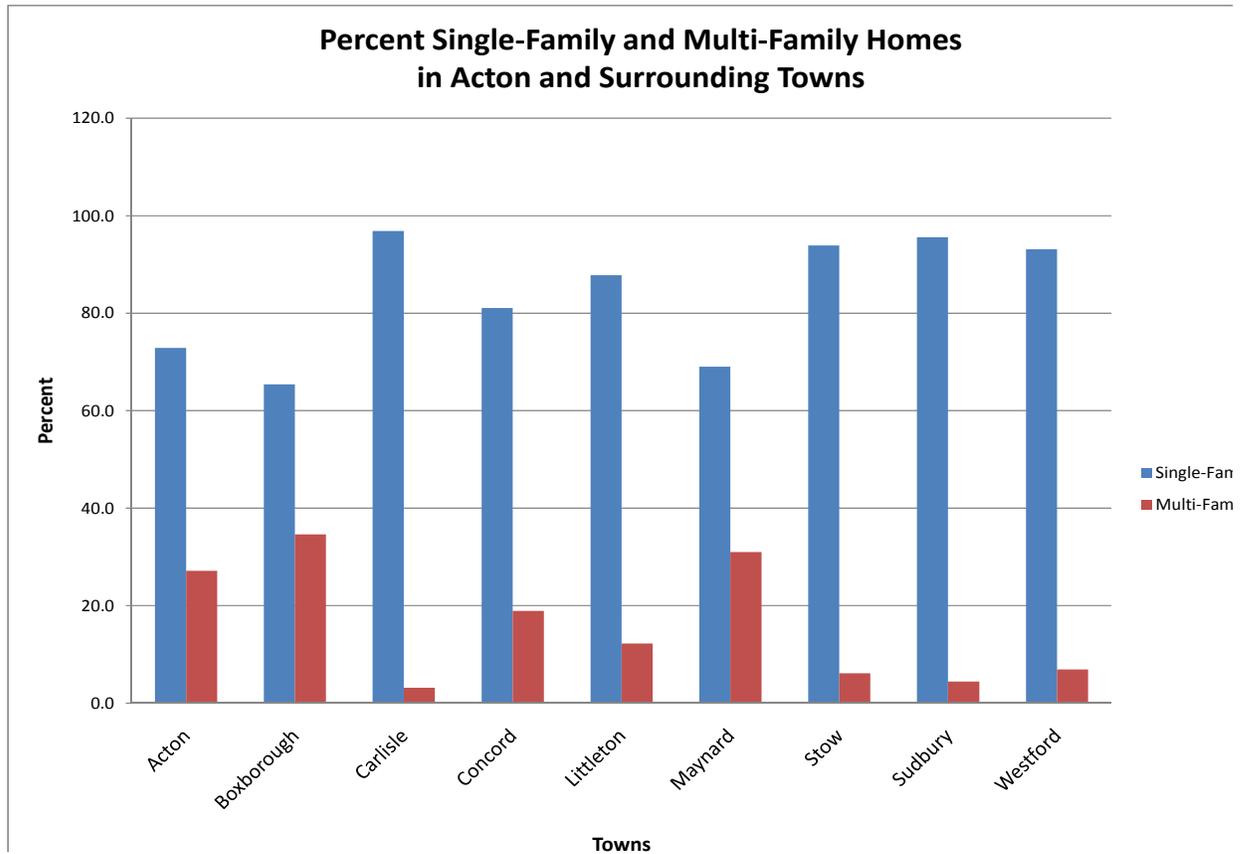
Source: Claritas Estimates adjusted by Planners Collaborative based on the U. S. Census of Housing.

*Acton is predominately a single-family detached housing unit town.*

Sixty-three percent (63%) of Acton’s housing stock is estimated to be in single-family detached units in 2010. There is no predominant other type of housing. The second largest category is structures with 5 to 19 units accounting for 13% of all housing units. Single-family attached units (town houses) account for nine percent 9% of the housing stock. There is a diversity of housing stock in Acton with buildings ranging from 1 unit to 50 or more units. All the types of

housing in between these two types are represented. Acton has a substantial number of multi-family unit structures, many of which are rental units. Rental units account for 26% of the occupied housing stock. How Acton compares with surrounding communities in single-family versus multi-family housing stock is shown on Figure 1.4.

Figure 1.4: Percent Single-Family and Multi-Family Homes in Acton and Surrounding Towns



Source: 2000 Census of Housing updated with Building Permit data to 2010

Note: Single-Family Attached and Detached are combined into the Single-Family Category. Acton’s housing is typical of its surrounding towns, all having predominately single-family detached units.

Only Boxborough and Maynard have higher percentages of multi-family housing stock (defined as 2 or more units per housing structure). Carlisle, Stow, Sudbury and Westford have very low percentages of multi-family housing.

**Intentions to Remain Living in Acton**

The 2008 telephone survey of residents asked questions about how long people had lived in Acton, and whether they were planning to move in the next 5 to 10 years. A cross-tabulation of phone survey results was done of the length of time people were planning to stay in Acton vs. whether they had school age (minor) children (under the age of 18). 154 of the 366 survey responders had children. Of these 11% said they were planning to stay 1-5 years, 20% were planning to stay 6-10 years and 43% said they were planning to stay 11 years or more. 26% of the responders said they did not know how long they were planning to stay. The questions asked are shown in Table 1.9.

Table 1.9: Phase 1 Telephone Survey Questions Regarding Plans to Stay in Acton

<b>How long do you plan on living in Acton?</b>	1 – 5 Years	6 – 10 Years	11+ Years	Don't Know
<b>Do you have any minor children? (Under the age of 18)</b>	Yes		No	
<b>If yes,</b>	How many?		How old?	

The phone survey was a carefully selected 5% random sample with 366 usable responses. 42% of the responders had children. This agrees very well with the 2000 Census figure of 43% and the Claritas update to 2010 of 42% of households having children.

The average number of children was 1.9. The statistical error associated with the sample was 5.1%. The survey provides a fairly reliable indication of the fact that almost 1/3 of the people with children plan to leave within 10 years.

**Building Permits**

Building permit data from 2000 to 2010 (July) shown in Figure 1.5 and Table 1.10 document a recent decrease in the growth pattern compared to the late 1990's. Building permit data is important because it provides a year by year updated assessment of the housing stock in town. Data used here was obtained from the U. S. Census Bureau, who in turn obtains it from the town. There are some small differences in reporting between the two sources. The ten year total since 2000 is 773 total housing units. Residential construction during this period has been overwhelmingly 88% single-family homes (534 units). Residential building permits reached a high of 108 in 2000, but sunk continuously to a low of 26 in 2004. Residential building activity picked back up in 2005, 2006 and 2007, rising to 77 permits in 2006. In 2008 and 2009 residential building activity has again sunk to 33 permits in 2009. Data for 2010 show 19 residential building permits for the first half of the year.

Figure 1.5: Acton Annual Residential Building Permits

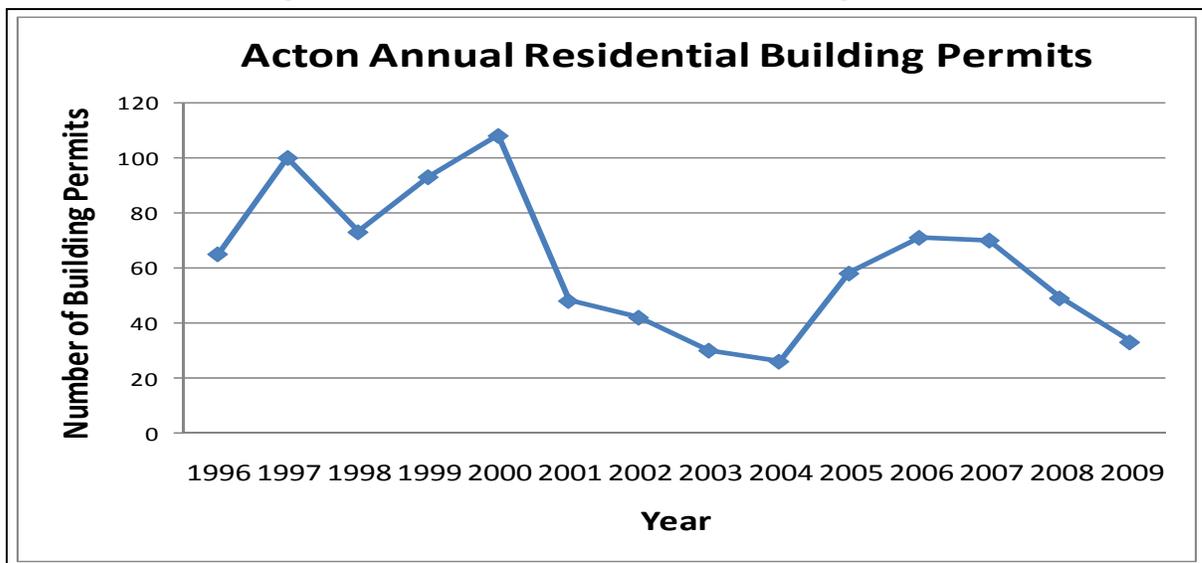


Table 1.10: New Residential Building Permits in Acton

Year	1996	1997	1998	1999	2000	2001	2002	2003
<b>Buildings</b>	65	100	73	93	108	48	42	30
<b>Units</b>	68	100	73	94	126	71	42	30
Year	2004	2005	2006	2007	2008	2009	2010	
<b>Buildings</b>	26	58	77	70	49	33	19	
<b>Units</b>	32	58	367*	70	49	36	19	

Source: U. S. Census Bureau for Figure 1.5 and Table 1.9.

*The number of residential building permits issued each year has been quite sporadic with a recent downturn from 2007 to 2009. \*2006 is the year the 296 Avalon units were permitted.*

**Housing Densities, Location, and Amounts**

Acton has a moderate overall housing density of about 0.4 of an acre per housing unit (or slightly over 2 housing units per acre). The largest minimum lot size under zoning for a single-family house is 100,000 sq. ft (about two and one half acres) in the R10 and R10/8 zoning districts. The R-2 district requires 20,000 sq. ft., the R-4 district 40,000 sq. ft. and the R8 and R8/4 80,000 sq. ft. respectively for a single-family home. Two-family and multi-family residential buildings are permitted in the R-A and R-AA zoning district, and in most village zoning districts.

The smallest lot permitted for multi-family housing is 10,000 sq. ft., about ¼ of an acre, in the R-AA zoning district at Kelley’s Corner. Fifteen thousand square foot lots are required in the village zoning district in West Acton, which also allows multi-family units. Multi-family structures in village and village residential zones are limited to 4 units, except that the South Acton Village (SAV) district allows more than 4 units in each structure with a special permit from the Board of Selectmen.

All residential zones permit by-right (without a special permit) one accessory apartment unit within any main residential structure built before 1990.

Forty-eight (48%) of all residentially zoned land requires 20,000 sq. ft. minimum lots for single-family homes. Areas requiring 40,000 sq. ft. and 80,000 sq. ft. minimum size lots make up 7% and 23% respectively of residentially zoned land. There are 325 acres zoned for multi-family residences, which is about 4% of all residentially zoned land. Table 1.11 shows the designations, areas, minimum lot sizes and required frontages, and number of housing units permitted in each zoning district.

Table 1.11: Residential Zoning Districts in Acton

Name	Designation	Minimum Lot Size in Square Feet	Minimum Road Frontage in feet	Acres in 2005	Percent of Residentially Zoned Acres	No. of Housing Units Permitted
Residence 2	R-2	20,000	150	4,467	48	1 + Apt. w SPA
Residence 4	R-4	40,000	175	644	7	1 + Apt. w SPA
Residence 8	R-8	80,000	200	1331	14	1 + Apt. w SPA
Residence 8/4	R-8/4	80,000	200	874	9	1 + Apt. w SPA

## Population and Housing

Residence 10	R-10	100,000	250	134	1	1 + Apt. w SPA
Residence 10/8	R-10/8	100,000	250	1612	17	1 + Apt. w SPA
Residence A	R-A	100,000	200	249	3	2 + Apt.
Residence AA	R-AA	10,000	100	13	<1	4
Village Residential	VR	15,000	50	63	1	4 + more with SPS only in the SAV District.

Source: Town of Acton Zoning Bylaws, and MassGIS for Acreage

Note: Apt. = Apartment; SPA = Special Permit from the Zoning Board of Appeals; SPS = Special Permit from the Board of Selectmen

The housing section of the To Live in Acton Community Development Plan prepared in 2004 identified areas where future housing might be located (called “Housing Opportunities” in that plan). These are shown on Figure 1.6. Low density residential areas are located primarily in the northern half of Acton. Areas of moderate residential density are located primarily in the Acton Center, West Acton and South Acton areas, which include the Route 2 Corridor. Village areas of higher residential density are located in South Acton, West Acton, along Route 2A (Great Road) at the Concord border, and in North Acton. Village areas are intended for mixed uses, including residential uses, and infill on vacant or under-utilized properties. The sewer service area in South Acton, extending up to Kelley’s Corner could contribute to higher density residential densities around the train station and along Route 27.

The amount of future residential development is indicated by the forecasts of future population, households and dwelling units. Table 1.5 shows that there may approximately 600 more dwelling units in town by 2020 (although owing to the current market downturn this growth may not be fully realized by 2020. This is an average annual production rate of 60, which is close to the average of 62 experienced between 2000 and 2009 (shown in Table 1.5). There is land available for this amount of development.

The buildout analysis done for the 1998 Master Plan Update estimated that a total of 10,600 housing units could be built in Acton, given its available developable vacant land at that time. The 2004 To Live in Acton Community Development Plan reduced the estimated future increment to 10,200 dwelling units. The 2010 Census reports that Acton has 8,530 dwelling units in 2010 and that the number could increase to 9,176 by 2020 and 9,515 by 2030, given current zoning. (The future estimates are based on MAPC projections of population and households.)

A detailed analysis of vacant lots approved for residential use done by the Acton Planning Department indicates that there are 343 lots ready for construction. These are scattered around town in various subdivisions and approved residential projects and in a few cases (15 lots) on land where subdivision approval is not required. The map in Figure 1.7 shows the scattered location of subdivisions as of 2007. The 343 lots are likely to accommodate more than 343 housing units since 2-family and multi-family and town house units are likely to be built on some of them. Potential demand estimates for housing units by 2020 by MAPC (roughly 600 new units) suggest that about half of forecast units can be accommodated on lots already approved.

Figure 1.6: Housing Opportunities and Developable Land as Identified in the 2006 Community Development Plan

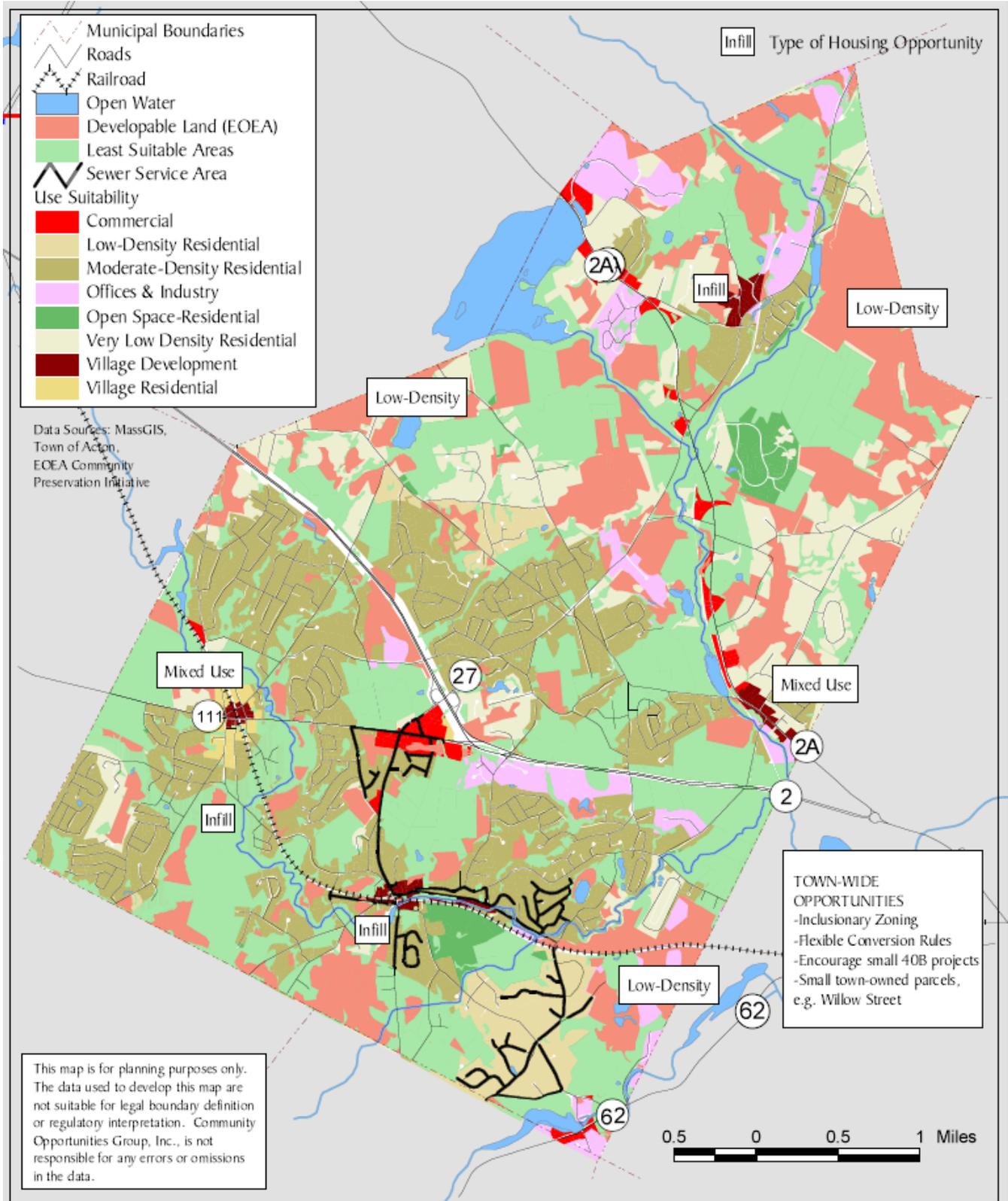
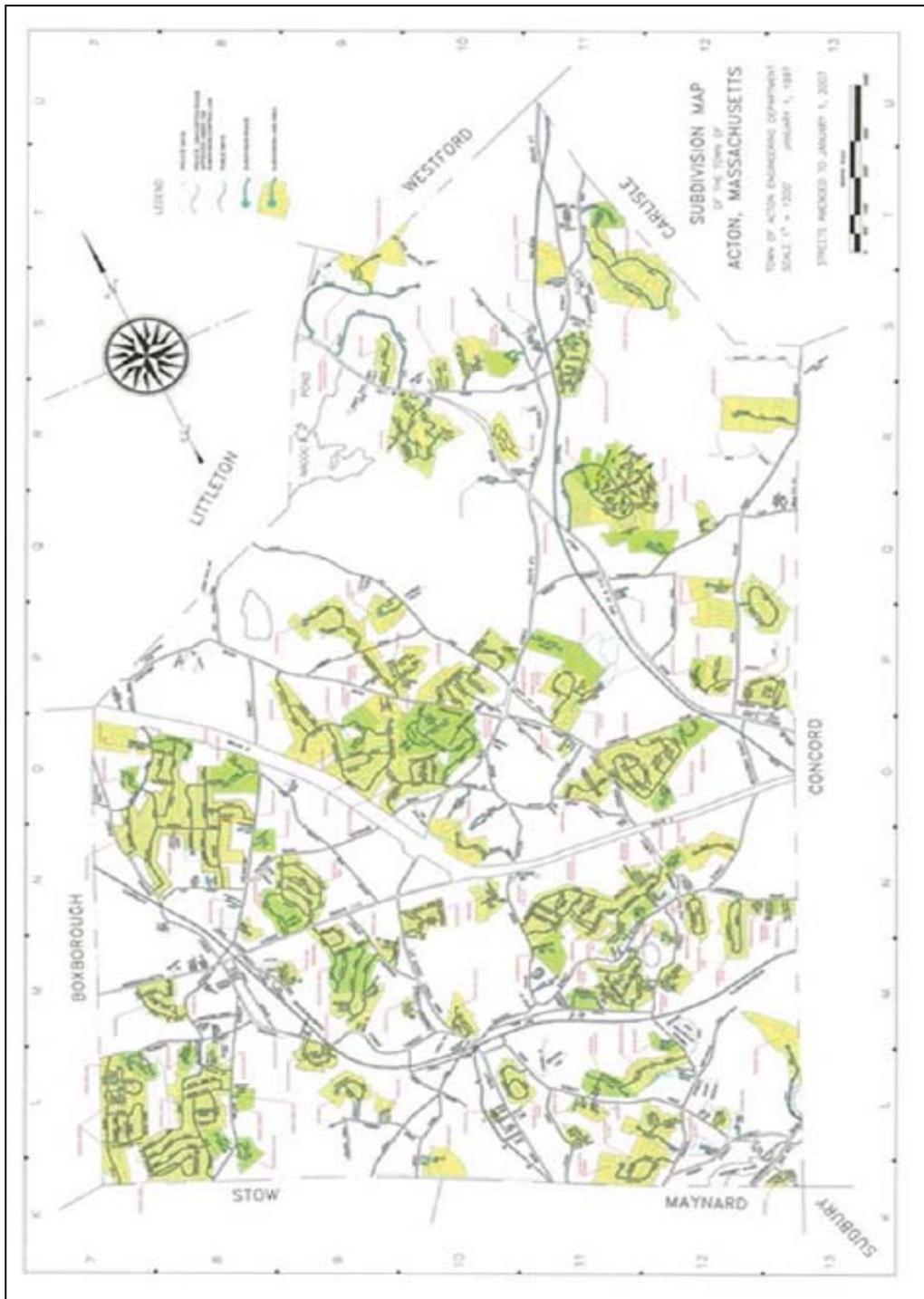


Figure 1.7: Residential Subdivisions in Acton as of 2007



**Assessment of Housing Demand**

Demand is high as indicated by the number and price of sales shown in Table 1.12. About 5% of the housing stock is sold each year. Table 1.12 shows median selling prices of single-family and condominium housing in Acton for the period 1987 to 2010.

Table 1.12: Residential Sales in Acton, 1987 – 2010

Year	Number of Sales			Median Sales Price		
	1-Family	Condo	All Units	1-Family	Condo	All Units
2010 (9 mo.)	142	88	252	\$498,750	\$280,000	\$459,900
2009	185	107	325	\$482,000	\$199,000	\$436,250
2008	148	114	311	\$501,800	\$225,000	\$453,000
2007	165	143	348	\$525,000	\$253,000	\$462,500
2006	185	146	378	\$535,000	\$278,106	\$488,800
2005	190	194	434	\$542,000	\$276,000	\$473,450
2004	225	175	468	\$542,500	\$230,000	\$426,750
2003	222	196	473	\$474,500	\$182,000	\$375,900
2002	229	234	515	\$450,000	\$193,450	\$371,000
2001	200	194	428	\$426,450	\$189,250	\$360,500
2000	265	248	557	\$389,900	\$129,250	\$318,570
1999	302	200	546	\$336,950	\$126,750	\$290,000
1998	264	206	548	\$294,250	\$164,900	\$275,000
1997	258	190	516	\$285,000	\$135,250	\$259,900
1996	244	157	463	\$261,500	\$164,000	\$250,000
1995	204	114	418	\$264,900	\$118,500	\$231,500
1994	257	116	440	\$253,000	\$119,200	\$224,950
1993	278	161	490	\$245,125	\$80,000	\$197,950
1992	281	149	488	\$235,800	\$49,500	\$195,000
1991	222	146	428	\$235,000	\$81,200	\$190,625
1990	159	108	311	\$225,800	\$110,000	\$180,500
1989	174	109	343	\$247,388	\$116,900	\$220,000
1988	192	168	434	\$244,950	\$116,450	\$195,500
1987	241	280	603	\$258,000	\$105,900	\$157,000

Source: The Warren Group, Banker and Tradesman

Note: Single Family plus Condo Units does not = Total Units because there are some other types of units that Banker and Tradesman does not identify in its report but includes in Total Units.

The data reflect the downturn in housing sales that has occurred owing to national economic conditions. Average prices have come down and the number of sales per year has been reduced.

From 1990 to 2000 the price of housing rose by an average of about 6 to 7% per year. Prices increased by about 76% during that decade. Between 2000 and 2006 the average price rose by about 5% per year. Since then the average price dropped about 3.5% per year up to 2009. In 2010 the average price has risen by about 5%. The rate of change reflects the national, state and regional economic conditions in which a major recession occurred after 2006, and recovery in the housing market from the recession, is just beginning in 2010.

Table 1.13 shows the relative position of Acton in the regional housing market. Acton ranks 4th in median sales price of all housing and in single family housing among the towns surrounding it.

Table 1.13: Median Sales Price of Housing in Acton and Surrounding Towns through September, 2010

	<b>All Housing Units</b>	<b>Rank</b>	<b>Single-Family Units</b>	<b>Rank</b>
<b>Acton</b>	\$459,900	4	\$498,750	4
<b>Boxborough</b>	\$345,000	8	\$492,500	5
<b>Carlisle</b>	\$675,000	1	\$690,000	1
<b>Concord</b>	\$621,500	2	\$680,000	2
<b>Littleton</b>	\$389,250	5	\$400,000	8
<b>Maynard</b>	\$295,000	9	\$307,500	9
<b>Stow</b>	\$379,850	6	\$424,900	7
<b>Sudbury</b>	\$585,000	3	\$619,600	3
<b>Westford</b>	\$350,450	7	\$431,500	6

Source: The Warren Group, Banker and Tradesman.

*Acton’s housing stock is moderately expensive, being substantially below the more expensive communities of Carlisle, Concord, and Sudbury.*

Acton is in the middle of its neighbors relative to current housing sales prices. Given that, and the desirability of living in Acton because of its schools, town services and facilities, regional accessibility, and relatively large amounts of open space, it is likely that Acton will continue to have an active housing market, attracting developers and new residents and placing new pressures on town services and facilities.

**Affordable Housing**

“Affordable Housing is defined in Massachusetts by Statute (M.G.L. Chapter 40B, Sections 20-23), as housing for households with incomes not exceeding 80% of the metropolitan area median income, and requires that housing to restrict rents or home prices for a specific period of time, generally in perpetuity. These households are designated as “low and moderate income.” The price range of affordable homes is currently \$140,000-175,000. Deed riders restrict the future re-sales of these properties to other income eligible families. Furthermore, housing is considered affordable if it does not consume more than 38% of gross household monthly income. There may be some properties in Acton that are valued at these low prices but unless they are deed restricted for income eligible families, they can neither be counted toward the Town's Statutory

## Population and Housing

10% Housing goal under Chapter 40B, nor officially termed Affordable Housing.” [Adapted from the Acton Community Housing Corporation (ACHC) Website.]

The ACHC aids in the creation of new affordable housing. ACHC is appointed by the Board of Selectmen and charged with facilitating affordable housing for working families and individuals with modest incomes. ACHC oversees First-Time Homebuyer programs and moderate income rental units, but does not itself own any housing units.

The responsibilities of the ACHC include:

- Acting as the Town's initial contact and preliminary negotiating agency with developers of proposed affordable residential housing projects (40B's)
- Reviewing design and density
- Determining consistency with Comprehensive Permit Policy
- Initiating action to create affordable residential housing developments on Town-owned properties
- Monitoring the affordability requirements for housing developments such as:
  - Sales price
  - Maximum income and asset eligibility
  - Size of households applying for affordable units
  - Continued eligibility of the designated affordable Deed Restricted units
  - Marketing and outreach plan to ensure affirmative fair marketing
  - Deed Riders used to ensure continued affordability resale of affordable units

The ACHC is likely to play a major role in the creation of new affordable units because of the scope of its activities.

An important objective Acton may choose to include in its Master Plan is to move toward meeting the Commonwealth of Massachusetts objective of having 10% of each city's and town's housing stock be affordable. The 2010 median household income for the Boston Metropolitan area that includes Acton is \$91,800. For a household of four, 80% of the median household income is \$66,150. Any affordable housing subsidized by federal dollars limits recipients to those earning less than 80% of median income. Currently 6.1% or 519 units in Acton are considered affordable, using Commonwealth of Massachusetts statutory definitions. Town efforts through The Acton Community Housing Corporation and 40B housing developments have helped to raise this figure from 2.5% in the previous decade. Avalon Bay, a 40B development, with its 296 units of rental housing is a major factor in bringing this number up. The ACHC was instrumental in the creation of 47 additional ownership units. Table 1.14 shows how Acton compares with surrounding communities in achieving the objective of having 10% of its housing stock affordable.

Table 1.14: Massachusetts Subsidized Housing Inventory: January 2011

<b>Community</b>	<b>2000 Census Year-Round Housing Units</b>	<b>Subsidized Housing Inventory Units</b>	<b>Percent</b>
Acton	7,645	519	6.1%
Boxborough	1,900	24	1.3%
Carlisle	1,647	20	1.2%
Concord	6,095	363	6.0%
Littleton	3,018	245	8.1%
Maynard	4,398	365	8.3%
Stow	2,108	143	6.8%
Sudbury	5,582	280	5.0%
Westford	6,877	347	5.0%
<b>Subregion Totals</b>	<b>39,270</b>	<b>2335</b>	<b>5.9%</b>
<b>Statewide Totals</b>	<b>2,526,963</b>	<b>243,630</b>	<b>9.6%</b>

Source: Massachusetts Department of Housing and Community Development.

*Acton needs only 3.9% more of its housing stock to be affordable to meet the state set objective of 10% affordability.*

Acton had 8,530 year-round housing units according to the 2010 Census of Housing. Ten percent (10%) would be 853 units. Given the current figure of 519 affordable units, 334 additional affordable units would be needed to achieve the ten percent (10%) figure. Using the figure of 9,176 dwelling units forecast for 2020, a little more than one-half (52%) of all of the new units need to be affordable to approach the 10% target. (However, some of the objective could also be met by making existing units available at affordable cost with deed restrictions to maintain affordability.) Extending achievement of the target to 2030 (9,595 total year-round housing units) means that 41% of new units between 2010 and 2030 would need to be affordable. This is an annual rate of 22 units if the target is to be met by 2030. It is significant that past efforts have matched this pace. In 1988 there were only 144 affordable housing units in Acton which was 2.1% of the total housing stock then. Between 1998 and 2010, 375 units of affordable housing have been created, a rate of 31 per year.

Some of Acton's affordable housing is owned or managed by the Acton Housing Authority. Their current inventory is shown in Table 1.15.

Table 1.15: Existing and Proposed Acton Housing Authority Units

	<b>Existing</b>	<b>Proposed</b>
Owens 91 units of elderly/handicapped housing.	91	
Owens 42 units of family housing.	42	
Owens a 12 unit group home.	12	
Provides housing vouchers for 170 units of affordable rental housing.	170	
Gives local residents priority in providing housing.		
Has a waiting list of 349 applicants.		
Is using Community Preservation Act (CPA) funds to develop 12 new affordable rental family units on Sachem Way.		12
Is also using CPA funds to make capital improvements to the existing inventory of housing stock.		
<b>Total Existing Units</b>	<b>312</b>	
<b>New Units Planned</b>		<b>12</b>

Source: Acton Housing Authority.

Note: Some of the Section 8 voucher units are located outside of Acton.

*The Acton Housing Authority has a variety of means to provide affordable housing.*

### **Income/Affordability Gap**

2010 estimated Census data can be used to estimate relative income distribution by quartiles. Table 1.16 shows numbers of Acton’s households in income groups in 2010. Five and three-tenths (5.3%) of individuals living in Acton were below the U. S. Government defined poverty level in 2008.

Table 1.16: Households and Household Income, Estimated for 2010

<b>Income</b>	<b>Number of Households</b>
Less than \$14,999	321
\$15,000 to \$24,999	249
\$25,000 to \$34,999	328
\$35,000 to \$49,999	559
\$50,000 to \$74,999	1073
\$75,000 to \$99,999	1048
\$100,000 to \$124,999	925
\$125,000 to \$149,999	764
\$150,000 to \$199,000	1210
\$200,000 to \$499,999	1602
\$500,000 and over	337
<b>Number of Households</b>	<b>8,415</b>
<b>Median household income (dollars)</b>	<b>\$117,122</b>

## Population and Housing

Source: 2000 U. S. Census of Population updated to 2010 by Claritas and adjusted by Planners Collaborative.

*There are a wide range of household incomes in Acton, contributing to its diversity.*

These data indicate the following income brackets by quartiles (rounded to the nearest \$100):

Table 1.17: Estimated 2010 Household Income Quartiles in Acton

<b>Quartile</b>	<b>Income</b>
First quartile (bottom 25%)	\$0 to \$65,000
Second quartile	\$65,000 to \$117,100
Third quartile	\$117,100 to \$193,200
Fourth quartile (top 25%)	\$193,200 and over

Source: 2000 U. S. Census of Population updated to 2010 by Claritas and adjusted by Planners Collaborative.

*The quartile data reiterates the wide range of incomes found in Acton.*

The average selling price of all residential units in Acton was \$459,900 in 2010. The annual income needed to buy the average priced home is \$131,567, based on a 5% down payment, 30% of income dedicated to home purchase, a 4.5% fixed-rate 30-year mortgage, and annual payments for homeowners insurance (\$2,760) and local real estate taxes (\$8,316). This means that about half of the households in Acton cannot afford to buy an average priced home in the town today. With the recent economic slowdown and very recent slight upturn in the housing market some relief may be offered, but it is likely that almost a majority of Acton households will not be able to afford the average priced home in town in the near future.

As mentioned above, the current standard for affordability for a household of four people is an annual income of \$66,150, which is 80% of the metropolitan area annual median household income for four-person households. The U. S. Department of Housing and Urban Development (HUD) defines two additional standards for its housing assistance programs. These are a 60% level called low income (\$54,120 for a household of four), and a very low income level currently set at \$45,900 for a household of four. It is estimated that Acton has 15% of its households below the very low income level, and an additional 19% of its households below the low income level. Twenty-six percent (26%) of Acton's households are estimated to be income eligible for affordable housing, using the 80% criterion, used in the 40B program and defined by HUD as moderate income households (earning less than \$66,150 for a household of four persons). This does not mean that all these families participate in the program, only that they are income eligible.

### **Property Taxes from Residential Development**

Acton has 4,877 parcels of land classified as single-family in 2010. The average assessed value of a single-family home is \$512,103, and the average single-family tax bill is \$8,767, according to the Massachusetts Department of Revenue. Residential uses (single-family and others) in Acton pay \$55,769,176 in property taxes, representing 87% of all property taxes collected by the town. Commercial uses pay 9% of the property taxes and industrial uses pay 3%. Personal property (mainly equipment in commercial and industrial uses) pays 2%. The comparison of Acton with surrounding towns is shown on Table 1.18.

Table 1.18: Property Tax Revenues from Major Land Uses Types by Town

	<b>Residential</b>	<b>%</b>	<b>Commercial</b>	<b>%</b>	<b>Industrial</b>	<b>%</b>	<b>Personal Property</b>	<b>%</b>	<b>Total</b>
Acton	\$55,769,176	87.1	\$5,497,569	8.6	\$1,675,574	2.6	\$1,110,816	1.7	\$64,053,135
Boxborough	\$11,935,703	75.1	\$1,341,843	8.4	\$2,286,998	14.4	\$326,253	2.1	\$15,890,797
Carlisle	\$19,903,018	98.2	\$144,139	0.7	\$19,309	0.1	\$193,075	1.0	\$20,259,541
Concord	\$59,621,336	90.6	\$5,100,090	7.8	\$406,458	0.6	\$669,685	1.0	\$65,797,569
Littleton	\$16,924,928	71.3	\$1,796,882	7.6	\$4,259,388	17.6	\$750,419	3.2	\$23,731,617
Maynard	\$17,711,760	79.1	\$1,780,763	7.9	\$2,158,385	9.6	\$751,915	3.4	\$22,402,823
Stow	\$17,698,621	91.2	\$919,565	4.7	\$417,504	2.2	\$364,708	1.9	\$19,400,398
Sudbury	\$59,811,853	91.3	\$3,158,019	4.8	\$1,294,359	2.0	\$1,264,922	1.9	\$65,529,153
Westford	\$47,940,063	85.7	\$3,297,328	5.9	\$3,618,276	6.5	\$1,072,015	1.9	\$55,927,682

Source: Mass. Department of Revenue.

*Acton, like similar towns around it, depends very heavily on its residential tax base to support its government.*

Acton is in the middle of this group of towns. Littleton, Boxborough, Maynard and Westford have lower shares of property tax revenues contributed by residential uses. These are towns that have historically or recently attracted commercial and industrial uses. With the exception of Westford, they also have residential property bases that are considerably smaller than Acton’s.

### **Overall Summary**

Acton’s population is expected to continue to grow relatively slowly, as it has in the recent past, because it is running out of prime developable land and has wastewater disposal constraints (see Chapter 7, Facilities and Services). There are significant shifts in the age composition of Acton’s population. These shifts are important because they indicate what types of services and facilities and housing will be needed in the future. Households are expected to grow more quickly than population because household size is expected to decline, a statewide trend that has been observed since 1990. There are 343 lots ready for residential construction. Potential demand estimates for housing units by 2020 (roughly 600 new units) suggest that about half of all new forecast units can be accommodated on lots already approved. Currently 6.1% or 519 units in Acton are considered affordable, using Commonwealth of Massachusetts statutory definitions.

### **Opportunities and Challenges Posed by Population and Housing Existing Conditions**

- Creating affordable housing is both a challenge and an opportunity to retain residents.
- It is a challenge to get renters to stay longer than 7 years on average.
- Building up residential densities in and around village centers is a challenge.

## Population and Housing

- Assuring that new housing created best matches likely demographic changes will be challenging but also an opportunity to develop a land use pattern that may be more sustainable.
- Matching residential growth to town infrastructure and services capacities is a challenge.
- Creating more moderately priced market-rate housing and holding down municipal expenses to maintain or lower property tax rates will be challenging.

In conclusion, Acton is a very desirable place to live because of its schools and other municipal services, and the high quality of its housing stock. Acton is, however, an expensive place to live, requiring relatively high household incomes to maintain the quality of one's home, cover transportation costs, and pay the property taxes needed to support good quality town facilities and services.

## Appendix

### Town of Acton Subsidized Housing Report

#### Acton Community Housing Corporation

Nancy Tavernier, Chairman

TOWN OF ACTON

Acton Town Hall

472 Main Street

Acton, Massachusetts, 01720

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TOWN OF ACTON

#### SUBSIDIZED HOUSING INVENTORY REPORT

40B and other deed restricted affordable units

January 2011

#### Commonwealth of Massachusetts

<u>Project Name</u>	<u>Type</u>	<u>Total 40B units</u>
DMR Group Home	rental	18
DMH Group Home	rental	10
Sub-total (MA)		<b>28</b>

#### Acton Housing Authority Units

<u>Project Name</u>	<u>Type</u>	<u>Total 40B units</u>
McCarthy Village	rental	35
Windsor Ave. Apts.	rental	68
Scattered site condos	rental	31
McCarthy Village II*	rental	12
Group home	rental	12
Sub-total (A.H.A.)		<b>158</b>

#### Miscellaneous

<u>Project Name</u>	<u>Type</u>	<u>Total 40B units</u>
Habitat for Humanity (River St.)	ownership	1
Sub-total (Misc.)		<b>1</b>

\*Approved but not constructed

**Acton Community Housing Corporation Units**

<u>Project Name</u>	<u>Type</u>	<u>Total affordable units</u>
Acorn Park, scattered sites	ownership	2
Bellows Farm, scattered sites	ownership	6
Harris Village	ownership	4
Westside Village (40B)	ownership	4
Crossroads Condos (40B)	ownership	3
Inn at Robbins Brook	rental	3
Franklin Place (40B)	ownership	3
Fort Pond Brook Place (40B)	ownership	2
Dunham Place	ownership	1
Woodlands at Laurel Hill (40B) (Avalon Acton)	rental	296 (60 actual)
Davis Place (40B)	ownership	2
Blanchard Place (40B)	ownership	3
Robbins Brook	ownership	1
Ellsworth Village	ownership	2
Willow-Central (40B)	ownership	2
Drummer Rd.	ownership	1
Somerset Hill	ownership	2
Faulkner Mill	ownership	1
Lalli Terrace (40B)	ownership	2
Madison Place (40B)	ownership	2
Old High School Commons (Towne)*	rental	15
93 Central St.*	ownership	1
113 Central St.*	ownership	1
99 Parker St.*	ownership	2
Sub-total (ACHC) ownership		47
Sub-total (ACHC) rental		314
<b>Sub-total ACHC units</b>		<b>361</b>
<b>TOTAL SUBSIDIZED UNITS counted toward 10%</b>		<b>548</b>
Census 2000 Year housing units		7,645
<b>Percentage subsidized units</b>		<b>7.2%</b>

\*Approved but not constructed

January 2011 Note: This tally was prepared before the state revised its figures and now uses the figure of 519 total subsidized units and 6.1% affordability of the total housing stock.

Table A1.1: MAPC Projections of Population and Households by Municipality -  
Prepared Jan. 31, 2006

<b>Population</b>				
<b>Town</b>	<b>2000</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>
Acton	20,331	21,724	23,049	23,701
Boxborough	4,868	5,279	5,612	5,884
Carlisle	4,717	5,012	5,249	5,439
Concord	16,993	18,354	18,806	19,148
Littleton	8,184	9,670	11,080	12,461
Maynard	10,433	10,798	11,085	11,303
Stow	5,902	6,507	6,775	6,990
Sudbury	16,841	18,469	20,133	21,611
Westford	20,754	22,170	23,312	24,234

<b>Households</b>				
<b>Town</b>	<b>2000</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>
Acton	7,495	8,696	9,190	9,597
Boxborough	1,853	2,105	2,273	2,363
Carlisle	1,618	1,779	1,900	2,002
Concord	5,948	6,862	7,271	7,614
Littleton	2,960	3,812	4,505	5,200
Maynard	4,292	4,636	4,911	5,143
Stow	2,082	2,412	2,600	2,761
Sudbury	5,504	6,541	7,346	8,086
Westford	6,808	7,722	8,348	8,882

Sources:

2000 U. S. Census of Population, Claritas Estimates adjusted by Planners Collaborative for 2010 for Acton. Metropolitan Area Planning Council (MAPC) for 2010 for other town, and for 2020 and 2030 estimates for Acton and other towns.

Population and Housing

Table A1.2: Single and Multi Family Residential Housing Units Permitted by Building Permits by Year in Acton and Surrounding Towns: 2000 - 2009

Year	Acton		Boxborough		Carlisle		Concord		Littleton		Maynard		Stow		Sudbury		Westford	
	SF	MF	SF	MF	SF	MF	SF	MF	SF	MF	SF	MF	SF	MF	SF	MF	SF	MF
2009	33	3	6	0	10	0	32	0	11	0	2	0	47	0	13	0	55	0
2008	49	0	5	0	1	0	14	0	58	4	5	33	45	0	55	0	50	0
2007	70	0	2	0	7	0	27	0	21	0	23	8	55	0	79	0	99	41
2006	71	296	10	0	12	0	20	8	30	0	4	0	43	0	50	0	105	0
2005	58	0	16	0	19	0	18	6	26	19	4	4	29	0	22	0	60	0
2004	30	2	27	0	17	0	25	7	39	0	8	0	34	12	25	0	69	0
2003	30	0	32	0	7	0	19	42	32	0	4	22	16	0	37	0	119	0
2002	42	0	43	0	16	0	29	0	53	0	3	0	36	0	34	0	68	11
2001	47	24	13	0	25	0	23	18	53	0	22	0	28	0	52	12	89	0
2000	<u>96</u>	<u>30</u>	<u>18</u>	<u>0</u>	<u>24</u>	<u>0</u>	<u>24</u>	<u>0</u>	<u>73</u>	<u>0</u>	<u>10</u>	<u>0</u>	<u>41</u>	<u>0</u>	<u>83</u>	<u>0</u>	<u>93</u>	<u>0</u>
<b>Total</b>	<b>526</b>	<b>355</b>	<b>172</b>	<b>0</b>	<b>138</b>	<b>0</b>	<b>231</b>	<b>81</b>	<b>396</b>	<b>23</b>	<b>85</b>	<b>67</b>	<b>374</b>	<b>12</b>	<b>450</b>	<b>12</b>	<b>807</b>	<b>52</b>

Source: U. S. Census Bureau Manufacturing, Mining and Construction Statistics. SF = Single Family, MF = Multi-Family

## Chapter 2: Economic Development

This chapter covers the following topics:

- Relationship of Economic Development to Planning Goals
- Inventory information on
  - Employment and unemployment
  - Labor force
  - Wages
  - Economic establishments
  - Retail sales
  - Location and character of commercial development
  - Property taxes raised from commercial development
  - Projections of employment.
- Opportunities and Challenges posed by Existing Economic Development Conditions

### **Why Acton's Economic Development is Important to the Comprehensive Plan**

These topics are important because employment is essential for economic well being, and because commercial areas contribute to the character of Acton. Providing opportunities to shop in Town may be important so people do not have to travel long distances to obtain essential goods and services. Finally, commercial development is a major source of tax revenue for the Town.

### **Relation of Economic Development to Planning Goals**

Economic development information is relevant to six of the seven Acton 2020 goals; (the exception is “Maintain and Enhance Town Assets,” to which it does not have a direct relationship).

*Goal: Preserve and Enhance Town Character*

Some economic activities are housed in buildings that are not compatible with Acton's town character. This is both a question of architectural design and site planning. There will be opportunities to improve site planning and architectural design in future redevelopment and rehabilitation of some commercial and industrial properties, as well as in new commercial developments. On the other hand, some businesses are housed in historic buildings and in historic districts. Their business success supports the maintenance of these historic assets. Consumer choices and government laws, regulations and policies can significantly alter a businesses success and future outlook.

*Goal: Increase Sustainability*

Building construction (both new and rehabilitation) and maintenance practices that save energy, reduce carbon footprints and use renewable resources are ways to increase sustainability in economic development. In the survey done two years ago, a majority (53.5%) of Acton's business people indicated that they would use affordable “green” construction techniques for their businesses.

*Goal: Improve Connections*

Pedestrian pathways can be created and/or improved with better site planning in commercial and residential developments. Vehicle connections that do not require use of public roads

## Economic Development

(e. g., between parking and internal circulation spaces) can be made in some cases between adjacent commercial properties.

### *Goal: Create Community Gathering Places*

Creating attractive and well functioning indoor and outdoor gathering places in commercial developments will aid in improving social interactions between people, and in increasing customer traffic and sales for local businesses.

### *Goal: Enable Diversity and Inclusion*

Encouraging restaurants, shops, and businesses serving all segments of the town, will better enable diversity. Creating more jobs across the complete spectrum of skill and wage levels will encourage inclusion of more workers with more diverse backgrounds.

### *Goal: Maintain and Improve the Financial Well-being of the Town*

Commercial and industrial development tends to require less in services than residential development, and these uses thus make a positive net contribution to the town's fiscal balance.

## **Summary of Key Points**

### *Employment Based in Acton*

- Acton is an important employment center in its nine town sub-region. Concord and Westford are the other important employment centers. Acton is expected to remain an important sub-regional employment center.
- In 2010, on average, 11,248 people were employed in jobs located in Acton.
- In 2000 (the most recent year for which data is available) only 20.5% of jobs in Acton were held by Acton residents and 79.5% by residents of other cities and towns.
- Major categories of employment in Acton are retail trade, public administration including public schools, health care and social assistance, computer systems design and related services, education services (not including public schools), and eating and drinking establishments.
- Health care and social assistance and computer systems design and related services are the fastest growing categories of employment located in Acton (147% and 112% respectively, between 2001 and 2009).
- The average weekly wage in Acton establishments was \$938 in 2009, but it ranged widely from \$226 for used merchandise stores to \$2,346 for scientific research and development services.
- Average weekly wages ranged from \$226 (used merchandise stores) to \$2,346 (scientific research and development services).

### *Acton's Labor Force*

- In September, 2010 Acton had a labor force of 11,757 (Acton residents who hold jobs anywhere.)
- In September, 2010 5.6% of Acton's labor force was unemployed (compared to a statewide figure of 8.0%)

## Economic Development

- The largest number of Acton residents are employed in the high wage/high education categories of management, computer/mathematical, educational/training/library, sales related, and office/administrative support.

### *Businesses*

- There were 795 establishments in Acton in the second quarter of 2010, according to data from the Massachusetts Office of Workforce Development.
- The number of businesses has varied by about 10% in recent years although the number in 2009 is about the same as in 2001 (780).
- There are about 500 home based businesses in Acton, many of them not included in the 795 establishments listed by the Massachusetts Department of Workforce Development.
- Acton is a town of small businesses, with an average of employees per business in 2009; this includes only businesses recognized by the Department of Workforce Development.
- The value of retail sales in 2007 in Acton was \$644,864,000.
- Motor vehicle and parts dealers and food and beverage stores accounted for 58% of all retail sales in 2002 and 64% in 2007.
- Most of Acton's commercial development is located along its numbered highways (Routes 2, 2A and 27) and in village centers.

### *Taxes*

- Acton collects 87.1% of its property taxes from residential property and 12.9% from commercial and industrial property.
- For the last eight years, Acton has had the highest residential tax rate of all towns around it, except for Stow, which had a higher rate from 2003 to 2005.
- The average residential tax bill in Acton has been closer to the middle of the nine towns, but it has been consistently slightly above the average for these towns.

## **Employment, Establishments and Wages**

### **Employment**

There are about 11,000 people employed in establishments located in Acton. It accounts for 18.5% of total employment in the nine community sub-region made up of Acton and its surrounding towns. There are additional people employed in Acton and surrounding towns that are self-employed and do not report through the Mass. Department of Workforce Development, which is the base source of employment statistics for the Metropolitan Area Planning Council (MAPC), the regional planning agency for 101 cities and towns around Boston in its estimating and forecasting work. MAPC then adds in estimates of employment not reported to the Mass. Department of Workforce Development. These are generally small numbers of people who do not pay into workman's compensation funds.

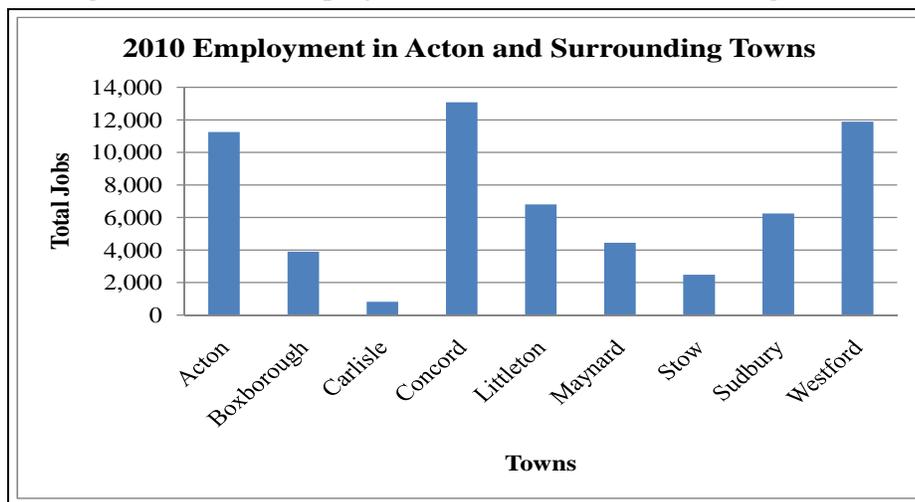
Table 2.1: Employment in Acton and Surrounding Towns: 1970 to 2030

	1970	1980	1990	2000	2010	2020	2030
<b>Acton</b>	2,046	5,365	9,395	10,304	11,248	11,989	12,600
<b>Boxborough</b>	39	558	2,286	2,153	3,904	2,526	2,663
<b>Carlisle</b>	161	405	649	826	818	805	793
<b>Concord</b>	4,183	9,827	11,643	12,399	13,077	13,576	13,976
<b>Littleton</b>	1,198	2,837	5,342	6,250	6,804	7,232	7,585
<b>Maynard</b>	5,237	15,926	7,403	4,541	4,455	4,372	4,291
<b>Stow</b>	312	805	2,260	2,231	2,485	2,671	2,825
<b>Sudbury</b>	3,208	7,186	9,706	5,890	6,246	6,428	6,571
<b>Westford</b>			5,565	11,056	11,888	12,546	13,084

Source: Metropolitan Area Planning Council (MAPC)

The table shows consistent employment growth in most of the sub-region towns with Acton, Concord and Westford retaining their places as major sub-regional employment centers.

Figure 2.1: 2010 Employment in Acton and Surrounding Towns



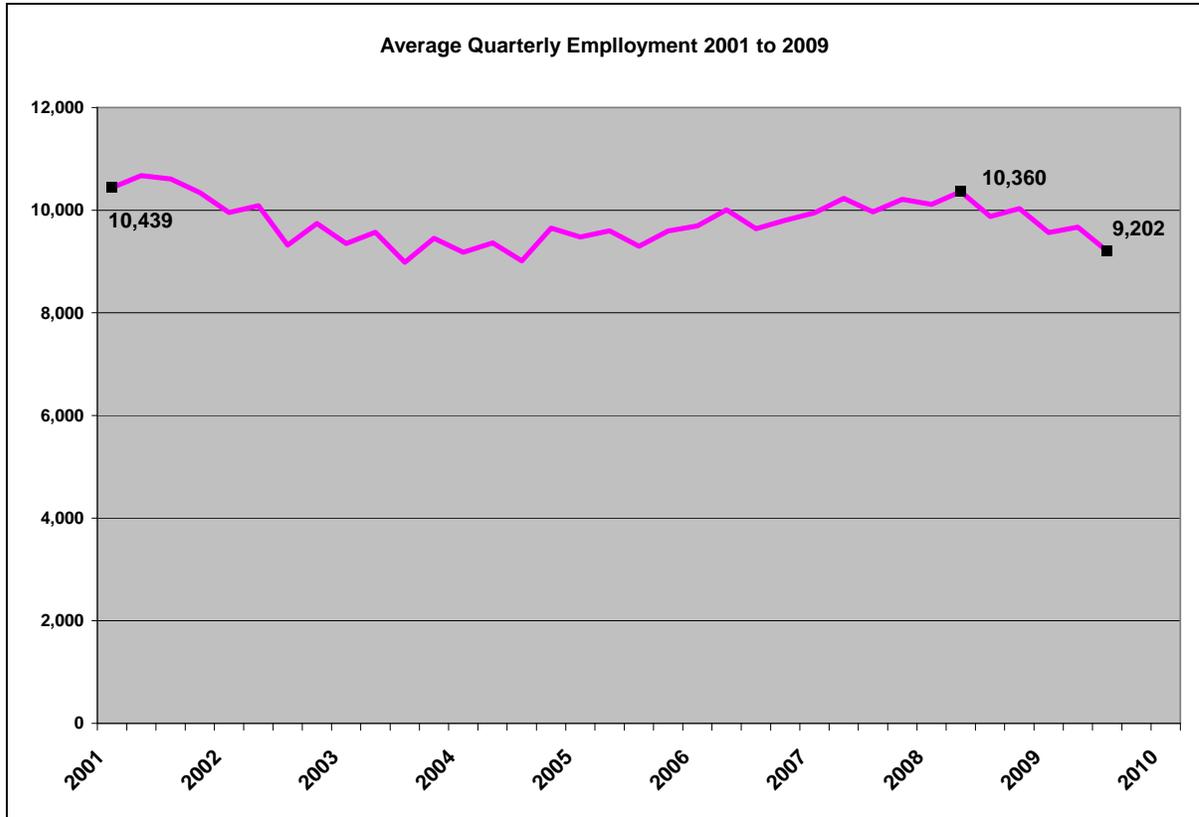
Source: MAPC.

The chart further illustrates the dominance of Acton, Concord and Westford as sub-regional employment centers.

It is estimated that there are about 500 self-employed people in Acton, many working in their homes. Data from the business registration list of the Town of Acton is used, along with Claritas (a widely used proprietary data estimating and forecasting service) data to make this estimate.

Employment has grown steadily when viewed at 10 year intervals. Employment is subject to business cycles which are captured by viewing the data by quarters (three month periods). Figure 2.2 shows average quarterly employment in Acton from 2001 to 2009. The data ends in 2009, at the end of an economic downturn. It also does not include public sector employment, which accounts for the figures being lower than those shown on Figure 2.1 and Table 2.1.

Figure 2.2: Acton Employment by Calendar Quarter

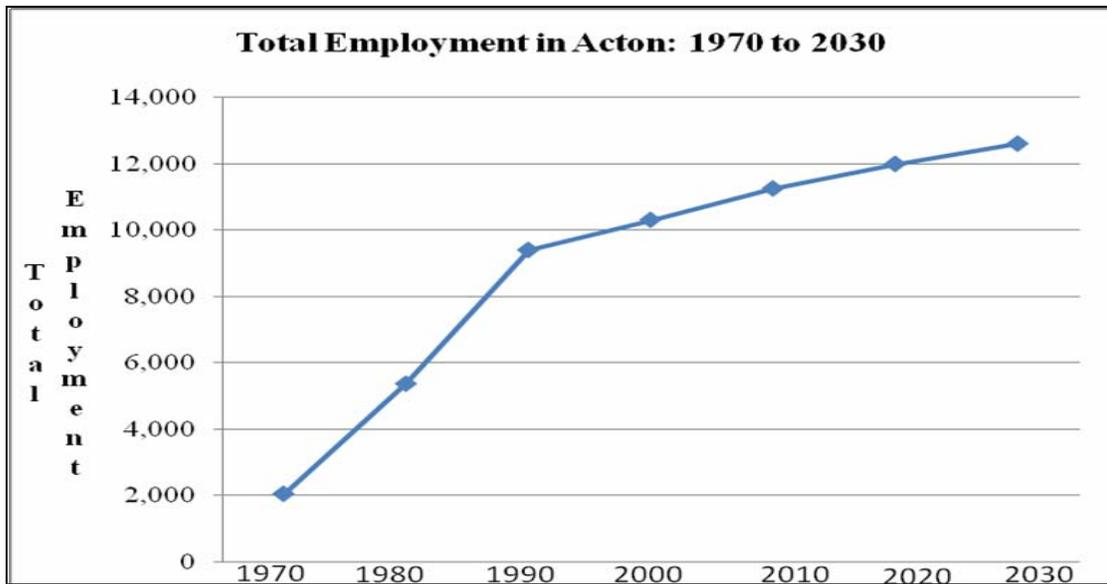


Source: Mass. Department of Workforce Development data for Acton.

Note: The vertical axis begins at 8,000 in order better to show the variations in employment from one calendar quarter to the next. Figure 2.3 shows Acton's historical development of jobs going back to 1970 and projected by MAPC to 2030.

*The chart shows that employment based in Acton fluctuates but has not trended substantially higher or lower in the past decade.*

Figure 2.3: Total Employment in Acton, 1970 to 2030



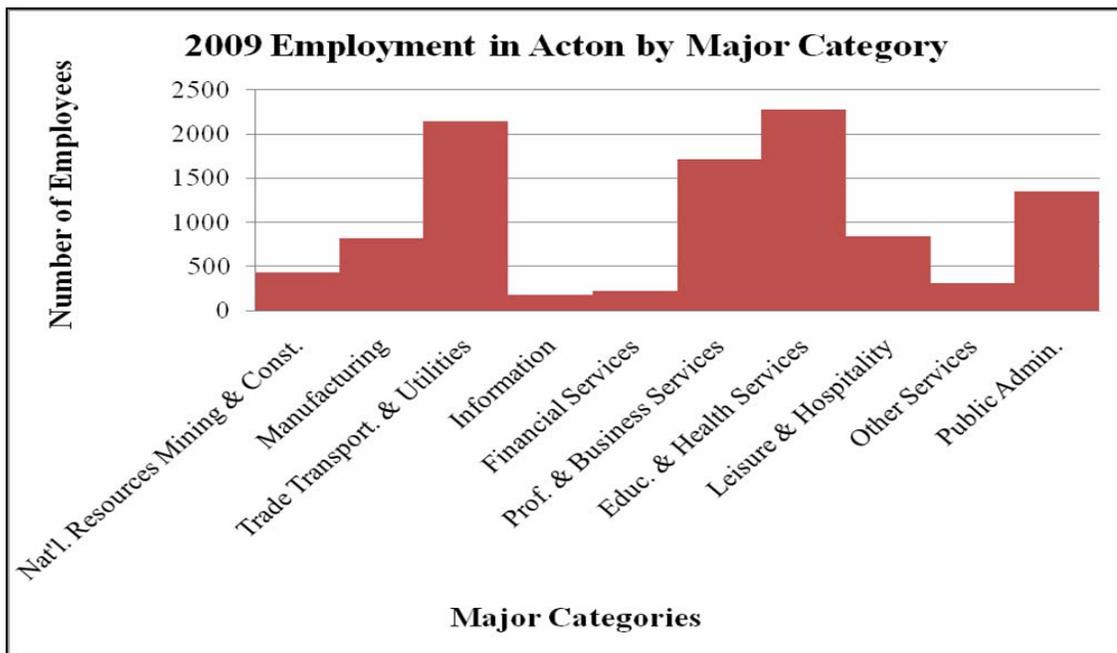
Source: MAPC.

*The chart shows that Acton’s percentage employment growth has lessened since 1990, but still remains, and is expected to remain, consistently positive.*

Employment in Acton grew very rapidly between 1970 and 1990, and has grown more modestly since then, and is expected to continue to grow modestly.

Figure 2.4 shows the major types of employment in Acton.

Figure 2.4: Employment in Acton by Major Category (2009)



Source: Mass. Department of Workforce Development.

## Economic Development

*Figure 2.4 shows the dominance of 4 categories of employment in Acton: Trade, Transport and Utilities, Professional and Business Services, Education and Health Services, and Public Administration.*

*Table 2.2, below, shows these figures with a further breakdown of some categories important for planning, like retail trade, manufacturing and services.*

Table 2.2: Employment by Detailed Category Reported to the Massachusetts Department of Workforce Development in 2009

<b>Category</b>	<b>Employment in 2009</b>
Agriculture, Forestry, Fishing and Hunting	14
Construction	434
Fabricated Metals Products Manufacturing	146
Computer and Electronic Products Manufacturing	174
Electronic Instruments Manufacturing	173
Other Durable Goods Manufacturing	325
Utilities	20
Wholesale Trade	317
Retail Trade	1,677
Transportation and Warehousing	135
Information	177
Financial Activities including Banking and Insurance	155
Real Estate and Rental and Leasing	66
Legal Services	69
Accounting and Bookkeeping Services	43
Architectural and Engineering Services	166
Computer Systems Design and Related Services	820
Management and Technical Services	157
Scientific Research and Development Services	46
Other Professional and Technical Services	116
Management of Companies and Enterprises	68
Administrative and Waste Services	245
Educational Services (not Including Public Schools)	877
Offices of Physicians	280
Offices of Dentists	122
Other Health Care and Social Assistance	1,001
Arts, Entertainment and Recreation	223
Food Services and Drinking Places	621
Other Services except Public Administration	307
Public Administration including Public Schools	1,301
<b>Total</b>	<b>10,276</b>

Source: Mass. Department of Workforce Development

Note: The discrepancy between this lower total figure and the MAPC figure results from the fact that MAPC figures are estimates and they include employment not reported to the Mass. Department of Workforce Development. The table shows a disaggregation of employment, but still illustrates the dominance of retail trade, other health care and social assistance, and public administration (including public schools).

The top five categories are retail trade, health care and social assistance, educational services and computer systems design and related services and food services and drinking places. Of these, only health care and social assistance, and computer systems design and related services are growth industries, as revealed in time series data in Table 2.3. These two sectors have more than doubled since 2001. Retail has stayed about the same, while food services and drinking places declined somewhat and educational services declined more substantially.

Table 2.3: Growth in Employment in the Largest Sectors of Acton’s Economy

Sector	2001	2003	2005	2007	2009	% Growth 2001-2009
Retail	1680	1868	1898	1866	1677	< -1%
Educational Services	1080	1230	1097	1157	877	-18.8%
Health Care and Social Assistance	568	762	1121	1286	1403	+147%
Public Admin. including Public Schools	1178	1281	1197	1374	1301	+10.4%
Food Services and Drinking Places	688	548	585	674	621	-9.7%
Computer Systems Design and Related Services	387	322	459	828	820	+112%

Source: Series ES-202 Employment Data from the Mass. Department of Workforce Development.

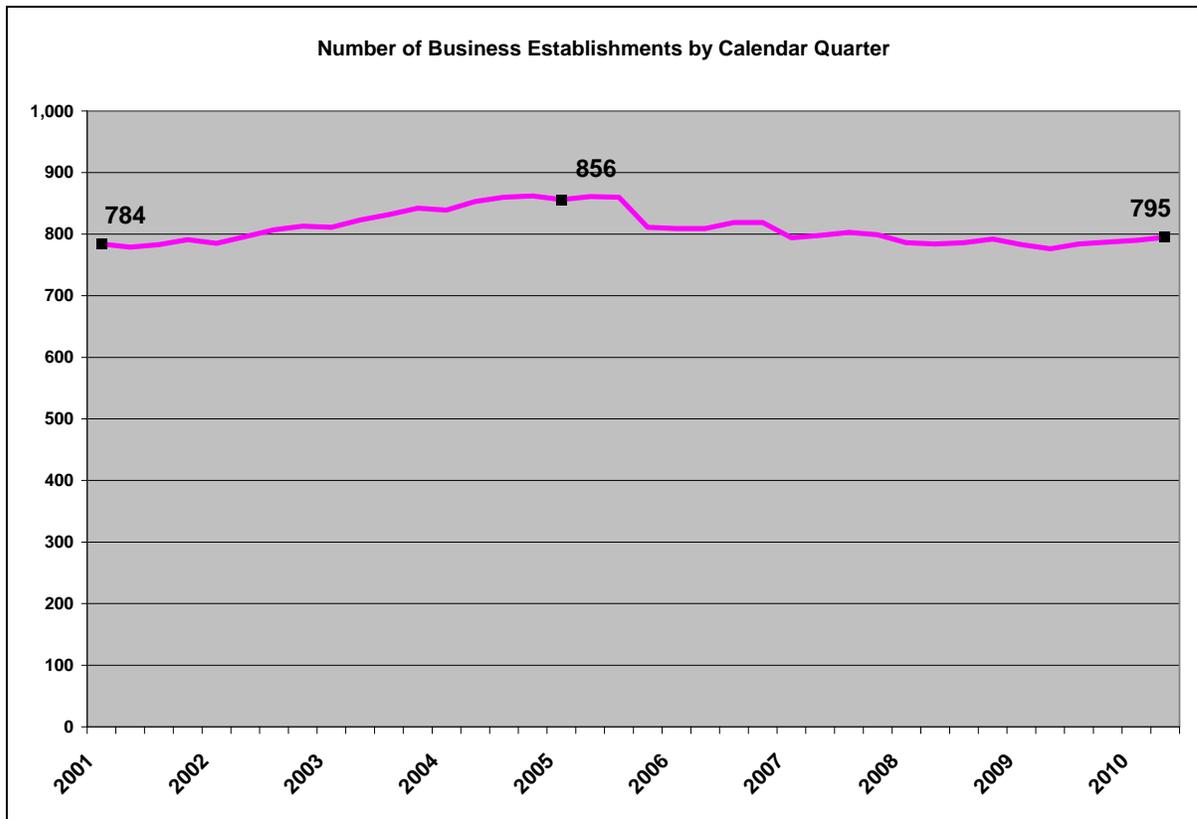
*Two of the largest categories (retail and public administration including public schools) remained relatively constant, while the exceptional growth categories were health care and social assistance, and computer systems design and related services.*

### Establishments

The latest data available from the Massachusetts Department of Workforce Development, for the second quarter of 2010, indicates that there were 795 business establishments in Acton. The number of private sector businesses (establishments) has varied by about 10% in recent years as shown on Figure 2.5, although the number in 2009 (795) is about the same as in 2001 (784). In 2004 and 2005 the number increased to around 860 and fell sharply in 2006. The number of businesses reflects overall economic conditions with the deep recession causing significant business shutdowns beginning in 2006.

The average number of employees per business has remained very constant, ranging only between 10 and 14 from 2001 to 2009. In 2009 it was 12. Acton is a town of small businesses, as measured by employees per business.

Figure 2.5: Number of Establishments by Quarter, 2001 to 2009



Source: Massachusetts Department of Workforce Development data for Acton.

Note: The vertical axis begins at 720 in order better to show the variations in the number of establishments from one calendar quarter to the next.

*The chart illustrates the gradual growth in the numbers of establishments up to 2005, and the decline in that number since then, owing mainly to the national economic downturn.*

### Wages

The highest wage is over ten times the lowest wage. Many of the lower paying jobs are taken by young people seeking to obtain some money for education, trips, entertainment or consumer goods. They often live with their parents and cannot support a household on the money they earn. Some of the lower paying jobs are taken by older people seeking to supplement their household's income. The lower wage categories also contain a relatively higher proportion of part-time jobs, lowering individual household income even further. The highest paying jobs all require substantial education and experience. Most are in the high-tech sector.

Table 2.4: Average Weekly Wages Paid in Selected Acton Businesses in 2009

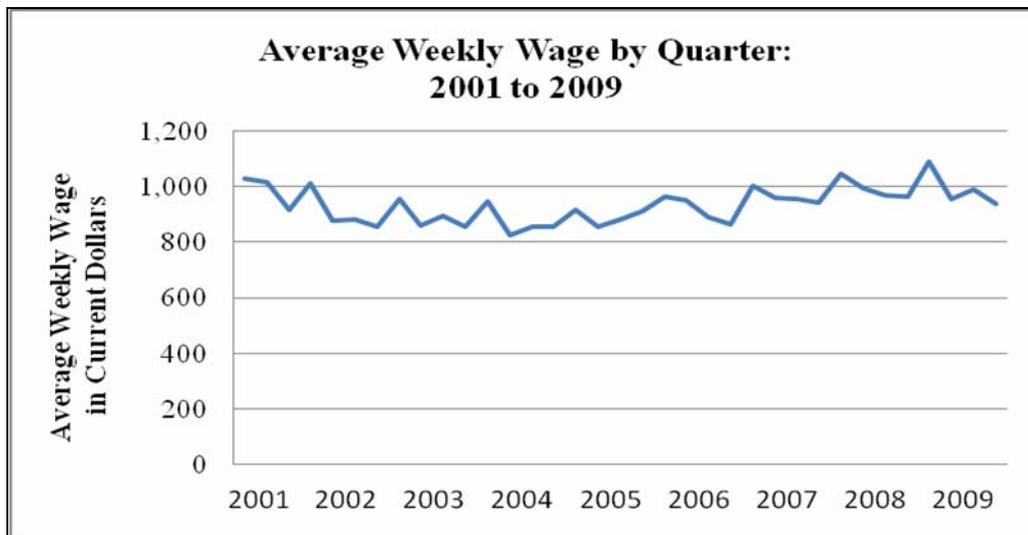
<b>Employment/Business Category</b>	<b>Establishments</b>	<b>Quarterly Wages</b>	<b>Employees</b>	<b>Ave. Weekly Wages</b>
<i>5 Highest Wage Categories</i>				
Scientific Research and Development Services	8	\$1,402,682	46	\$2,346
Computer Systems Design and Related Services	51	\$22,229,235	820	\$2,085
Wired Telecommunications Carriers	6	\$1,204,671	49	\$1,891
Electronic Markets and Agents/Brokers	24	\$2,124,714	94	\$1,739
Management & Technical Consulting Services	45	\$3,216,657	147	\$1,983
<i>5 Lowest Wage Categories</i>				
Private Households	38	\$175,040	41	\$328
Clothing Stores	12	\$754,915	182	\$319
Sporting Goods/Musical Instrument Stores	9	\$190,567	50	\$293
Limited-Service Eating Places (Fast-Food)	21	\$1,125,648	323	\$268
Used Merchandise Stores	3	\$41,077	14	\$226

Source: Massachusetts Department of Workforce Development.

*The table shows the wide variability in wage scales by employment category.*

Average weekly wages in Acton businesses varied by 32% during the period 2001 to 2009. As shown in Figure 2.6 they ranged from \$825 in 2004 to \$1,087 in 2008. Table 2.4 above shows the range of wages by business types. Only the highs and lows are shown.

Figure 2.6: Average Weekly Wage by Quarter, 2001 to 2009



Source: Massachusetts Department of Workforce Development data for Acton.

*The chart shows that the average weekly wages have been rather constant since 2001.*

## Labor Force and Unemployment

According to the Massachusetts Department of Workforce Development there were 11,757 people in the Acton Labor Force in September, 2010. In that month 11,079 of those people were employed and 678 were unemployed, resulting in an unemployment rate of 5.8%.

Labor force is defined as Acton residents who are employed or are unemployed and registered with the Mass. Department of Workforce Development as looking for a job. These employment figures, shown on Table 5, are not the same as the employment data listed above, which are for people employed in jobs located in Acton. Labor force employment refers to Acton residents who have a job located anywhere, or who are unemployed and registered as looking for a job. Unemployment data are subject to the fact that some people “drop out” of the labor force because they are discouraged about finding a job. If they are not registered as being unemployed they are not counted as unemployed. Therefore unemployment is often underestimated, especially in economic downturns when jobs are hard to find, while unemployment benefits are running out.

Table 2.5: Labor Force and Unemployment in Acton: 2000 to 2010 (September)

Year	Period	Labor Force	Employed Labor Force	Unemployed Labor Force	Acton Unemployment Rate	Mass. Unemployment Rate
2010	September	11,757	11,079	678	5.8	8.0
2009	Annual	11,725	11,016	709	6.0	8.4
2008	Annual	11,759	11,350	409	3.5	5.3
2007	Annual	11,754	11,406	348	3.0	4.4
2006	Annual	11,639	11,249	390	3.4	4.7
2005	Annual	11,625	11,231	394	3.4	4.8
2004	Annual	11,601	11,166	435	3.7	5.2
2003	Annual	11,786	11,213	573	4.9	5.8
2002	Annual	11,978	11,388	590	4.9	5.3
2001	Annual	11,907	11,559	348	2.9	3.7
2000	Annual	11,639	11,454	185	1.6	2.7

Source: Mass. Department of Workforce Development.

*The table shows that Acton has been consistently below the state unemployment rate, and that the employed labor force has been remarkably consistent since 2000.*

That Acton’s unemployment rate has historically been below the state rate reflects the fact that Acton has a highly qualified labor force. Table 2.6 shows the numbers of Acton residents in various labor force occupational classifications.

Table 2.6: Estimated 2010 Acton Population Over Age 16 by Occupational Classification

<b>Labor Force Category</b>	<b>Number</b>	<b>Labor Force Category</b>	<b>Number</b>
Architect/Engineer	659	Healthcare Support	102
Arts/Entertain/Sports	278	Maintenance Repair	99
Building Grounds Maintenance	190	Legal	191
Business/Financial Operations	844	Life/Physical/Social Sciences	393
Community/Soc Services	167	Management	2210
Computer/Mathematical	1346	Office/Administrative Support	1049
Construction/Extraction	216	Production	209
Educational/Training/Library	1077	Protective Services	124
Farming/Fishing/Forestry	33	Sales/Related	1300
Food Preparation/Serving	244	Personal Care/Services	291
Health Practitioner/Technicians	594	Transportation/Moving	141

Source: Claritas Update of the 2000 Census of Population to 2010 adjusted by Planners Collaborative to agree with the Department of Workforce Development Figures.

*The table shows a concentration of labor force in higher skills occupations.*

The largest number of people are in the high wage/high education categories of management, computer/mathematical, educational/training/library, sales related and office/administrative support. Substantial numbers of people are also in other high wage/high education categories of architect/engineer, business/financial operations and health practitioner/technicians.

The U. S. Census Bureau classifies 10,107 of Acton’s labor force as white collar, 665 as blue collar and 985 people as farm and service workers.

Labor force qualifications are especially important for economic development because prospective employers are attracted to communities that have the kinds of skills they need. Employers in the growth industries of health care, high-tech, bio-tech and energy conservation are looking for educated experienced people such as those found in the Acton labor force.

**Employment Location and Character**

The 2005 land use survey identifies 459 acres used for commercial purposes and 204 acres used for industrial purposes. Figure 2.7 shows the concentrations of retail, office and manufacturing businesses.

Many of Acton’s businesses are located along Route 2A (Great Road). For the most part, these are highway oriented retail and service businesses that serve town-wide and sub-regional markets. Businesses located in Acton’s villages serve more local markets, but some serve town-wide and sub-regional markets, such as the Ace Hardware Store in South Acton. The highway oriented businesses are characterized by large amounts of parking in front of linear storefronts, as shown in the following two photos. The third photo shows how off-street parking can be placed to the side or rear of buildings by bringing buildings out to the street line. It also illustrates mixed retail and residential use at a commuter rail station.

Economic Development



Shopping Center on Great Road (East Side)

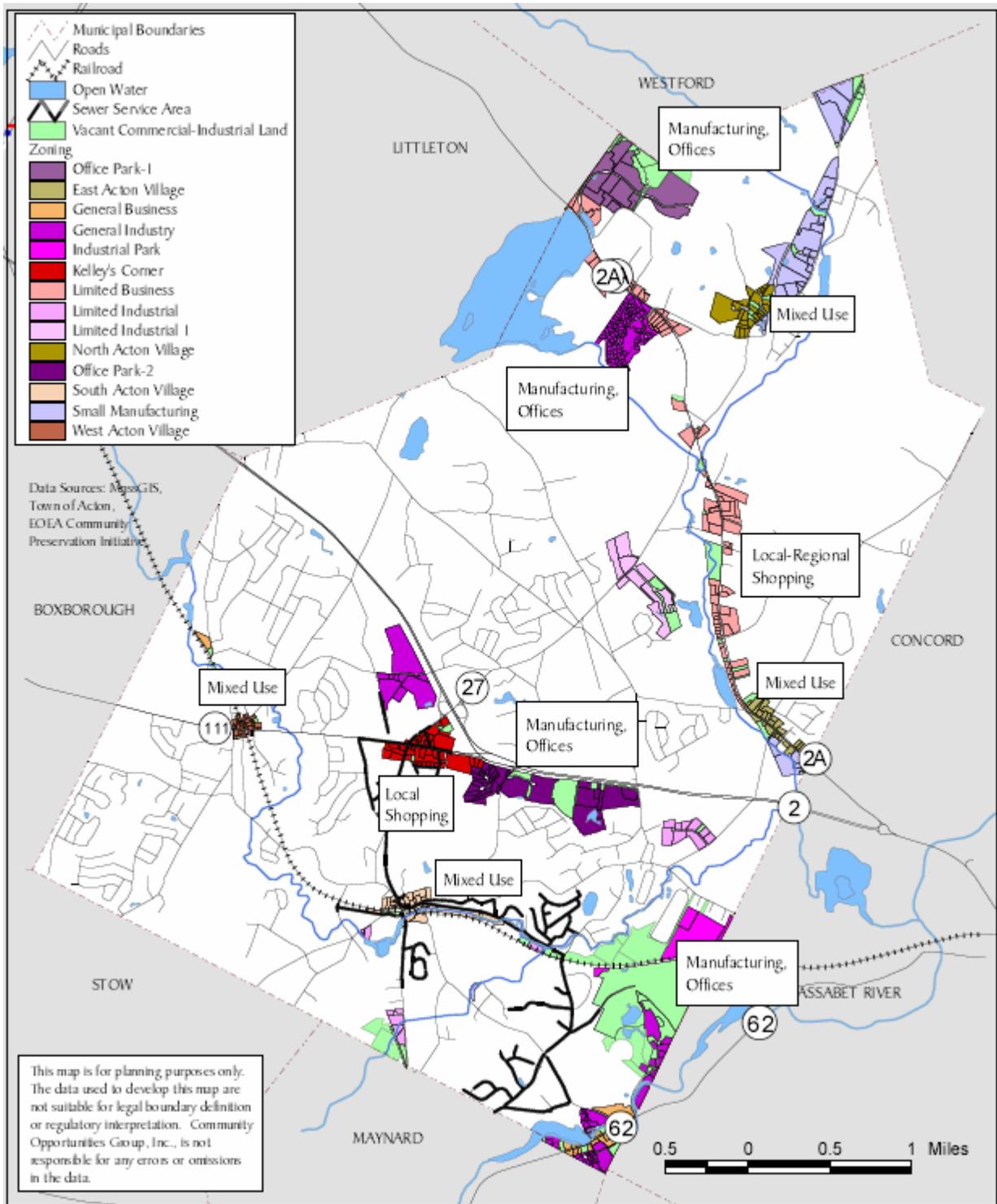


Shopping Center on Great Road (West Side)



Mixed use (retail and residential) building at the Manchester, MA commuter rail station

Figure 2.7: Commercial and Industrial Areas in Acton



Source: To Live in Acton Community Development Plan, Community Opportunities Group, Inc., 2004

Commercial areas contain both retail and services space. The industrial/manufacturing areas contain office space with services, as well as manufacturing space. Some of the office space

## Economic Development

is modern, well landscaped and buffered by vegetation to blend in with the wooded character of much of Acton, as shown in the following photos.



125 Nagog Park Office Building



Discovery Way Office Building

Acton also has some historic village architecture housing commercial uses, as shown in the photo below of West Acton Village.



West Acton Village

It is possible to redevelop commercial strip areas into village-type areas by extending buildings at right angles, breaking up façade lines and creating visual points of interest in front of buildings, along with landscaping and pedestrian paths that lead to gathering areas. Visual points of interest can be such items as small water bodies, fountains, clock towers, gateway arches, statues, kiosks, vender's carts, outdoor goods displays, memorial plaques, and other sculptural and streetscape designs. Two examples are shown in the following photos.



Buildings at Right Angles to Each Other



Small Gateway to an Outdoor Seating Area

**Retail Sales**

According to the U. S. Census Bureau Acton had retail sales of \$644,864,000 in 2007. Data for retail sales for 2002 and 2007 is shown on Table 2.7.

Table 2.7: Number of Establishments and Value of Retail Sales by Category in 2002 and 2007

Acton, Massachusetts Retail Category	2002		2007	
	No. of Establishments	Annual Sales (in thousands of dollars)	No. of Establishments	Annual Sales (in thousands of dollars)
Motor vehicle & parts dealers	11	176,913	12	294,361
Furniture & home furnishings stores	7	7,998	12	23,654
Electronics & appliance stores	7	17,094	5	2,529
Building material & garden equipment & supplies dealers	12	21,777	11	17,208
Food & beverage stores	18	97,022	17	118,715
Health & personal care stores	7	30,871	6	32,890
Gasoline stations	10	31,460	9	70,389
Clothing & clothing accessories stores	13	13,721	16	27,563
Sporting goods, hobby, book & music stores	12	14,058	12	11,903
General merchandise stores	2	D	1	D
Miscellaneous store retailers	20	D	18	D
Nonstore retailers	7	25,787	8	13,542
<b>Total</b>	<b>126</b>	<b>471,883</b>	<b>127</b>	<b>644,864</b>

Source: U. S. Census of Retail Trade. A **D** entry means data is not disclosed because competitors in the category, using their own information, would be able to accurately estimate data for other individual establishments.

*The table shows the variety of retail establishments in Acton, but also the dominance of motor vehicle and parts dealers and food and beverage stores in terms of dollar volumes.*

The data are in current dollars for each year. Adjusting the data for inflation yields a figure of \$543,939,530 for 2002 expressed in 2007 dollars. The consumer retail price index inflation rate between the two years was 15.27%. There was an increase of \$10,092,447 in total retail sales expressed in constant dollars between 2002 and 2007. The largest sales are in the motor vehicle and parts dealers and food and beverage stores. They accounted for 58% of all sales in 2002 and 64% in 2007. Sales figures for general merchandise stores and miscellaneous store retailers are not given because if they were published, proprietary data would be disclosed.

The number of total retail establishments was virtually unchanged between the two years, but some shifts by category did occur, as shown on Table 2.7. The largest change was the addition of five stores selling furniture and home furnishings. While the overall numbers by types of stores is remarkably constant between the two years, the sales volumes in some

## Economic Development

categories changed quite a bit. Categories that lost substantial sales were electronics and appliance stores and non-store retailers (vendors that sell from catalogs, vending machines, home delivery sales, door-to-door sales, and electronic shopping. Direct sales by farmers, manufacturers, and wholesalers to consumers are also included.). The one category whose sales grew substantially was motor vehicle and parts dealers. Sales in furniture and home furnishings stores also grew substantially in percentage terms, by 157% from a relatively small base in 2002. As mentioned this is the category that added five stores between 2002 and 2007.

Acton attracts shoppers from other towns, as indicated by comparing its 2007 total retail sales of \$644,864,000 with the income available for retail purchases that is possessed by Acton residents, estimated at \$392,000,000 in 2007. In contrast, the survey of Acton residents in 2008 indicated that about 57% of the respondents do more than one-half of their shopping outside of Acton. Both indicators suggest that new or expanded existing businesses could do well in Acton. In summary, Acton retailers attract outside shoppers and only capture less than half of in-town residents.

### Markets for Future Economic Development

It is clear that markets exist for some future economic development in Acton. Services, which occupy office space, are expected to continue to grow in the area. They have increased in Acton by 14% over the past 10 years. The fastest growing sector of Acton's economy has been professional and business services, which has grown by 16% over the last 10 years. Other office-using sectors such as education and health services and the information sector are expected to grow, according to the projections of the Metropolitan Area Planning Council (MAPC), shown on Table 2.8. Manufacturing is not expected to grow, reflecting an overall regional and national trend, but industrially zoned land can be devoted to office and research and development activities. Retailing activities should grow in proportion to population and income growth. As mentioned, retailing could also grow if more in-town and out-of-town shoppers can be captured by Acton's shops.

Table 2.8: Projected Employment Growth in Acton

<b>Employment Category</b>	<b>2000</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>
Manufacturing	1,963	1,886	1,820	1,760
Government*	200	215	226	235
Other Services	251	286	313	336
Leisure and Hospitality	670	756	823	879
Education* and Health Services	1,760	1,973	2,143	2,286
Professional and Business Services	2,068	2,399	2,657	2,872
Financial Activities	215	240	259	275
Trade, Transportation and Utilities	2,227	2,431	2,587	2,714
Natural Resource, Mining, Construction	390	432	479	517
Information	560	629	682	725
<b>Total Employment</b>	<b>10,304</b>	<b>11,247</b>	<b>11,989</b>	<b>12,600</b>

Source: MAPC

\*Note: Employment in schools is included in education services.

*The table shows moderate future growth in employment (a little over ½% per year) projected by MAPC.*

Additional sources of economic development are the small self-employed people, some of whom conduct businesses in their homes. There are estimated to be about 500 of these self-employed people in Acton. As their businesses grow, those in home offices or home shops could need to occupy larger quarters in commercially zoned areas. Some will find it advantageous to locate near other similar businesses and business services to facilitate their business growth. Another possible advantage for them can be realized by sharing the support services of secretarial, clerical, copying, editing and technical computer personnel.

**Property Taxes**

Property tax rates in Acton have been slowly increasing since 2003. By town and fiscal year the following are tax rates for the last eight years (Table 2.9). Please note the table is in two parts. The first part is for residential tax rates. The second part is for commercial and industrial tax rates for those four towns that have a split rate (e.g., commercial and industrial property is taxed at higher rates than residential property). In the other five towns including Acton the commercial and industrial tax rates are the same as the residential tax rate.

Table 2.9: Property Tax Rates in Acton and Surrounding Towns: Fiscal Years 2003 - 2010

Town	FY 2010	FY 2009	FY 2008	FY 2007	FY 2006	FY 2005	FY 2004	FY 2003
<b>Acton</b>	\$17.12	\$16.53	\$15.39	\$14.62	\$14.58	\$13.81	\$14.03	\$13.55
<b>Boxborough</b>	\$16.53	\$14.84	\$14.14	\$13.87	\$13.24	\$13.10	\$13.32	\$12.78
<b>Carlisle</b>	\$14.62	\$14.04	\$12.68	\$11.96	\$12.99	\$12.62	\$12.47	\$15.05
<b>Concord</b>	\$13.09	\$11.90	\$10.72	\$10.56	\$10.23	\$9.80	\$10.59	\$9.64
<b>Littleton</b>	\$14.63	\$13.85	\$12.62	\$12.11	\$12.17	\$11.35	\$11.32	\$11.15
<b>Maynard</b>	\$16.14	\$14.51	\$13.33	\$12.76	\$12.91	\$13.16	\$12.97	\$17.46
<b>Stow</b>	\$16.58	\$15.28	\$14.73	\$13.82	\$14.04	\$14.36	\$14.64	\$14.48
<b>Sudbury</b>	\$16.08	\$15.29	\$14.27	\$13.12	\$13.55	\$13.46	\$13.46	\$16.78
<b>Westford</b>	\$14.63	\$13.97	\$13.40	\$13.10	\$12.92	\$13.68	\$14.00	\$14.51
<b>Property Tax Rates for Commercial and Industrial Uses (Towns with a Split Tax Rate)</b>								
<b>Littleton</b>	\$23.11	\$22.76	\$20.57	\$20.11	\$19.02	\$17.98	\$18.16	\$10.36
<b>Maynard</b>	\$25.71	\$23.63	\$22.76	\$21.78	\$24.86	\$23.70	\$23.39	\$28.95
<b>Sudbury</b>	\$20.13	\$19.30	\$18.47	\$20.78	\$21.71	\$20.53	\$20.81	\$22.26
<b>Westford</b>	\$14.82	\$14.15	\$13.58	\$13.27	\$13.10	\$13.68	\$14.18	\$14.66

Source: Massachusetts Department of Revenue.

*The table shows that Acton has consistently had the highest tax rate in its sub-region since 2006.*

For the last eight years, Acton has had the highest residential tax rate of all towns around it, except for Stow which had a higher rate from 2003 to 2005. Concord has consistently had the lowest residential property tax rate. Acton has had a steady increase in its tax rate for all years except in FY 2005 when the rate decreased from \$14.03 to \$13.81. The average residential tax bill in Acton has been closer to the middle of the nine towns, but it has been consistently slightly above the average for these towns; (see Appendix table A2.4).

## Economic Development

A possible objective of the Master Plan is to reduce the reliance on the residential tax base for town revenues. Increased economic development is one way to do that. Table 2.10 shows Acton's percentage of town revenues raised by commercial and industrial uses and by personal property (mostly equipment in commercial and industrial properties). Commercial uses are retail and office and personal and business services. Industrial uses are manufacturing, wholesaling, and research and development.

Table 2.10: Amount and Percentages of Property Tax Revenues Raised from Residential, Commercial, Industrial and Personal Property in Acton and Surrounding Towns in 2010

Town	Residential	%	Commercial	%	Industrial	%	Personal Property	%	Total
Acton	\$55,769,176	87.1	\$5,497,569	8.6	\$1,675,574	2.6	\$1,110,816	1.7	\$64,053,135
Boxborough	\$11,935,703	75.1	\$1,341,843	8.4	\$2,286,998	14.4	\$326,253	2.1	\$15,890,797
Carlisle	\$19,903,018	98.2	\$144,139	0.7	\$19,309	0.1	\$193,075	1.0	\$20,259,541
Concord	\$59,621,336	90.6	\$5,100,090	7.8	\$406,458	0.6	\$669,685	1.0	\$65,797,569
Littleton	\$16,924,928	71.3	\$1,796,882	7.6	\$4,259,388	17.9	\$750,419	3.2	\$23,731,617
Maynard	\$17,711,760	79.1	\$1,780,763	7.9	\$2,158,385	9.6	\$751,915	3.4	\$22,402,823
Stow	\$17,698,621	91.2	\$919,565	4.7	\$417,504	2.2	\$364,708	1.9	\$19,400,398
Sudbury	\$59,811,853	91.3	\$3,158,019	4.8	\$1,294,359	2.0	\$1,264,922	1.9	\$65,529,153
Westford	\$47,940,063	85.7	\$3,297,328	5.9	\$3,618,276	6.5	\$1,072,015	1.9	\$55,927,682

Source: Massachusetts Department of Revenue.

Personal property is primarily the equipment owned by businesses.

*The table shows that the share of taxes that Acton raises from residential property is in the middle (median) of the nine towns.*

Acton raises a greater percentage of its property tax revenues from commercial property than any of the surrounding towns. However, Acton raises a very small percentage of revenues from industrial properties, compared to Boxborough, Littleton, Maynard and Westford. For personal property taxes, which are the smallest component of property tax revenues, all towns are in a fairly narrow range, with Maynard having the largest figure. Clearly, if Acton took measures to increase industrial development it could broaden its property tax base. Further commercial development in retailing and office space could broaden the property tax base as well, although it is already substantially larger than the industrial tax base. Another measure Acton might consider is to split its tax rate, taxing commercial and industrial property at a higher rate than commercial property. Littleton, Maynard, Westford and Sudbury currently do this. This however, would be a revenue raising action, not an action to promote economic development, although it could be done in a modest way that would be less likely to retard economic development.

## Overall Summary

Employment has grown steadily in Acton when viewed over the long term. It is expected to continue to grow. Average establishment size is small (12 employees per establishment). There are about 11,000 people employed in establishments located in Acton. The town accounts for 18.5% of total employment in the nine community sub-region made up of Acton and its surrounding towns. Acton has the most retail employment and retail sales of any of the nine communities but it is apparent that considerable retail purchases of Acton residents

are made out-of-town. While some Acton retailers attract out-of-town shoppers, all of Acton's retailers only capture less than half of in-town resident's retail purchases. Acton has two rapidly growing employment categories that provide a basis for future strong growth (Health Care and Social Assistance and Computer Systems Design and Related Services).

There were 11,757 people in the Acton Labor Force in September, 2010. In that month 11,079 of those people were employed and 678 were unemployed, resulting in an unemployment rate of 5.8%. This is considerably lower than the statewide rate of 8.0% and the national rate of 9.0%. Acton's lower unemployment rate results from its well educated and highly skilled labor force.

## **Opportunities and Challenges Posed by Existing Economic Development Conditions**

- Floor-area ratios (the ratio of square footage in buildings to the area of the lot on which they are located) in industrial areas and the villages can be increased to obtain greater density and more intensive utilization of the land.
- It is possible to seek home rule authority to establish a differential property tax policy in order to encourage and retain start-up ventures, micro-business incubators, and micro-business cooperatives in Acton.
- A graduated commercial property tax increase, starting from a lower base, would make Acton desirable for start-up companies and entrepreneurs by reducing their operating costs for three to five years.
- Economic development and housing affordability are mutually dependent public policy issues. Businesses are attracted by a local labor force. Many businesses need lower skill workers with lower wages for maintenance, security, and clerical jobs. Affordable housing helps to attract these kinds of workers and thus help economic development.
- Commercial development can be focused on creating more local opportunities to shop for goods and obtain services, and publicizing the shopping opportunities that already exist.
- Existing strip commercial development is unsightly but presents opportunities to redesign and redevelop it.

In conclusion, Acton has a strong and diverse economic mix of activities that provides a base for further growth. While further strengthening its role as a sub-regional employment center, Acton can improve its visual character by better design in new and redeveloped commercial and industrial properties.

## Appendix

Table A2. 1: Labor Force, Unemployment, Income and Household Size for Acton and Surrounding Towns

<b>Town</b>	<b>Labor Force</b>	<b>Unemployment</b>	<b>Unemployment Rate</b>	<b>Median Household Income</b>	<b>Average Household Size</b>
Acton	11,582	623	5.3%	\$115,677	2.80
Boxborough	2,998	163	5.4%	\$97,051	2.63
Carlisle	2,577	146	5.7%	\$160,903	3.02
Concord	8,040	425	5.3%	\$127,563	2.60
Littleton	4,851	309	5.4%	\$98,555	2.83
Maynard	6,161	414	6.7%	\$77,304	2.44
Stow	3,600	187	5.2%	\$122,500	2.93
Sudbury	8,621	486	5.6%	\$147,383	3.15
Westford	12,057	730	6.1%	\$119,051	3.07

Sources: Mass. Department of Workforce Development for Labor Force and Unemployment. (Data for December, 2010) U. S. Census Bureau for Income and Households. (Data estimated for 2009 in the Census Bureau American Community Survey 5-Year Estimates)

Table A2. 2: Median Income Reported in the 2000 Census of Population and the Census Bureau's American Community Survey for 2009

<b>Town</b>	<b>2000</b>	<b>2009</b>
Acton	\$91,624	\$115,667
Boxborough	\$87,618	\$97,051
Carlisle	\$129,811	\$160,903
Concord	\$95,897	\$127,563
Littleton	\$71,384	\$98,555
Maynard	\$60,812	\$77,304
Stow	\$96,290	\$122,500
Sudbury	\$118,579	\$147,383
Westford	\$98,272	\$119,051

Source: U.S. Census of Population for 2000 and American Community Survey for 2009  
2000 figures are as reported to the Census Bureau. 2009 figures are inflation adjusted estimates.

Table A2.3: Average Residential Assessed Values

Town	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
ACTON	\$293,642	\$331,310	\$380,802	\$436,456	\$466,751	\$499,657	\$529,771	\$542,140	\$523,109	\$507,466	\$512,103
BOXBOROUGH	\$304,260	\$330,200	\$362,751	\$488,223	\$485,822	\$508,428	\$551,921	\$554,010	\$565,638	\$545,872	\$506,349
CARLISLE	\$394,578	\$490,453	\$501,450	\$569,094	\$723,044	\$730,874	\$738,114	\$822,143	\$825,035	\$777,301	\$771,254
CONCORD	\$467,344	\$472,140	\$674,799	\$754,153	\$754,200	\$898,455	\$906,265	\$922,372	\$944,487	\$899,866	\$835,697
LITTLETON	\$203,375	\$233,144	\$236,809	\$295,946	\$346,016	\$362,927	\$382,382	\$415,767	\$409,101	\$384,156	\$370,111
MAYNARD	\$169,504	\$200,537	\$200,783	\$201,723	\$293,737	\$296,249	\$333,897	\$354,013	\$354,178	\$337,368	\$320,390
STOW	\$246,690	\$293,531	\$346,305	\$365,842	\$388,311	\$423,035	\$457,435	\$483,765	\$471,013	\$463,581	\$445,062
SUDBURY	\$359,388	\$426,486	\$432,961	\$479,865	\$596,201	\$601,849	\$660,961	\$702,816	\$683,843	\$662,080	\$650,508
WESTFORD	\$239,447	\$263,981	\$304,460	\$347,271	\$385,413	\$416,940	\$461,379	\$470,337	\$467,844	\$459,180	\$450,723

Source: Boston.com reporting data from Massachusetts Department of Revenue

Table A2.4: Average Residential Property Tax Bill

Town	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	<a href="#">% change 09-10</a>	<a href="#">% change 05-10</a>	<a href="#">% change 00-10</a>
ACTON	\$5,118	\$5,410	\$5,754	\$5,914	\$6,549	\$6,900	\$7,724	\$7,926	\$8,051	\$8,388	\$8,767	4.50%	27.10%	71.30%
BOXBOROUGH	\$5,136	\$5,118	\$5,612	\$6,239	\$6,471	\$6,660	\$7,307	\$7,684	\$7,998	\$8,101	\$8,370	3.30%	25.70%	63.00%
CARLISLE	\$7,023	\$7,367	\$7,913	\$8,565	\$9,016	\$9,224	\$9,588	\$9,833	\$10,610	\$10,913	\$11,276	3.30%	22.20%	60.60%
CONCORD	\$5,655	\$5,921	\$6,633	\$7,270	\$7,987	\$8,805	\$9,271	\$9,740	\$10,125	\$10,708	\$10,939	2.20%	24.20%	93.40%
LITTLETON	\$2,866	\$2,989	\$3,128	\$3,300	\$3,917	\$4,119	\$4,654	\$5,035	\$5,163	\$5,321	\$5,415	1.80%	31.50%	88.90%
MAYNARD	\$3,043	\$3,371	\$3,552	\$3,522	\$3,810	\$3,899	\$4,311	\$4,517	\$4,721	\$4,895	\$5,171	5.60%	32.60%	69.90%
STOW	\$4,472	\$4,887	\$5,091	\$5,297	\$5,685	\$6,075	\$6,422	\$6,686	\$6,938	\$7,084	\$7,379	4.20%	21.50%	65.00%
SUDBURY	\$5,987	\$6,636	\$7,399	\$8,052	\$8,025	\$8,101	\$8,956	\$9,221	\$9,758	\$10,123	\$10,460	3.30%	29.10%	74.70%
WESTFORD	\$3,946	\$4,572	\$4,743	\$5,039	\$5,396	\$5,704	\$5,961	\$6,161	\$6,269	\$6,415	\$6,594	2.80%	15.60%	67.10%
AVERAGE	\$4,805	\$5,141	\$5,536	\$5,911	\$6,317	\$6,610	\$7,133	\$7,423	\$7,737	\$7,994	\$8,263	3%	26%	73%

Source: Boston.com reporting data from Massachusetts Department of Revenue

## Chapter 3: Natural Resources

This chapter inventories Acton's existing natural resources. It includes:

- Relationship of Natural Resources to Planning Goals
- Current information on Acton's
  - geology and topography,
  - soils,
  - surface water resources,
  - major habitats and wildlife resources, and
  - rare species.
- Opportunities and Challenges posed by the Existing Natural Resource Conditions.

### **Why Acton's Existing Natural Resources are Important to the Comprehensive Plan**

Acton's natural resources provide services to the citizens of Acton. Clean water and air are critical for the town's future. Healthy ecosystems and habitats with a diversity of wildlife are indicators that families can live healthy lives and enjoy their surroundings. Measures to protect natural resources will be important strategies for the Comprehensive Plan. One of the primary ways to help preserve the Town's character that was identified in developing a vision for Acton's future was the preservation and additional acquisition of open space.

### **Relationship to Planning Goals**

*Goal: Preserve and Enhance Town Character:*

Natural resources are major factors contributing to Acton's unique character. The pattern of the town's early development was based on good land for pastures and water resources for power for mills. The topography, forests, surface water features, wetlands, geological features, and agricultural lands, all contribute to town character and are important natural resources.

*Goal: Ensure Environmental Sustainability:*

Living sustainably is based on living within the limits of our natural resources—water, air, energy, and food—without harming those natural resources for future generations. Increasing sustainability implies protecting natural resources..

*Goal: Increase Connections*

Protecting natural resources can also help develop connections. Trails through protected natural areas that facilitate the ability to walk or bike between destinations, schools, shopping, and neighborhoods can be developed if a system of inter-connected open spaces are protected. Sharing experiences about wildlife and natural areas can also increase connections and communication.

*Goal: Enable Diversity and Inclusion:*

Access to natural resources contributes to diversity. We all rely on natural resources and share some attitudes and values about nature. Maintaining and protecting natural areas supports those shared values and also allows diverse relationships with nature.

## Natural Resources

### *Goal: Provide Places for Gathering:*

Natural areas can provide important places for gathering. Nature can bring people together for enjoyment and learning.

### *Goal: Maintain and Enhance Town Assets:*

Water, wildlife, soils, and natural landscapes are important town assets. Pure drinking water is arguably the town's most important asset and understanding the relationship between existing future development and water quality is critical for protecting it.

### *Goal: Maintain and Improve the Financial Well-being of the Town*

Investment in the protection of Acton's natural resources must be done prudently and with consideration of competing resources, but preserving these resources can save money in the future by helping the town to meet regulatory requirements, quality drinking water, and, in some cases, serve as an alternative to development of specific parcels of land that could require more town services than it contributes in taxes.

## **Summary of Key Points**

### *Geology and Topography*

- The underlying bedrock is Nashoba Formation that dates back between 430 and 500 million years.
- Acton Granite, a younger intrusion into the underlying formation, was a source of foundation stone for many older buildings.
- The topographic character of Acton is due to glacial activity that deposited glacial till, drumlins (Great Hill), kettle-holes (Grassy Pond), eskers (Acton Arboretum), kames (Forest Road west of Hosmer Street), and alluvial and swamp deposits along stream beds.
- The average elevation is about 230 feet, the highest point is 430 feet, and the lowest is 130 feet.

### *Soils*

- In general Acton soil groups are moist, rough and stony in character with many areas of sandy loam. Wet soils are located in stream valleys and certain areas have ledge.
- High ground water, stoniness, and excessively drained soils present challenges for location of underground septic systems in many areas, but 80% of Acton homes use these systems. (See Chapter 7 for further discussion.)

### *Surface Water Resources*

- There are two major watersheds – Nashoba Brook and Fort Pond Brook.
- Acton Stream Teams (<http://www.actonstreams.org>) has done visual shoreline monitoring and educates the public about the town's 36 streams (more than 32 miles).
- The state has classified Acton's surface waters, with the exception of Nagog Pond, as Class B. This classification indicates the waters are generally suitable for primary and secondary contact recreation, may be used for water supply with appropriate treatment, and will provide good wildlife habitat.
- Nagog Pond (Class A) was assigned to Concord by the General Court in 1884 for its water supply.

## Natural Resources

- Excess nutrients are a problem in some of Acton's surface water bodies. Much of the excess nutrients come from storm water run-off. Drainage from impervious surfaces, parking lots, streets, and the roofs of structures impacts surface water quality. All of these sources of storm water run-off carry pollutants that end up in the town's wetlands and waterways. In response to these problems the Town has developed a Storm Water Management Plan and a Nonpoint Source Control Program. These efforts identify sources of pollutants and steps to mitigate their impacts.
- Acton watersheds account for 65% of the recharge of its groundwater aquifers – the source of the town's drinking water. The other 35% is contributed by watersheds that are not wholly within Acton.

### *Major Wildlife Resources*

- Over the last 100 years, Acton, like many surrounding communities, has been transformed from a community dominated by fields and orchards, to a one dominated by suburban development and forests.
- Acton includes five “hotspots” for biodiversity identified in the state's BioMap 2 Project
  - NARA/Wills Hole/Kennedy/Marshall Land/Nashoba Sportsman Club (partially town-owned and Zone II Wellhead Protection Area),
  - Grassy Pond (partially town-owned),
  - Assabet River in southeastern corner of town, including portion of Zone II Wellhead Protection Area,
  - Heath Hen Meadow, a wetland area and wetlands along the town boundary with Stow and Maynard, including a portion of a Zone II Wellhead Protection Area, and
  - Reformatory Fields/Weatherbee Conservation Land, including portion of a Zone II Wellhead Protection Area.
- Acton also has state-designated Priority Habitats of Rare Species.
- Acton has approximately 7,000 acres of forest land (more than 50% of its total area). This total includes small private holdings such as back land on residential lots as well as larger forested areas on public open space.
- Wetlands, both forested and non-forested, comprise nearly 13% of the Town's area and are important habitats.
- There are 23 certified vernal pools and 142 potential vernal pools – important habitat for wood frogs, salamanders, etc.
- Acton includes habitats for 9 state-listed rare plant or animal species. These habitats are concentrated along the major brooks.

## Geology and Topography<sup>1</sup>

The topography of the town is best described as hilly, with a series of glacial drumlins separated by broad glacial outwash valleys. The general elevation is about 230 feet above mean sea level, with one hill rising to 430 feet above sea level. The lowest elevation of the town, 130 feet above sea level, is located at the Concord town line.

The bedrock underlying Acton is known as the Nashoba Formation (Hansen, 1956; Alvord, 1975). These rocks were originally sandstones and similar sedimentary rocks, but were altered by heat and pressure over geologic time into metamorphic rocks and then reshaped and altered during the continental ice ages. The Formation is largely gneiss, a relatively coarse-grained rock that shows different layers of minerals upon close examination. There is considerable variety in this mineral composition, and numerous subdivisions have been identified. Most of the Formation in Acton is biotite gneiss, in which one can see small flat crystals of the mineral biotite, a black form of mica. The formation is relatively old, dating back to the Ordovician geologic period that occurred between 430 and 500 million years ago.

The Nashoba Formation was subjected to extreme forces over geologic time as at least one mountain range rose and was completely eroded away. As a result, the Formation is very folded and faulted (Goldsmith, 1991). The various subgroups within the Formation are mapped as elongated bands that run from northeast to southwest. Faults separate the Formation from the neighboring rocks to the northwest and southeast. These faults are minor and do not present a significant geologic hazard. Nonetheless, small magnitude earthquakes do occur once every year or two. If residents even notice these earthquakes they often mistake them for a large truck passing, although sometimes they can be accompanied by a sudden loud noise like a cannon shot.

The Nashoba Formation is punctuated in places by younger volcanic rocks, known as Acton Granite. These deposits were formed when molten magma intruded from the subsurface into the Nashoba Formation. The intrusions, which are relatively small features, were mined in the past in several small quarries in Acton. Old quarries were located in North Acton off Quarry Road, Knox Trail, Lexington Drive, and in the Acorn Park subdivision. Foundation stones seen in colonial houses and barns around Acton are usually Acton Granite.

Acton's current topographic character is largely determined by younger deposits that overlie the bedrock. These varied formations were deposited during the continental ice ages that ended about 14,000 years ago. During the ice ages, sheets of ice, over a mile thick in places, covered Canada, New England, and the north central United States. The glaciers formed, melted away, and reformed although only the effects of the most recent ice age are clearly discernible. During

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<sup>1</sup>

*References:*

Alvord, D.C., 1975. Preliminary Bedrock Geologic Map of the Westford and Billerica Quadrangles, Massachusetts. Open File Report 75-387. United States Geological Survey, Washington, D.C.

Goldsmith, R., 1991. "Stratigraphy of the Nashoba Zone, Eastern Massachusetts: An Enigmatic Terrain." In: N.L. Hatch, Editor. The Bedrock Geology of Massachusetts. Professional Paper 1366-E-J. United States Geological Survey, Washington, D.C.

Hansen, W.R., 1956. "Geology and Mineral Resources of the Hudson and Maynard Quadrangles, Massachusetts." Geological Survey Bulletin 1038. United States Geological Survey, Washington, D.C.

each ice age, massive sheets of ice moved over the landscape, scraping and re-depositing rocks and sediment. In Acton, the last glacier moved more or less due south. Glacial striations, marks scraped by the moving glacier and the rocks it carried, can still be seen on smooth rock outcrops.

The ice ages left behind numerous and varied geologic deposits, which were altered during the post-glacial period as the melting glacier produced eroding torrents of water. Much of Acton is blanketed by **glacial till**, a compact mixture of sediment. Till is composed of a wide range of particle sizes, from very fine clay to large boulders. These various grain sizes were compressed under the moving glaciers into a poorly sorted mixture that often resists drainage. The high water tables and poor drainage that interfere with on-site wastewater treatment systems in much of Acton are caused by these till deposits. The rocky soils that discourage farming in New England are also a consequence of the glacial till.

One striking manifestation of till are **drumlins**, elongated hills aligned with the direction of movement of the glacier. There are nine drumlins in Acton, ranging in height from 310 to 430 feet above mean sea level. They include Faulkner Hill in South Acton, Wright or Mead's Hills in West Acton, and Great Hill near the intersection of Routes 27 and 111.

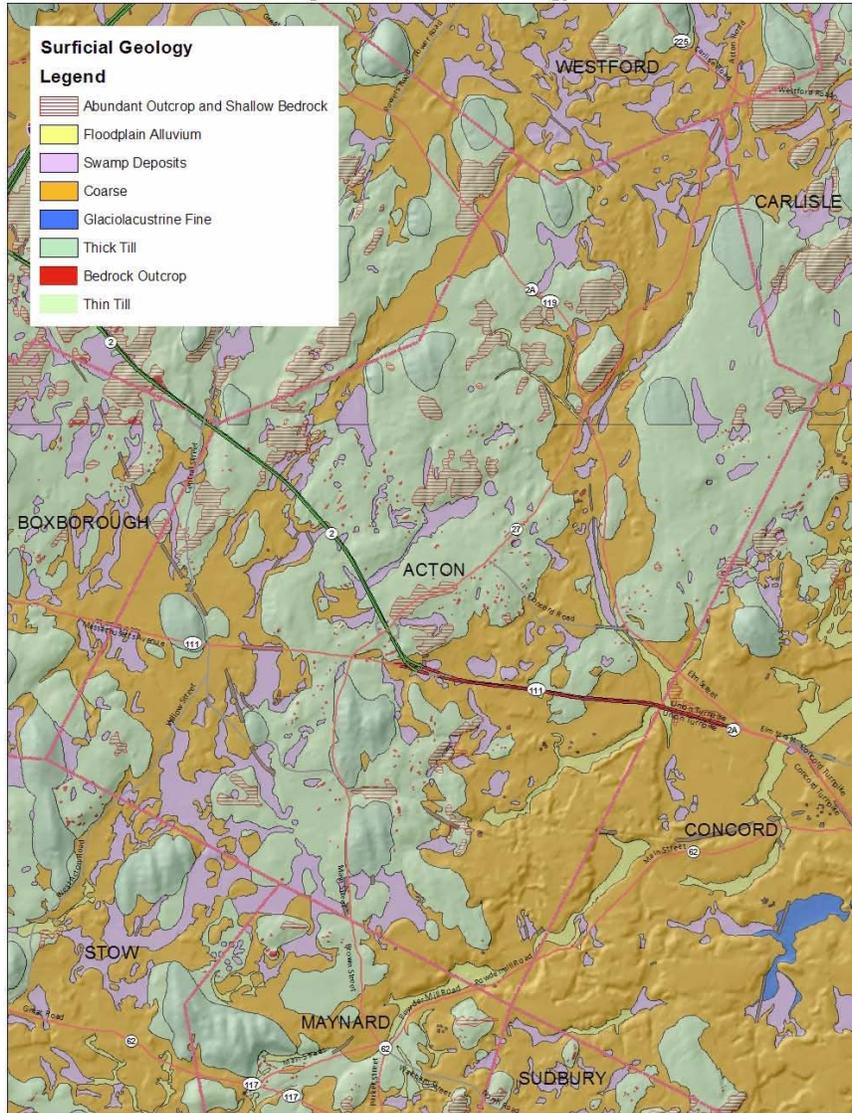
Lower elevations are generally occupied by glacial **outwash** deposits, sand and gravel deposited in water running from the melting glaciers. Fine-grained clay and silt were washed from these deposits by the running water, and therefore these soils are more open and drain more readily than the till soils. All of Acton's public water-supply wells are located in sand and gravel outwash, and these deposits generally require greater protection from pollution than the areas covered by till.

The sand and gravel outwash deposits are punctuated by a variety of intriguing glacial features. Blocks of ice left by the wasting glacier eventually melted to create "**kettle-holes**" in the outwash. Grassy Pond and Will's Hole formed in such glacial kettle holes. Today, these two ponds have evolved into quaking bogs with mats of sphagnum moss floating on the water. With time, the floating mats will slowly close in on the open water and eventually the ponds will disappear and give way to meadows.

**Eskers**, long sinuous gravel deposits, are also found in Acton. These deposits were made in ice tunnels under the wasting glacier. Today, they stand as narrow causeways, 10 to 30 feet high, winding through the woods. Were it not for their tortuous path, one could mistake them for constructed road or railroad beds. Eskers are found in the Town Forest in North Acton and in the Acton Arboretum.

Other glacial deposits include kames, kame terraces, and kame deltas. **Kames** are relatively flat-topped hills that formed in holes in the ice sheet. **Kame terraces** were formed by glacial melt-water streams along the margin between the wasting ice sheet and higher valley walls. Where these streams flowed off the ice onto ice-free land they formed **kame deltas**. A large kame delta occupies the area south of Fort Pond Brook along the Concord town line and west to Parker Street. A kame terrace lies to the north of the brook along School Street. Forest Road runs on top of a kame west of Hosmer Street.

Figure 3.1: Surficial Geology



Acton's geology continues to change in present times, and there are geologic formations that postdate the ice ages. These include **swamp deposits**, which are forming in wetlands throughout the town, and **alluvium**, which forms in stream beds.

There are few commercial rock or mineral deposits in Acton. Historically, Acton Granite was quarried and deposits of bog iron were used to produce a low quality ore. Several gravel pits were recently active, producing aggregate from esker and glacial outwash deposits.

There are generally no features that pose significant geologic hazards or limitations on development. Perhaps the only exceptions are the recent swamp deposits, which have poor bearing capacity for structures. These deposits generally occur within wetlands, which are precluded from development by town bylaw and the Massachusetts Wetlands Protection Act. The Acton Planning Department also reports that there were some recent relatively small landslides along the Assabet River that started in Concord and ended up in Acton.

### Soils<sup>2</sup>

Acton soils are predominantly moist, but rough and stony in character, with many areas of sandy loam. Wet soils are associated with the stream valleys, and certain areas of town have a number of ledge outcroppings.

The Natural Resources Conservation Service has mapped associations of generalized soils for broad areas which have a distinctive pattern of soils, relief, and drainage. Each association on the generalized soil map (Figure 3.2) is a unique natural landscape. Typically, an association consists of broad areas of one or more major types of soils and some additional areas of minor soil types. The association is named for the major soils included in the broad area. The components of one association can occur in another, but in a different pattern. More detailed information on soils is included in the appendix.

The generalized soil map (Figure 3.2 – Generalized Soils Map) can be used to compare large areas for general land uses. Areas of suitable and unsuitable soils for different uses can be inferred from the map. Because of its small scale, the generalized map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. More detailed mapping is available for those purposes. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management. Any particular site can have a variety of soil types.

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<sup>2</sup> The soil types identified in this report were compiled by the Natural Resources Conservation Service and reported in "Soil Survey of Middlesex County, Massachusetts", 2009.

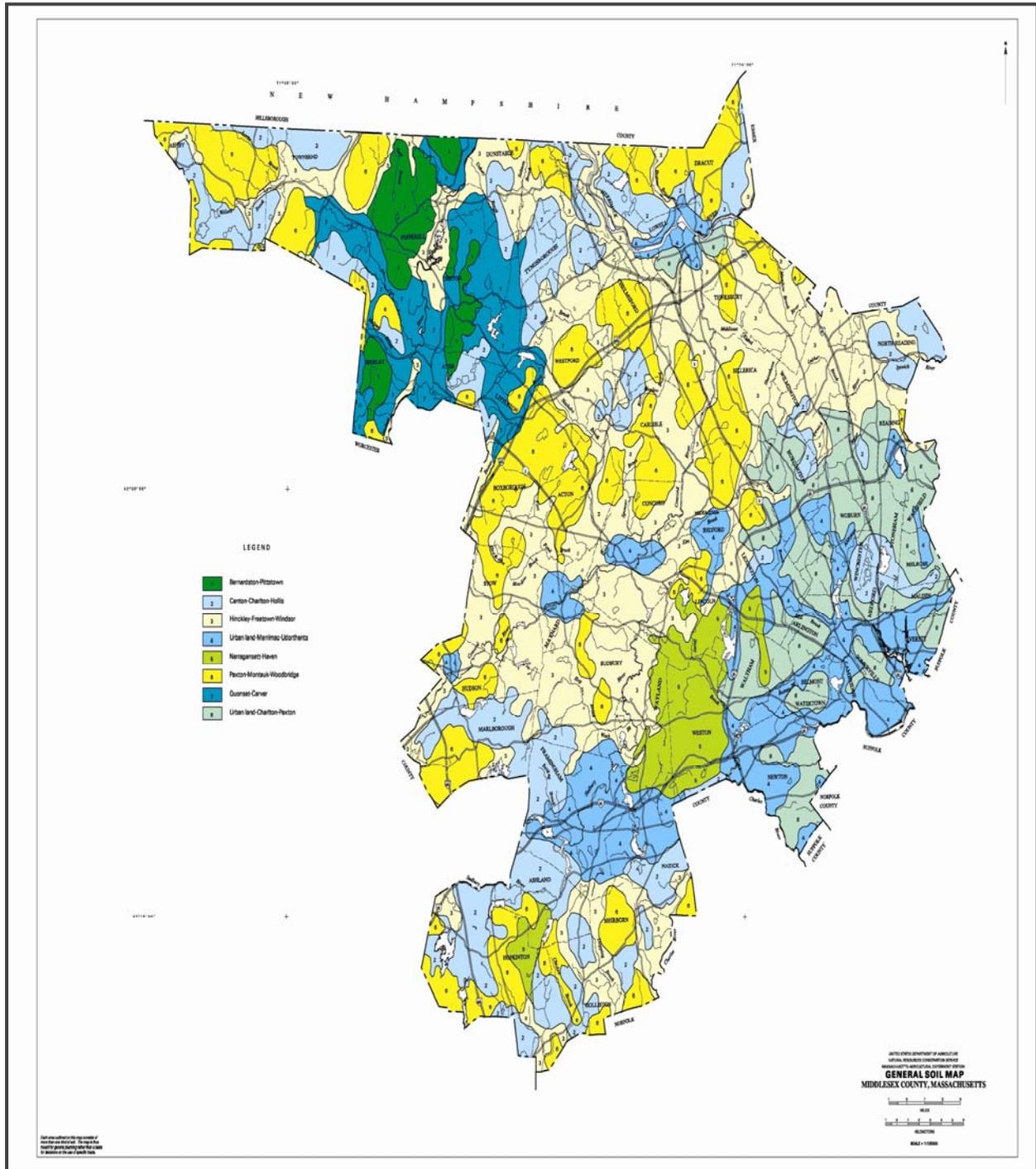


Figure 3.2-Generalized Soils Map

*Hinckley-Freetown-Windsor Association (beige, #3 on Figure 3.2)*

Nearly level to steep, very deep, excessively drained, sandy soils that formed in glacial outwash, and nearly level, very deep, very poorly drained, organic soils.

Excessively drained Hinckley soils are on glacial outwash plains and terraces. Nearly level, very poorly drained Freetown soils are in large depressions and along streams and typically have layers of muck, mucky peat, and peat to a depth of about 65 inches.

Excessively drained Windsor soils are on glacial outwash plains, and the tops of terraces and deltas. Typically, the soils have an 8 inch surface layer of loamy sand. The 15 inch subsoil consists of loamy sand in the upper part and sand in the lower part. The substratum consists of gravelly sand and sand.

The dominant minor soils in this generalized map unit are the somewhat excessively drained Merrimac soils on smooth-sloping plains, moderately well drained Sudbury and Deerfield soils on low plains and in swales, and poorly drained Wareham and Raynham soils and very poorly drained Scarboro soils in depressions and along drainage-ways.

This association is mostly forested. Some areas are cropland. Many areas are used for home sites. A few isolated areas are used as sources of sand and gravel.

This association has “severe limitations” for onsite sewage disposal, as the Hinckley and Windsor soils readily absorb but may not adequately filter and treat the effluent from septic tanks and may contaminate ground water resources. This association is poorly suited to cultivated crops and pasture as the Hinckley and Windsor soils are droughty and require irrigation for optimum crop production. Freetown soils have severe limitations for urban use because they are wetlands.

*Paxton-Montauk-Woodbridge Association (yellow, #6 on Figure 3.2)*

Nearly level to steep, very deep, well drained and moderately well drained, loamy soils formed in glacial till; on drumlins and smooth-sloping ground moraines.

Well drained Paxton soils are on top slopes and side slopes of drumlins. Typically, the soils have a 7 inch surface layer of sandy loam. The subsoil has fine sandy loam in the upper part and sandy loam in the lower part. The approximately 43 inch substratum is firm, sandy loam in the upper part and very firm, fine sandy loam in the lower part.

Well drained Montauk soils are on smooth sloping ground moraines and broad, irregularly shaped drumlins. Typically, the soils have a 7 inch surface layer of fine sandy loam. The subsoil is about 22 inches thick and consists of sandy loam. The substratum is firm, gravelly loamy sand.

Moderately well drained Woodbridge soils are in drainage swales and on top slopes, upper side slopes, and toe-slopes of drumlins. Typically, the soils have a 2 inch surface layer of fine sandy loam. The subsoil of fine sandy loam has distinct, brown and yellowish red masses of iron accumulation. The substratum is firm, fine sandy loam with similar red masses of iron accumulation.

The dominant minor soils are moderately well drained Scituate soils on drumlins and moraines and poorly drained Ridgebury and very poorly drained Whitman soils in depressions and

drainage-ways. Many small areas of very poorly drained Freetown and Swansea soils occur in depressions and small narrow valleys.

This association is mostly forest. Some areas are orchards, hay, or pasture. Some areas are used for home sites. It has “severe limitations” for onsite sewage disposal because of restricted permeability and a seasonal high water table. Where slopes do not exceed 15 percent, this map unit is well suited to cultivated crops, orchards, pasture, and has good potential for conifer production. Areas with slopes in excess of 15 percent are suitable for orchards, but are subject to erosion.

*Urban land-Merrimac-Udorthents Association (blue, #4 on Figure 3.2)*

Nearly level to strongly sloping, very deep, somewhat excessively drained Merrimac soils on broad outwash plains and valleys; areas of Urban land and Udorthents (man-altered land<sup>3</sup>).

Nearly level and gently sloping, somewhat excessively drained Merrimac soils are in areas where less than 85 percent of the land is covered with impervious surfaces, and most areas are in intricate patterns with Urban land. Typically, the soils have a surface layer of fine sandy loam about 9 inches thick. The subsoil is gravelly sandy loam in the upper 9 inches and gravelly loamy coarse sand in the lower 8 inches. The substratum is gravelly coarse sand in the upper part and gravelly coarse sand in the lower part.

Udorthents consist mainly of areas where soil has been removed and of areas that have been filled. Where the surface soil has been removed, loamy or sandy subsoil and substratum layers are exposed. The fill consists of soil, rubble, refuse, and spoil from dredging, and ranges from 2 to 20 feet thick.

The dominant minor soils are well drained Canton, Charlton, and Paxton soils on uplands. Also included are moderately well drained Sudbury soils in swales and depressions and excessively drained Hinckley soils on knolls and low ridges. Freetown, Swansea, and Scarboro soils occur in isolated wetlands.

This association is mostly in residential, commercial, and industrial developments. Because of the Merrimac soils, this association has severe limitations for septic tank absorption fields, but since most of these areas are served by municipal water and sewage disposal systems, there are few limitations for additional development, as far as the major soil components are concerned.

*Prime farmland*

There are 547 acres of prime agricultural soils and a limited number of active farms in town that total about 167 acres according to the land classification of the Acton Assessors (Chapter 61 – 97 acres, other 70 acres). Much of the prime farmland is no longer in agricultural use.

Soil classes are listed and briefly described in the appendix.

**Soils Discussion**

Seventy-five percent of Acton’s area has soils that are classified by the Natural Resources Conservation Service as having “severe limitations” for on-site septic systems. Still more than 80% of the developed parcels in Acton have such systems. Some of these have been built with “mounded” systems, where additional soil has been brought in to aid filtration and some are on

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<sup>3</sup> Urban land consists of areas where 85 percent or more of the land is covered with impervious surfaces such as buildings and pavement.

sites that have sufficient area to find enough good soil to design a functional system. The Acton Health Department approves and monitors (at time of sale – Title V) these private on-site septic systems. The Town's 2004 Comprehensive Water Resources Management/ Environmental Impact Report states that over 90% of these existing systems are adequate and are expected to continue to function for the planning period – 2024. About 3.5% of the remaining 10% are appropriate for on-site, innovative/ alternate (I/A) technology and/or mounded systems. The other 6+% are systems that would require off-site solutions for the wastewater disposal problems and they are dispersed throughout the town. Attempting to service only the dispersed lots with off-site solutions would be technically impractical and cost prohibitive. The lots identified as needing off-site solutions could be joined by adjacent lots to create independent service areas that may be more economically feasible. Alternatives for these sites are being reviewed. See additional discussion in the Chapter 7: Facilities and Services.

The development issues imposed by soils include high ground water, which may limit the installation of septic systems and basements; stones or boulders, which may increase construction costs; or shallow soils over bedrock, which may limit construction and increase costs. Slope is more of a limitation for commercial development than it is for residential development. Excessively drained soils may not provide sufficient filtration for on-site septic systems causing contaminants to reach groundwater resources. All of these factors can be overcome at additional expense, and with high real-estate prices those costs are passed on to the purchaser. Contamination of groundwater is a concern for the Acton Board of Health and they have an aggressive program of inspections and regulations to address the concern.

## Surface Water Resources

Among Acton's prize natural resources are two major streams: Fort Pond Brook, fed by flows from Grassy Pond, Guggins Brook, and Heath Hen Meadow Brook, flows through the western and southern portions of town. Nashoba Brook flows across the eastern portion of the town; Butter Brook, Will's Hole Brook and Nagog Brook are its tributaries. Spencer Brook, and its tributaries, drains the extreme northeast corner of town. Since approximately 75% of the watershed areas for Fort Pond and Nashoba Brooks are located in Acton, the quality of these brooks depends on how well they are protected. The streams and associated wetlands mentioned above provide an estimated average of 65% of the recharge of the aquifers, the source of Acton's drinking water.<sup>4</sup>

Acton Stream Teams ([www.actonstreams.org](http://www.actonstreams.org)) founded in 1998, maintains active public education programs to reduce sources of pollution and excessive nutrients to Acton's waterways and to raise awareness of the wildlife habitat and recreational opportunities provided by Acton's streams. They have done visual shoreline surveys, written descriptions of 36 stream areas along the town's 13 named streams (more than 32 miles), and installed 26 signs identifying the streams in Acton. The Stream Teams also perform annual cleanups.

Other than the small pond at the North Acton Recreation Area, NARA, the town does not have any large ponds or lakes that are used for public swimming as do many surrounding towns. Ice House Pond, located off Concord Road, was used as a source of ice for many years. Grassy Pond, with its bog-like characteristics, is habitat for many rare plants and home to a diverse

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<sup>4</sup> Town of Acton Open Space and Recreation Plan 2002 – 2007.

wildlife population. Part of Nagog Pond is located in Acton (the other part is in Littleton) although water supply rights were assigned to Concord by the General Court in 1884.

The state has classified Acton's surface waters, with the exception of Nagog Pond, as Class B. This classification indicates the waters are generally suitable for primary and secondary contact recreation, may be used for water supply with appropriate treatment, and will provide good wildlife habitat. Nagog Pond is classified as Class A water, reflecting its high quality and use by Concord for drinking water.

In addition to the nine acre pond at NARA, Acton has numerous water-related recreational options. Some of the town's waters are popular for fishing, skating, boating, and wildlife observation. Many of the ponds and streams can only be accessed by hiking through town conservation lands, but some, such as Ice House Pond, are adjacent to parking. (See the Open Space and Recreation chapter for more information on water-based recreation.)

### **Storm Water Management Plan**

Excess nutrients are a problem in Acton's surface water bodies. For example, during the summer and early fall a green carpet of aquatic plants, indicating eutrophic conditions that promote a proliferation of plant life, especially algae, which reduces the dissolved oxygen content and often causes the death of other organisms, can be seen on Robbins Mill Pond, an impounded section of Nashoba Brook. Ice House Pond has also had problems in the past with water chestnut, an invasive exotic plant.

Much of the excess nutrients come from storm water run-off. Drainage from impervious surfaces, parking lots, streets, and the roofs of structures impacts surface water quality. All of these sources of storm water run-off carry pollutants that end up in the town's wetlands and waterways. In response to these problems the Town has developed a Storm Water Management Plan (SWMP - <http://www.acton-ma.gov/DocumentView.aspx?DID=38>) and a Nonpoint Source Control Program (<http://www.acton-ma.gov/DocumentView.aspx?DID=46>). These efforts identify sources of pollutants and steps to mitigate their impacts.

When the NARA swimming area was built in 2002 an innovative constructed wetland was built to help deal with intercepting nutrients and suspended solids from storm water run-off. Water testing in 2005 showed that the wetland was effective. It is also an attractive teaching tool for the summer camp and has interpretive material for other visitors that illustrate the value of wetlands and their role in maintaining clean water..

### **Major Habitats and Wildlife Resources of Acton**

Over the last 100 years, Acton, like many surrounding communities, has been transformed from a community dominated by fields and orchards, to one dominated by suburban development and forests. As a result of this dramatic change in land use and increased forest cover, Acton has experienced an influx of many wildlife species that were uncommon in eastern New England during the past 150 years, such as coyotes, beavers, turkey, and fisher. While it is true that wildlife can be found in the most densely populated areas of town, the most productive and diverse wildlife habitat corridors follow the two major stream basins, Nashoba Brook and Fort Pond Brook. Together these streams and their associated tributaries represent Acton's contribution to the Assabet River watershed and are home to a rich wildlife community.

Some may look at Acton and perceive its undeveloped land, the few existing and former agricultural areas, forests, water, and wetlands as being relatively unimportant land uses. In fact, this undeveloped land still constitutes about 60% of the town's total land area. Much of this undeveloped land is wetlands, other water bodies, and protected natural areas. In addition to being home to about 22,000 residents, Acton is home to a diversity of wildlife. Biodiversity is a term used to describe habitats and interactions of native species in a particular area, with emphasis on the quality of the natural community. The Massachusetts Natural Heritage and Endangered Species Program has recently issued BioMap 2, a biodiversity conservation plan for the Commonwealth. In addition, the Sudbury, Assabet and Concord (SuAsCo) Biodiversity Protection and Stewardship Plan

([http://www.sudburyvalleytrustees.org/files/Biodiversity\\_Plan/Contents.html](http://www.sudburyvalleytrustees.org/files/Biodiversity_Plan/Contents.html) ) provides more specific biodiversity information within those target watersheds. Together, these two projects have identified several areas of interest within Acton. Acton has five areas identified by the state's BioMap 2 Project as "core habitats" for conserving biodiversity for future generations;

1. NARA/Wills Hole/Kennedy/Marshall Land/Nashoba Sportsman Club (partially town-owned and Zone II Wellhead Protection Area),
2. Grassy Pond (partially town-owned),
3. Assabet River in southeastern corner of town, including portion of Zone II Wellhead Protection Area,
4. Heath Hen Meadow, a wetland area and wetlands along the town boundary with Stow and Maynard, including a portion of a Zone II Wellhead Protection Area, and
5. Reformatory Fields/Weatherbee Conservation Land, including portion of a Zone II Wellhead Protection Area.

The Natural Heritage and Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries and Wildlife has mapped these Core Habitats as the state's "hotspots" for biodiversity. These areas are identified as the most viable natural communities and habitats for rare plants and animals and the most critical sites for biodiversity conservation across the state.

Acton also has NHESP designated "Priority Habitats of Rare Species" along Nashoba Brook (partially protected by public ownership), and wetlands and upland along the Boxborough boundary (mostly protected by town ownership and wetlands regulations). These are rare species (plant and animal) habitat areas that have been identified by the state and have a legal status that triggers a more comprehensive review by the local Conservation Commission and the state when development is proposed.

A diversity of wildlife is an indicator of the health of the environment and is a source of joy for children and grownups alike. The following describes the town's major wildlife habitats, agricultural land, open land, forests, and wetlands, and some of the more common wildlife likely to be found in them.

### **Agricultural Land**

This once common habitat has become scarce with the replacement of farms with houses. One consequence of this suburban development is a return of forest land. This has meant a return of some plants and animals to Acton and the region. For example, beaver, coyote, moose, fisher,

and bear are now becoming common in many areas where they had been extirpated. At the same time species requiring large meadows and grasslands have become more rare.

Acton Assessors classify 167 acres in agricultural use (97 acres in Chapter 61, 70 acres of other farmland). Chapter 61 is a program that reduces the property taxes for land in agricultural use as an incentive to help keep the land in farming use. The program allows the town to an option to buy the land if it is removed from agricultural use and sold. In addition the state-owned agricultural land at the Route 2 gateway includes another 75 acres of agriculture and other small agricultural fields total about 94 acres, for a total of 336 acres (2.6% of the total area). These areas are still important resources for a diversity of wildlife. Most of the remaining agricultural land is located in small fields in several areas of town:

Many bird species nest near these fields and use them as well as other habitats for hunting and feeding on seeds, insects, and small mammals. Many migrant songbirds, those that move between northern and southern latitudes with the seasons, can still be found feeding in farm fields in Acton and other nearby towns during migration. Many hawks and owls, such as American kestrels and northern harriers, rely on grasslands for hunting small mammals, while other hawks and owls, such as red-tailed hawks and great horned owls, hunt in these fields as well as in the town's forested areas. In addition to birds, voles, white-tailed deer, woodchucks, coyotes, eastern cottontail rabbits, and other mammals often use agricultural areas. Several snakes, such as the eastern hognose snake and the northern brown snake can also be found in fields and pastures.

### **Open Land**

Power line corridors and unused open land, like agricultural fields that are no longer being cultivated, are areas used by many of the same species of wildlife that use agricultural land. The 2008 land use map<sup>5</sup> indicates there were about 214 acres of this type of habitat in Acton (1.6% of the total area). Power line and other utility rights-of-way are also often used as movement corridors for wildlife, providing a means of getting from one habitat to another.

### **Forest Land**

Acton has an abundance of forestland. The habitat map (Figure 3.3) shows approximately 7,000 acres of forest, including forested wetlands, in Acton (over 50% of the town's total area). A large forested area (720+ acres), in a largely road-less part of town, is located in the northeast corner, east of Nashoba Brook. Part of this area is protected by Spring Hill, Camp Acton, and Nashoba Brook conservation land. Another large forested area (400+ acres) is located south of Nagog Pond. Part of this area is protected by the Nagog Hill conservation land. Mixed oaks dominate the upland areas sometimes mixed with white pine, American beech, pitch pine, black birch, sassafras, and pignut hickory. Three hundred and four acres of Acton's privately owned forests are in the State's Chapter 61 tax abatement program. The program allows the owner to pay reduced taxes as an incentive to keep the land in forest and gives the town a first right to purchase the land when the owner wishes to sell.

Much of Acton's forest land is in small private holdings including street-side trees and back land of residential lots. Some of these areas are ecologically significant as wildlife habitat and movement corridors, and make important contributions to the town's character.

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<sup>5</sup> See Chapter 8: Land Use and Zoning

## Natural Resources

Common birds include red-tailed hawk, Cooper's hawk, mourning dove, downy woodpecker, great-horned owl, eastern wood pewee, blue jay, American crow, white-breasted nuthatch, brown creeper, scarlet tanager, ovenbird, yellow-rumped warbler, Baltimore oriole, broad winged hawk, ruffed grouse, pileated woodpecker, red-eyed vireo, black-capped chickadee, wood thrush, indigo bunting, and wild turkey. Several species, such as the hawks, are most often found at forest edges, where woodlands abut more open areas such as agricultural fields. A diversity and juxtaposition of habitat types is not only aesthetically pleasing, but often an enhancement to wildlife as well. Some of the common reptiles and amphibians found in Acton's forests include spotted salamander, redback salamander, wood frog, American toad, eastern milk snake, and eastern garter snake. Common mammals include Virginia opossum, eastern chipmunk, woodchuck, gray squirrel, red squirrel, white-footed mouse, red fox, eastern coyote, raccoon, river otter, white-tailed deer, and striped skunk. (Note: Species of birds that are particularly threatened by forest fragmentation are underlined in the lists of forest species. See discussion of forest fragmentation below.)

### **Forest Fragmentation**

Many ecologists agree that one of the biggest threats to natural communities and biodiversity in Massachusetts and much of the rest of New England is the fragmentation of large expanses of uninterrupted forest habitats. Many wildlife species depend on the interior of forests (areas far from an edge) for a significant portion of their life cycle and many biologists agree that the loss of large uninterrupted tracts of forest is contributing to the decline of many species of birds and mammals.

As a result, the remaining uninterrupted forests in Acton, noted above, and surrounding towns are particularly valuable for a broad diversity of wildlife.

Another consequence of forest fragmentation and the cessation of hunting in suburban areas seems to be an explosion in the deer populations that serve as a host for deer ticks that carry Lyme disease. Deer prefer fragmented forests where they have access to relatively small patches of woods in proximity to openings that serve as feeding areas.

### **Wetlands**

Wetlands, including forested wetlands (1,297 acres - 10% of the town's total area) and non-forested wetlands (373 acres – 2.9% of the town's total area) are an important natural resource in Acton. They play a critical role in flood control and in maintaining water quality. These wetlands provide visual variety, wildlife habitat, and help maintain a healthy environment. Acton has good access to many of its wetlands and some education programs, like the NARA wetland, that increase community awareness of their value and interest as natural habitat.

In 1996, the Massachusetts Rivers Protection Act amended the State's Wetlands Protection Act to establish an additional wetland resource area: Riverfront Area. Streams that are perennial (i.e. those which flow all year except during periods of drought) are designated as "Rivers" and the land within 200 feet of each side of the channel is protected from most incursions under the Massachusetts Wetlands Protection Act regulations as "riverfront." The Acton Conservation Commission administers the state's Wetlands Protection Act regulations including the Rivers Act.

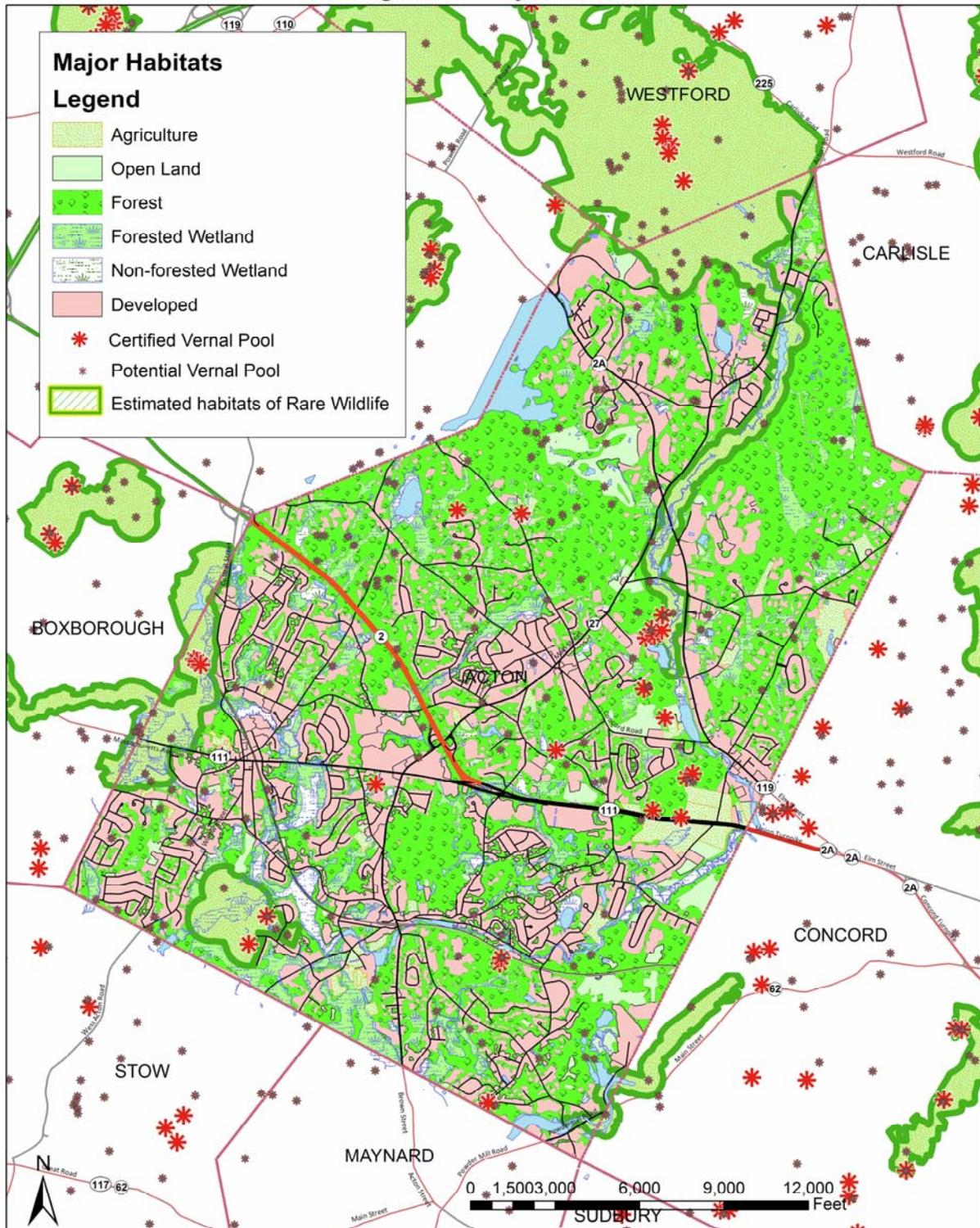
## Natural Resources

The dominant wetland forest type is red maple swamp<sup>6</sup>. Red maple occurs in either pure stands or as a major component of mixed stands in combination with yellow birch, white pine, eastern hemlock, or white oak. Other less common trees include American ash, cedars, and black gum. Wetland understory shrubs are common, including alder, viburnums, blueberries, and others. Herbs are abundant and include sedges, ferns, false hellebore, and skunk cabbage. These woodlands are an important component of the town's remaining forested lands and wetland laws generally protect them.

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<sup>6</sup> Community vegetation terms are standardized and follow either the Massachusetts Natural Heritage and Endangered Species Program "Classification of the Natural Communities of Massachusetts" ([http://www.mass.gov/dfwele/dfw/nhosp/natural\\_communities/natural\\_community\\_classification.htm](http://www.mass.gov/dfwele/dfw/nhosp/natural_communities/natural_community_classification.htm)) or the Massachusetts Department of Environmental Protection GIS wetland classification system.

Figure 3.3: Major Habitats



Some of the common animals found in the red maple swamp association include northern spring peeper, gray tree frog, bullfrog, common snapping turtle, painted turtle, northern water snake, and northern ringneck snake. Birds common to this habitat and not so likely encountered in upland forests include red-shouldered hawk, swamp sparrow, barred owl, cedar waxwing, yellow warbler, and common grackle. Many of the same mammals found in the upland forests are also likely to be found in red maple swamps. (Note: Species of birds that are particularly threatened by forest fragmentation are underlined in the lists of forest species. See discussion of forest fragmentation above.)

### **Non-forested Wetlands**

The vegetation map identifies 373 acres of non-forested wetlands in Acton (2.9% of the total area), and 253 acres of water (2.0% of the total area). The majority of the town's non-forested wetlands are found along the town's two major brooks. These rich wildlife resources include shallow marshes, deep marshes, shrub swamps, and ponds. Other non-forested wetlands are located at scattered locations throughout the town.

Bogs are peatlands, generally with evergreen and deciduous shrubs and patches of sphagnum moss. These wetland peatlands are found along the edges of Grassy Pond and Wills Hole. Bogs are known to provide important amphibian breeding habitat and may host populations of spotted turtles.

Emergent vegetation and floating-leafed plants such as water lilies (*Nymphaea* and *Nuphar*), and water depths to 6 feet characterize deep marshes. They typically provide preferred habitats for the following species; painted turtle, spotted turtle, and red-spotted newt. Common birds may include wood ducks as well as migrating pied-billed grebe, and American coot. Common mammals include the same species found in shallow marshes.

Shallow marshes are characterized by persistent emergent vegetation such as cattails and water depths to 1.5 feet, and provide preferred habitat for the following wildlife species; northern spring peeper, painted turtle, and northern leopard frog. Common birds may include great blue heron, green heron, Wilson's snipe, Virginia rail, mallard duck, tree swallow, red-winged blackbird, and American goldfinch. Common mammals may include Virginia opossum, little brown bat, muskrat, mink, and raccoon.

Woody shrubs such as buttonbush, alder, silky dogwood, and red maple, and saplings characterize shrub swamps. They typically provide preferred habitat for the following species: American woodcock, yellow warbler, common yellowthroat, common grackle, song sparrow, swamp sparrow, and American goldfinch. Common mammals include Virginia opossum, little brown bat, eastern cottontail, and raccoon.

Ponds are small bodies of water that are characterized by open water and some emergent vegetation such as cattails or floating-leafed plants, or both. Grassy Pond has characteristics of a bog with some associated bog species. Nagog Pond is the other major pond in Acton. Both of these ponds are important habitat areas for wildlife.

Vernal pools are small seasonal ponds that often are not connected to streams or other water bodies. Thus, they depend on groundwater, snowmelt and rainwater and usually become dry by late summer. Twenty-three Certified Vernal Pools and 142 "potential vernal pools" are identified on the Habitat Map for Acton. Vernal pools are critical habitats for some salamander species, wood frogs, and a wide variety of other wildlife. Some species of salamanders and

wood frogs migrate from surrounding forested uplands to these pools in the spring to breed. Without these vernal pools, these animals would be lost. Potential vernal pools are small topographic depressions or small pockets of suspected standing water identified from topographic maps and aerial photographs by NHESP as possible candidates for being vernal pools. A vernal pool is certified by NHESP following submission of documentation that a species of animals that require vernal pool habitat are actually present. Acton's wetland regulations provide a degree of protection for vernal pools regardless of their certification status. Ponds and vernal pools also provide preferred habitat for the following wildlife species; bullfrog, pickerel frog, eastern painted turtles, little brown bat, big brown bat, mink, and beaver.

### **Rare Species**

The 2009 list of rare species published by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) lists nine occurrences of rare or endangered plants and animals in Acton with the date they were last noted. The one listed plant is Dwarf Mistletoe (*Arceuthobium pusillum* 1898):

The eight state-listed animal species include: Threatened – Vesper Sparrow (*Pooecetes gramineus* 2003); and Species of Special Concern – Blue-spotted Salamander (*Ambystoma laterale* 2002); Twelve-spotted Tiger Beetle (*Cidindela doudecimguttata* 1930); Frosted Elfin (*Callophrys irus* 2008); a dragonfly – Zebra Clubtail (*Stylurus scudden* 1996); a mussel – Triange Floater (*Alasmidonta undulate* 1999), a mussel – Eastern Pondmussel (*Ligumia nasuta* 1999); and Wood Turtle (*Glyptemys insculpta* 2006); and a moth called the Barrens Buckmoth (*Hemileuca maia* 1986).

Estimated Habitats of Rare Wetlands Wildlife are mapped by the NHESP and are indicated on the Major Habitats Map (Figure 3.3). These areas are known sites for rare or threatened species and receive an extra degree of protection from the Massachusetts Endangered Species Act, administered by NHESP and the Massachusetts Wetlands Protection Act, administered by DEP and the Acton Conservation Commission. It is likely that there are other important wildlife species, habitats and more vernal pools in Acton.

Why should a resident of Acton care about rare species and protecting habitats that support them? Rare species are an indicator of the health of the environment and a healthy environment is important for our continuing health as well. Proximity to nature is also a source of enjoyment and increases livability. It also adds to the value of our homes. Several studies also show that proximity to open space increase the value of nearby homes.

### **Overall Summary**

Acton has a varied topography and large forested and wetland areas supporting biodiversity, potentially including 9 state-listed rare plant or animal species. Surface waters are generally of good quality but are impacted by nutrients from storm water runoff, which the Town's Storm Water Management Plan is designed to reduce.

## **Opportunities and Challenges Posed by Existing Natural Resource Conditions**

- Despite development, Acton has many important natural areas that enrich residents' lives and contribute greatly to the town's character. The challenge will be to continue to protect those areas and resources.
- Acton soils represent a challenge for the operation of septic systems. The Board of Health will need to continue to be diligent in enforcing their regulations in order to protect water resources. (See the discussion of water and wastewater in Chapter 7.)
- Protecting surface water resources from pollutants in storm water will be a continuing challenge.
- Adding to already protected conservation land is an opportunity and a challenge. The opportunity to protect additional wildlife and water resources and create connections between protected areas is contrasted with the increasing costs of acquiring land.
- Existing privately owned forested areas represent an opportunity to increase the size of existing protected forested areas.

In conclusion, Acton has a wealth of natural resources that contribute to the town's character and help to preserve biodiversity and water quality, but which require on-going effort to protect and preserve.

## **Appendix: Acton Soils**

The following descriptions are based on the Natural Resources Conservation Service's descriptions. For more detailed information and maps consult the "Soil Survey of Middlesex County Massachusetts", 2009, by the Natural Resources Conservation Service.

**Birdsall mucky silt loam**—These soils (0.5% of the town's area) have severe limitation for all types of development because of wetness. Development on such soils is generally prohibited by wetland regulations.

**Canton-Charlton-Urban land complex**—These soils (2.5% of the town's area) are generally developed with residences and businesses. The Canton and Charlton soils have moderate limitations for use as sites for the construction of dwellings or as sites for local roads, due to slope. The Charlton soil has moderate limitations for septic tank absorption fields, due to slope. Both Canton and Charlton soils have good potential for woodland wildlife habitat.

**Canton fine sandy loam**—These soils (2.2% of the town's area) have severe limitations for septic tank absorption fields, as it readily absorbs but does not adequately filter sewage effluent. The inadequate treatment capacity may result in the pollution of ground water. Low-density development can help to reduce this impact. Canton fine sandy loam with 3 to 8 percent slopes (80.9 acres) is classified as prime farmland.

**Carver loamy coarse sand**—These soils (0.2% of the town's area) are very sandy and have severe limitations for septic tank absorption fields, as it readily absorbs but does not adequately filter sewage effluent.

**Charlton-Hollis-Rock outcrop complex**—This map unit (9.7% of the town's area) consists of well drained Charlton soils on toe-slopes and in low pockets. The somewhat excessively drained Hollis soils are on hilltops and ridges. Stones and boulders cover up to 15 percent of the surface. Exposed bedrock, seepage, slope, shallowness to bedrock, and large stones on the surface severely limit this complex's suitability for most uses.

**Charlton-Urban land-Hollis complex**—These soils (1.3% of the town's area) are nearly level to rolling. The complex consists of very deep, well drained Charlton soils; areas of developed urban land; and shallow, somewhat excessively drained Hollis soils on uplands. The majority of the area is developed with residences and businesses.

**Charlton fine sandy loam**—This map unit (1.8% of the town's area) is very deep, gently sloping, well drained soil on toe-slopes of hills and on uplands. With the exception of having moderate limitations for small commercial buildings, this map unit has no major limitations for building site development, local road construction, or the construction of septic tank absorption fields. This map unit has good potential for woodland wildlife habitat. Charlton fine sandy loam with 3 to 8 percent slopes is prime farmland.

## Natural Resources

Deerfield sandy loam—These soils (1.4% of the town's area) have moderate to severe limitations for development because of high water table.

Freetown mucks—These soils (8.6% of the town's area) have severe limitations for all types of development because of wetness. Development on such soils is generally prohibited by wetland regulations.

Haven silt loam—This map unit (0.4% of the town's area) consists of very deep, well drained soils on glacial outwash plains and terraces. This map unit has slight limitations for use as a site for the construction of dwellings. It has moderate limitations for road construction, due to frost action. This map unit has severe limitations for septic tank absorption fields, as the soil readily absorbs but is a poor filter of sewage effluent. This inadequate filtering capability may result in the pollution of ground water. This map unit has good potential for woodland wildlife habitat. Haven silt loam is prime farmland.

Hinckley loamy sand—This map unit (8.8% of the town's area) consists of very deep, excessively drained soils on glacial stream terraces, outwash plains, kames and eskers. This map unit has slight limitations for the construction of dwellings and of local roads. It has severe limitations for septic tank absorption fields, as it readily absorbs but is a poor filter of sewage effluent. The soil's inadequate filtering capability can result in pollution of ground water. This map unit has poor potential for woodland wildlife habitat.

Hollis-Rock outcrop-Charlton complex—This unit (1.0% of the town's area) consists of rolling, shallow soils, areas of exposed bedrock, and very deep soils on hills and ridges where the relief is affected by the underlying bedrock. The somewhat excessively drained Hollis soils are on the crests of ridges or are near rock outcrops. The well drained Charlton soils are on side slopes or saddles on the landscape. Stones and boulders cover up to 15 percent of the surface. Slope and shallow depth to bedrock are severe limitations for septic tank absorption fields on the Hollis soils. Taking advantage of the moderate limitations of the Charlton soil areas and installing the septic system distribution lines across the slope are necessary for proper operation. However, it may be difficult to locate suitable sites for septic tank absorption fields on building lots of less than 2 acres. The Charlton soils have good potential for woodland wildlife habitat; the Hollis soils have poor potential for this habitat.

Merrimac-Urban land complex— This undulating complex consists of very deep, somewhat excessively drained Merrimac and similar soils, and areas of Urban land on broad plains. The Merrimac soils have only slight limitations for dwelling or local road construction. However, they have severe limitations for septic tank absorption fields.

Merrimac fine sandy loam—This very deep, nearly level, somewhat excessively drained soil (1.5% of the town's area) is on outwash plains and glacial stream terraces that commonly follow major stream valleys. This map unit has only slight limitations for the construction of dwellings or for road construction. However, it has severe limitations for septic tank absorption fields, as the soil readily absorbs, but is a poor filter of effluent. This inadequate filtering capability can result in pollution of ground water. This map unit has fair potential for woodland wildlife habitat. Merrimac fine sandy loam with 3 to 8 percent slopes is prime farmland.

Montauk fine sandy loam—This very deep, gently sloping to steep, well drained soil (2.4% of the town's area) is on the tops and upper side slopes of glaciated hills. This map unit has severe limitations for septic tank absorption fields. There may be a seasonal high water table from February to May. Also, restricted permeability in the substratum prevents the soils from readily absorbing sewage effluent. Installation of a larger-than-average leach field will help to overcome the latter limitation. Placing the distribution lines along the contour is generally needed to overcome the slope limitation in steeper areas. Where suitable outlets are available, curtain drains around the leach field help to remove excess subsurface water. This map unit has good potential for woodland wildlife habitat.

Narragansett-Hollis-Rock outcrop complex— This map unit (0.2% of the town's area) consists of rolling, very deep and shallow soils on uplands where the relief is affected by the surface of the underlying bedrock. The well drained Narragansett soils are in low pockets on toe-slopes. The somewhat excessively drained Hollis soils are on the crests of hills and ridges. Stones and boulders cover up to 3 percent of the surface. The Narragansett soil has moderate limitations as a site for dwellings, with or without basements, due to slope. The Hollis soil has severe limitations for dwellings with basements because bedrock is at a depth of less than 20 inches. Suitable home-sites can be located in this map unit, but the use of larger than customary lot sizes may be necessary. The Narragansett soil has moderate limitations as a site for local streets and roads, due to slope and frost action. The Hollis soil has severe limitations because bedrock is at a depth of less than 20 inches. The Narragansett soil has moderate limitations for septic tank absorption fields due to its slope and poor filtering qualities. Intensive onsite investigations may be necessary to locate areas suitable for the purpose, as the shallow Hollis soils have severe limitations for use as sites for septic systems. The Narragansett soil has good potential for woodland wildlife habitat. The Hollis soil has poor potential for woodland wildlife habitat.

Narragansett silt loam-- This very deep, gently sloping, well drained soil (2.3% of town's area) is on uplands adjacent to plains and stream terraces. This map unit has no major limitations for the construction of dwellings. Frost action moderately limits its use for road construction. This map unit has moderate limitations for septic tank absorption fields, as Narragansett soils readily absorb but are poor filters of sewage effluent. This inadequate treatment capability can cause pollution of ground water. Low density development or large lot sizes may help reduce the impact on ground water. This map unit has good potential for woodland wildlife habitat.

Paxton fine sandy loam— This very deep, gently sloping, well drained soil (10.3% of town's area) is on the smooth, convex side slopes and tops of glaciated hills. Slope and the seasonal perched water table are the main limitations of this soil for community development, especially as a building site and as a site for sanitary landfills. The slow permeability in the substratum of the soil is a limitation for septic tank absorption fields.

Ridgebury fine sandy loam, extremely stony—This soil (1.9% of the town's area) has a seasonal high water table that is the main limitation for community development, especially as a building site or as a site for septic tanks or sanitary landfills. Its slow permeability in the substratum is an additional limitation for septic tanks. It has the additional limitation of stoniness.

## Natural Resources

Scio very fine sandy loam—This very deep, gently sloping, moderately well drained soil (0.3% of the town's area) is in shallow depressions on plains and on tops of stream terraces. This map unit has severe limitations for septic tank absorption fields. Seepage and a seasonally high water table are the main limitations. Placing leaching facilities in a mound of more suitable fill material will help to overcome these impediments. This map unit has good potential for woodland wildlife habitat. It is prime farmland.

Scarboro mucky fine sandy loam— This very deep, nearly level, very poorly drained soil (1.9% of the town's area) is in low, flat areas and depressions on glacial outwash plains and terraces. This map unit has severe limitations for building sites due to ponded water on its surface. It is severely limited for septic tank absorption fields because of its poor filtering qualities and ponded surface water. Soils that are better suited for these uses should be selected. This map unit has poor potential for woodland wildlife habitat.

Scituate fine sandy loam—This very deep, gently sloping, moderately well drained soil (2.4% of town's area) is on shoulders and toe-slopes of uplands. Because of the seasonal high water table and restricted permeability, this map unit has severe limitations for septic tank absorption fields. Installing a larger-than average distribution system in a mound of more suitable fill material will help to overcome these limitations. This map unit has good potential for woodland wildlife habitat. Scituate fine sandy loam with 3 to 8 percent slopes is prime farmland.

Sudbury fine sandy loam—This very deep, gently sloping, moderately well drained soil (0.3% of the town's area) is in low areas and shallow depressions on glacial outwash plains and terraces. This map unit has severe limitations for septic tank absorption fields, mainly because of the seasonal high water table and inadequate filtering capacity of the soil. This inadequate filtering may result in the pollution of ground water. Placing septic system distribution lines in a mound of more suitable fill material will help to overcome these limitations. This map unit has good potential for woodland wildlife habitat.

Whitman fine sandy loam—The seasonal high water table is the main limitation of this soil (3.7% of town's area) for community development, especially as a building site or as a site for sanitary landfills or septic tank absorption fields. The slow permeability in the substratum is an additional limitation for septic tanks. Stoniness is another difficulty for development.

Windsor loamy fine sand—These soils (2.2% of town's area) have severe limitations for septic systems because of poor filtration and slight limitations for roads, residential or commercial development. Areas with slopes greater than 8% have more limitations for development.

Woodbridge fine sandy loam— This very deep, nearly level, moderately well drained soil (7.1% of the town's area) is on the smooth tops and toe-slopes of glaciated hills. The seasonal perched water table is the main limitation of this soil for community development, especially as a building site and as a site for septic tank absorption fields and sanitary landfills. The slow permeability in the substratum is also a limitation for septic tanks. Installing a larger-than-average distribution system in a mound of more suitable fill material will help to overcome these limitations. This map unit has good potential for woodland wildlife habitat.

## Natural Resources

Man-altered soils (Udorthents and Urban Land) compose 8.0% of the town's area.

Water covers 1.7% of the town's area. Gravel pits occupy 0.4% of the town's area.

Several other soil types occur in Acton in small, scattered sites. These include: Wareham loamy fine sand (0.6%), Swansea much (2.9%), Saco mucky silt loam (0.7%), Rock outcrop-Hollis complex (0.0%), Rippowam fine sandy loam (0.0%); Raypol silt loam (0.0%), Raynham silt loam (0.1%), and Quonset sandy loam (0.2%).,

## Chapter 4: Historic and Cultural Resources

This chapter inventories Acton's existing historic and cultural resources. Historic and cultural resources include both physical resources (buildings, landscape features, landscapes, and archaeological sites) as well as non-physical resources such as organizations, clubs, programs, and traditions, both of which contribute to the Town's quality of life. This chapter includes:

- Relationship of Historic and Cultural Resources to Planning Goals
- Inventory information:
  - A brief history of Acton and an overview of the Town's extant historic resources.
  - A description of the many historic and cultural organizations based in the Town.
  - A synopsis of the historic and cultural resource preservation efforts completed to date.
- A list of Opportunities and Challenges posed by existing Historic and Cultural Resources conditions.

### **Why Acton's Existing Historic and Cultural Resources are Important to the Comprehensive Plan**

Acton's many historic and cultural resources are important and valued attributes that help establish the character of the Town and past efforts to preserve, promote, and enhance them attest to their value to residents.

### **Relationship of Historic and Cultural Resources to Planning Goals**

#### *Goal: Preserve and Enhance Town Character*

While much of Acton has been developed since 1950, its character still owes much to its historic and cultural resources. Many of these resources are concentrated around what were Acton's Villages. Many historic and cultural resources outside of the villages maintain a visible connection with Acton's rural and agricultural past. Preservation and enhancement of the village character will depend on careful design and sympathetic redevelopment. Design is also key to enhancing the character of newer sections of the Town as development occurs in former rural areas.

#### *Goal: Ensure Environmental Sustainability*

One of the basic tenets of sustainability is to reuse and adapt existing buildings rather than build new and destroy. At the same time the smaller lots in and around Acton's villages could accommodate sympathetic development without consuming land resources and natural habitat and reduce commuting times often associated with disperse development.

#### *Goal: Improve Connections*

The historic villages were established in a time when walking and rail transportation predominated and connections were not dependent upon the private automobile. Today, sidewalks are being built to accommodate increased interest in walking, and discontinued rail rights-of-way are now being converted into rail-trails. A town-wide system of trails, sidewalks, public transportation, and roadways based on these historic resources can help improve connections.

*Goal: Enable Diversity and Inclusion*

Diversity was a feature of many of the historic resource areas where businesses, diverse housing sizes and types, and industry coexisted. Maintaining and adapting these historic areas is an opportunity to enhance town character. Attractively designed, mixed-use villages with a diversity of housing types and businesses can also enable inclusion and diversity.

*Goal: Provide More Opportunities for Community Gathering and Recreation*

Cultural traditions bring residents together to celebrate the community. Many of the existing gathering places are located in historic surroundings, several of them owned by the Town. There are also opportunities for creating new places within these historic areas.

*Goal: Maintain and Enhance Town Assets*

The Town assets include its historic neighborhoods, buildings, landscapes, and other cultural resources. Failure to maintain and enhance these historic and cultural resources would have a major impact on the Town's character.

*Goal: Maintain and Improve the Financial Well-being of the Town*

Acton's historic and cultural assets make the Town more desirable as a place to live and do business; the development which is attracted by these resources is likely to be of high quality and may contribute more to the Town's fiscal well-being than it consumes in services.

## **Summary of Key Points**

### *History*

- Native Americans pre-settled the area for hunting, fishing, gathering, and some agriculture – especially around Nagog Pond.
- Concord shepherds settled the area that would become Acton (in 1655) because of its prime grazing lands.
- Mills were developed on Fort Pond Brook and Nashoba Brook as early as 1670 – several mill sites remain.
- In 1735, Acton incorporated as a town and a meeting house was built in Acton Center.
- Railroads came in 1843 with stations in South Acton and West Acton that became village centers; A branch line connected South Acton with Marlborough in the 1850s, and by the 1870s another rail line went through East Acton and North Acton.
- By 1900, the population in the 5 villages was 2,120, and apples were the major export.
- In 1925 Acton population was large enough to sustain its own high school.
- In 1950, there were 3,500 people, and apples were still important, but by 1974 the population had reached 17,000 people, as orchards and fields turned into subdivisions – with some concentration around three villages: South Acton, Acton Center, and West Acton.

### *Historic Resources*

- The 2006 Massachusetts Heritage Landscape Inventory report for Acton lists Conant Farm, Grassy Pond, Miller Farm/Station Master's House, Nagog Pond, Nashoba Brook, Rt. 2 Gateway Agricultural Fields, South Acton Village, Stonefield/Simeone Farm, and Wetherbee Street Woods as priority landscapes in need of preservation. Many more local heritage landscapes were also identified by participants in the public sessions leading up to the report.

- The three Local Historic Districts centered on the villages of Acton Center, South Acton, and West Acton were designated by Town Meeting vote in 1990.
- Historic stone walls contribute greatly to the Town's character. Many are partially protected by Acton's existing Scenic Roads Bylaw.

#### *Cultural Resources*

- Acton boasts a culturally diverse population.
- Several cultural organizations sponsor a variety of events each year.
- Acton-Boxborough Cultural Council and Acton Recreation Department list a variety of cultural events – ethnic, musical, film festivals, theatre, arts and crafts, storytelling, and dance.
- Theatre III, the Theatre with a Twist, and the Open Door Theater are non-profits dedicated to promoting the performing arts through education and high-quality, reasonably priced performances.
- The Acton Recreation Department hosts a long schedule of events, most at NARA Park, throughout the year.
- Acton Memorial Library hosts an active schedule of events and community meetings including storytelling, book discussions, historic site explorations, musical events, movies, English language conversation groups, art exhibits, computer training, etc.
- Several of Acton's churches and a number of businesses host cultural events.

## **Acton's History<sup>1</sup>**

Prior to its settlement by farmers from Concord the central highlands at the headwaters of the Assabet River and Nashoba Brook, present-day Acton, were frequented by Nipmuck-related Native Americans who may have practiced some limited agriculture, hunting, fishing and gathering. Many areas of Acton were good campsites especially areas along Nashoba and Fort Pond Brooks as well as Nagog Pond. Proven settlements go back at least 7,000 years, to the Pine Hawk site near where the Assabet River briefly enters Acton. Trails for these activities are conjectured to have followed corridors from the Concord River along Fort Pond Brook and possibly along the routes of School/Central/ Summer Streets through South Acton with possible branches south along Liberty Street and north along Central Street. Another trail followed Nashoba Brook to Nagog Pond along Great Road with possible loops at Esterbrook and Davis Roads, with likely branches along Strawberry Hill and Main Street/Carlisle Road. Artifacts from early hunting and fishing villages have been found in Acton, especially in the area of Nagog Pond. Diseases, brought by early European explorers in the 1600s, decimated these native populations.

Nearly all of present day Acton's 12,990 acres is composed of portions of four early land grants. The two largest were: Major Simon Willard's Grant (known as Iron Work Farm), and the New Grant or Concord Village. Next to these grants was the praying Indian Township of Nashoba Plantation, present day Littleton. Seven of these "praying Indian townships" were set up by the General Court of Massachusetts in 1646 as a recognition of the success of Reverend John Eliot's efforts to Christianize the Native Americans.

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<sup>1</sup> Adapted from "A Short History of the Town of Acton, Acton Historical Society, 1974.  
(<http://www.actonhistoricalsociety.org/>)

The early landscape included large areas of meadows. These prime grazing lands were the reason Concord sought to annex these additional lands in 1655. The earliest European settler was John Law, Concord's shepherd, who built his home in 1656 on School Street near Lawsbrook Road. John Shepherd who was granted land by Concord to build his house near Hosmer Street joined Law in 1661. Capt. Thomas Wheeler built his house in 1668 near the intersection of present-day Concord Road and Alcott Street, under a lease from the town of Concord to herd their cattle. By 1670 he had also built a grist mill on Nashoba Brook.

The Iron Work Farm was worked in the manner of a plantation to support those employed at the iron works, which had been established in 1658 in what is now West Concord. The farm had at least three families living on it in 1684. The Knight-Forbush house, on Martin Street built in 1710, and the adjacent Stonefield Farm lie within the bounds of the original Iron Work Farm.

By 1730 there were at least two-dozen settlers scattered across the Town. The proprietors of Concord Village or the New Grant proceeded to divide their lands among the proprietors. The records of the proprietors' clerk give a picture of the Acton landscape from around 1730 until 1780 when the last lots were divided.

Partly because of the difficulty of attending services at the Concord meetinghouse, Acton was incorporated as a separate town in 1735. A meetinghouse was built in the center of town with roads coming from the outlying farms. Early industry included the mills on Fort Pond Brook in South Acton, as early as 1701; the forge on Nashoba Brook below Ice House Pond in 1728; and at least four mills along Nashoba Brook as early as 1738. Portions of these mill sites are still in existence. A number of sites are located in the Nashoba Brook Conservation Area including the Robbins Mill Pond Dam, which was repaired by the Town in 1990.

Although Acton was primarily an agricultural community in its early days, sawmills, and gristmills were necessities. The manufacture of barrels to store and ship foodstuffs became the first light industry. It continued into the early 1900s, as young birch trees became hoopoles for Florida citrus crates. A woolen industry centered on the Faulkner Mills, said to have been one of the first large-scale manufacturers of woolen cloth in this country. Parts of that original mill still exist.

In 1835 the powder mills were started on the Acton/Concord/Maynard (then Sudbury) line, and continued to operate into the 1940s. The dam on Old High Street has been repaired and is generating electricity again. In 1848 a pencil factory opened on Nashoba Brook at Brook Street, an outgrowth of the Thoreau family's pencil businesses in Concord; continuing in use until 1888. Another pencil factory was located further upstream. 1843 brought the railroad to Acton, with the Fitchburg Railroad line running through South and West Acton. Only with the arrival of the railroad did the villages really begin to grow, especially West Acton Village. It was not until after the Civil War that a railroad finally went through East and North Acton. The rail beds remain today and are possible locations for proposed rail-trails.

The 1870s brought several other industries to Acton; a piano stool factory (later to be Merriam's) on Fort Pond Brook in South Acton, Hall Brothers pail and churn factory and the Knowlton cigar factory both located in West Acton. Hall Brothers cut the trees from local woodlots for their products, which were shipped, across the country.

Quarrying was done in Acton throughout the 1800s but did not become a major industry until the 1880s. The Harris quarry, one of several in North Acton, was noted for its "slickened sides"

granite. This was formed by faults in the ledge that rubbed together, heating and forming a polished look. The final product had a look similar to a light green and beige marble. Earlier times saw small scale field quarrying being done by the farmers to cut fence posts and foundation stones. Many examples of this can be found scattered through the woods, one such example is located near a trail at the Arboretum. Some of these small quarries form the upland vernal pools that the Conservation Commission sought to protect with the bylaw changes at the April 1996 Town Meeting.

The 1890s brought a shift in population towards South and West Acton, which caused the precincts and school districts to be realigned. The North and East District Schools were combined into the Center District. Although the districts were officially changed the residents still thought of the villages as East and North Acton.

At the turn of the century Acton was still an agricultural community, with five villages and a population of 2,120. Apples were Acton's main agricultural export being shipped not only to Boston but to Europe. Before modern refrigeration space in the cellar of the Town Hall was auctioned off for storage. Apples were stored in the center of West Acton into the 1950s. Improvements were coming however; a water district was formed in 1912 for West and South Acton; the Center was added later. A town fire department, starting in 1915 with West Acton, replaced the independent fire companies.

1950 marks the shift from apples to houses, with most of the development in the southern half of the Town. There were 3,500 people in Acton in 1950; by 1974 there were 17,000. Much of this growth was facilitated by the construction of regional highways like Rt. 128 and Rt. 2 in the 1950s. Many orchards and open fields turned into subdivisions; although Acton still kept its agricultural ties with apples being a major crop into the 1960s. The town population was then concentrated in three villages; Acton Center, West Acton and South Acton. The form of government would eventually change to the current Town Manager -Board of Selectmen - Open Town Meeting form.

Until 1925 Acton sent its high school students to the Concord High School. In 1925, Acton's population was large enough to sustain its own high school, which was built on Massachusetts Avenue near the intersection of Main Street. The building, which still stands, was converted into use as an elementary school and currently sits vacant waiting conversion into residential housing. In 1957, Acton and Boxborough created a regional school district for grades 7-12. The Merriam School was constructed in 1958. Other schools quickly followed; Douglas 1966, Gates 1968, and Conant 1971. In 1967 a building was constructed for the Junior High. In 1973 a huge addition was added to this building and it became the high school. The junior high school moved to the old high school building.

Rapid growth in the 1960s and 70s also stimulated efforts to preserve Acton's historic and natural resources and to increase restrictions on future development. Open space and recreation land was set aside through gift and acquisition, and the Historical Commission inventoried many of the Town's historic buildings. A Historic District Study Committee was formed and proposed the creation of the three current historic districts, which were approved in a 1990 Special Town Meeting.

The 1990 Comprehensive Community Plan proposed to revitalize the former villages of North and East Acton and rebuild their village character. Both the North Acton Recreation Area,

opened in 1999, and Ice House Pond are located in close proximity to these village centers. In addition, the North Acton Recreation Area became the Town's major recreation facility.

Further information on the history of Acton can be found in the History of the Town of Acton, by Harold R. Phalen, 1954; and A Brief History of Acton, Acton Historical Society, 1974. Acton's Historic Properties Inventory, updated in 1990 through a Survey and Planning Grant from the Massachusetts Historical Commission and presently being updated with Community Preservation funds, is a source of information on some of the older historic resources in town. The early proprietors' records and many other papers and photographs on Acton are available for research in the collection of the Acton Historical Society.

## Inventory of Acton's Historical Resources

The Acton Historical Commission and the Massachusetts Historical Commission maintain the inventory of Acton's historical/cultural resources. Acton has 17 ancient Native American sites dating back to the Middle Archaic Period (8,000-6,000 B.P.) and four historic archaeological sites. One of the ancient Native American sites has been determined eligible for listing in the National Register. Due to the known information about other regions as well as the apparent Native American activity in Acton, it is likely that there will be more pre-historic and historic (post European Settlement) archaeological sites identified in the future.

Many of the historical resources are concentrated in Acton's three local historic districts that are centers of "villages" that developed in the 18th and 19th centuries. Regulations to preserve the character of these areas were established in 1990 with the enactment of Local Historic Districts in Acton Centre, South Acton, and West Acton. They require approval of most changes to the exterior appearance of a building or site within the districts. The district regulations are administered by the Acton Historic District Commission and may be found at <http://www.acton-ma.gov/DocumentView.aspx?DID=360>.

## Acton's Local Historic Districts

### Acton Center

The Acton Centre Local Historic District is located at the intersection of Concord Road and Main Street. It covers both sides of Main Street from the Acton Arboretum (Taylor Road) to just beyond Nagog Hill Road. It includes the Common, Davis Monument (memorial to Acton deaths in the Concord Battle at the beginning of the Revolutionary War), Town Hall, the Memorial Library, Acton Centre Store, Fire Station, and the Congregational Church as well as several residences. It has been the Town's civic center since the first meeting-house was built in the 1700s.

Acton Centre was also designated a National Register District in 1983, with 39 resources included. The Acton Centre Local Historic District



Figure 4.1: Acton Town Hall

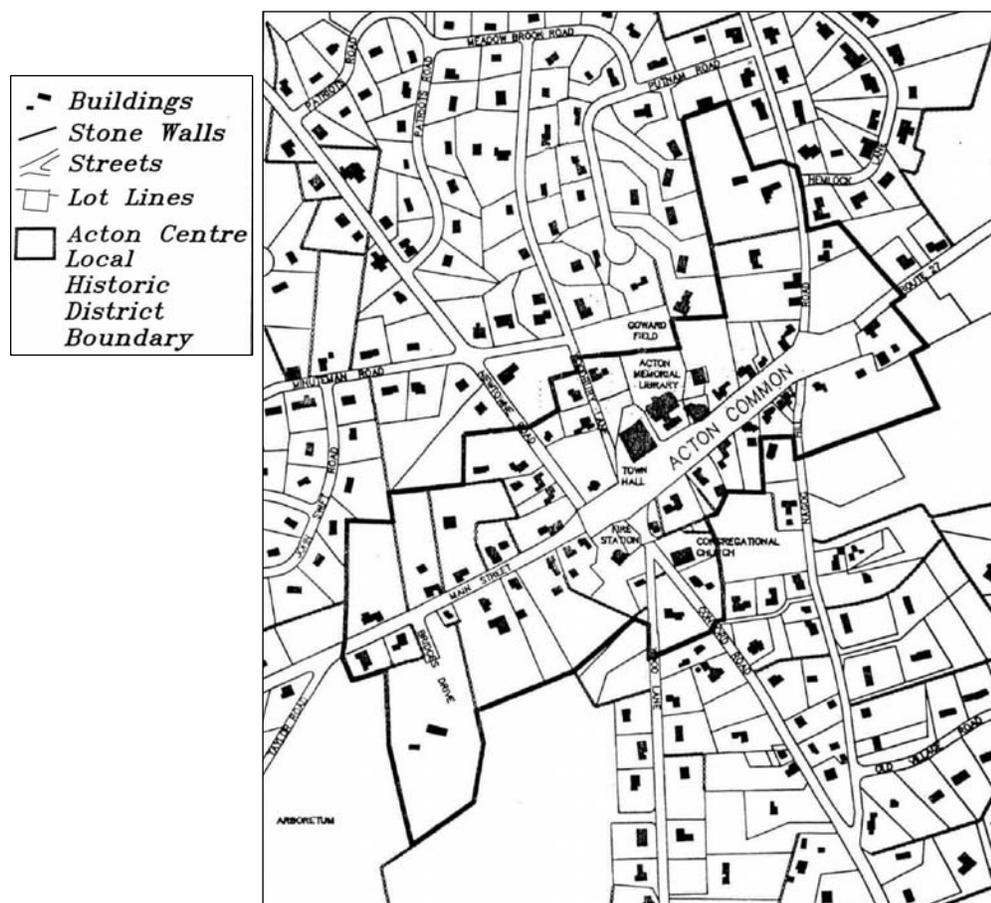
## Historic and Cultural Resources

includes all or part of 54 parcels and is zoned for mostly residential uses.

The Massachusetts Cultural Resource Information System of the Massachusetts Historical Commission (MACRIS) lists more than 49 buildings, structures, and sites within the district that are on both the State Register of Historic Places and the Inventory of Historic and Archaeological Assets of the Commonwealth, including:

- Abner Hosmer House
- John Fletcher House
- George L Noyes Grocery Store
- Samuel Law House
- Deacon John Fletcher House
- The Old Parsonage
- Samuel Chaffin House
- Jones Blacksmith Shop Site

Figure 4.2: Acton Centre Local Historic District



The Isaac Davis Trail, a National Register Historic Property (listed in 1972) used by the Acton Minutemen on April 19, 1775, runs through the district on its way to North Bridge in Concord and is the route of a reenactment of the march each year.

### South Acton

The South Acton Local Historic District is located at the intersection of School Street and Main Street in South Acton Village. It extends along School Street to Chadwick Street and also along River Street to Haley Lane. It includes the Faulkner Homestead (1707), Faulkner Mills-Erikson Grain Mill sites, Exchange Hall (recently renovated), and the Jones Tavern and several residences and commercial buildings. It is near the South Acton Commuter Rail Station.

Figure 4.4: South Acton Local Historic District



South Acton was the center of much of the Town's early commercial and industrial life. It was part of the Iron Work Farm grant and many of the early mills developed along Fort Pond Brook. Its place as a commercial center was strengthened with the coming of the railroad in 1843.

This portion of South Acton was designated a Local Historic District in 1991 and includes all or part of 77 parcels and has a variety of land uses and zoning districts.

The MACRIS inventory lists more than 58 buildings, structures or sites within the district, including:

- Amos and Charles Brooks Wheelwright Shop



Figure 4.3: Faulkner Homestead

## Historic and Cultural Resources

- John J. Lathrop Blacksmith Shop
- Central Hall/Old Post Office
- Jones Cider Mill
- J. A. Holmes and Company Woolen Mill Office
- Winthrop Faulkner Double House

### **West Acton**

The West Acton Local Historic District is located at the intersection of Massachusetts Avenue (Route 111) and Arlington Street and is part of West Acton Village. It extends along Massachusetts Avenue and along Windsor Avenue. West Acton is an important commercial area of town, consisting of several commercial developments centered along Route 111. It developed in response to the growth of the Fitchburg Railroad in the 19th century. The West Acton Station was located on land now occupied by New London Pizza. The West Acton District includes the Citizen's Library, an 1840 Greek Revival cape; the Minuteman Building, originally the West Acton Fire Station built in 1903; mill workers apartments built in about 1900; and several 19th Century Victorian residences along Windsor Avenue.

This portion of West Acton was designated a Local Historic District in 1991 and includes all or part of 75 parcels and has a variety of land uses and zoning districts.

The MACRIS inventory lists more than 59 buildings, structures or sites within the district, including:

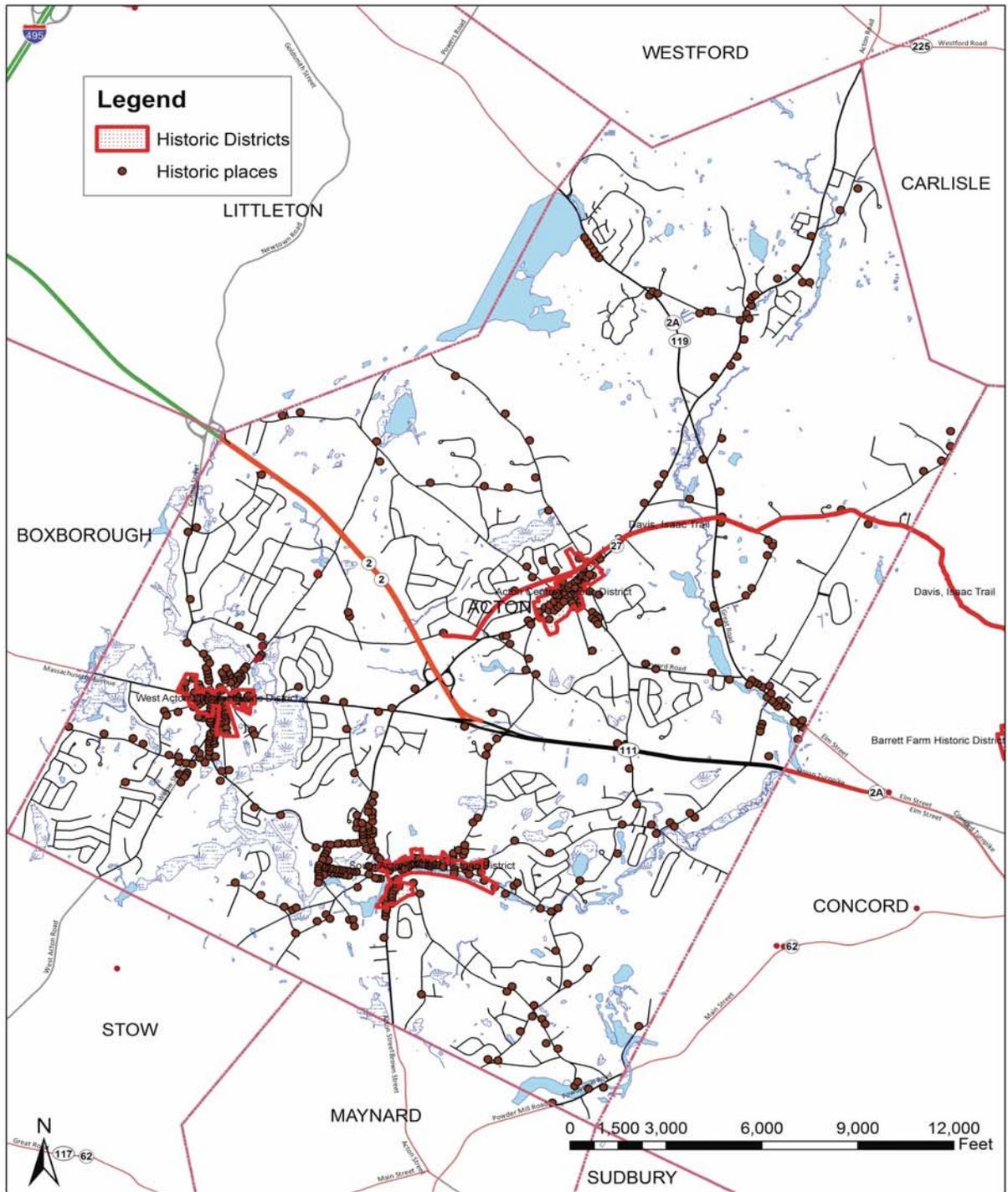
- Isaac Davis House & Market
- West Acton Universalist Church
- Oliver W. Mead House
- George Gardner House
- St. Elizabeth of Hungary Church
- West Acton Fire Station

Figure 4.5: West Acton Local Historic District



Complete listings of Acton’s historic cultural resources may be found in the Acton Historical Commission’s “Cultural Resource List” (<http://www.acton-ma.gov/DocumentView.aspx?DID=373> ) and also through the search capability of the Massachusetts Cultural Resource Information System (<http://mhc-macris.net/index.htm>).

Figure 4.6: Historic Resources



*The Map of Historic Resources (Figure 4.6) shows the Existing Local Historic Districts, the Isaac Davis Trail, National Register Properties outside the districts and the historic places listed in the Acton Historical Commission's and Massachusetts Cultural Resources inventory lists.*

## **Historical and Cultural Organizations and Traditions**

Various town boards and departments are involved in the preservation of the town's historic resources. Acton also has several private, non-profit historical and/or cultural organizations, and holds many cultural traditions:

### **Acton Historical Commission.**

The Historical Commission's purpose is to protect and preserve the Town's cultural character and assets, be they archaeological sites, historic buildings, open spaces, landscapes, or historic districts. The Commission is established under the Town of Acton Charter and by Chapter 40, Section 8d of the Massachusetts General Laws. Its five members are appointed by the Board of Selectmen. The Commission maintains the Cultural Resource list, compiles the inventory of the community's historic assets, and administers a historic maker program to recognize historic structures. It also administers the Town Bylaw Chapter N – Procedures for the Demolition of Historically and Architecturally Significant Buildings (“Demolition Delay Bylaw”), plays an advisory role in regard to development proposals, and can serve as a design resource to property owners who are remodeling older properties.

### **Historic District Commission (HDC)**

The HDC was founded in 1990 under the Town of Acton Charter when the Local Historic Districts were established, and is enable by Chapter 40C of the Massachusetts General Laws. Its seven members, appointed by the Board of Selectmen, oversee development and change within the Historic Districts. It is responsible for:

- Preserving the heritage of Acton by protecting the architecture and integrity of the three designated Historic Districts.
- Administering and enforcing the Town's local Historic District Bylaw (Chapter P) which was enacted by the Town in 1990.

Its Rules and Regulations require a Certificate of Appropriateness or Non-Applicability before most changes to the exterior appearance of a building or site within a Historic District. Information about the HDC, rules, regulations and guidelines are available on the Town's website.

### **Acton Historical Society**

The Historical Society is a non-profit organization supported by its members and volunteers. Its objectives are to discover, preserve and perpetuate facts and artifacts concerned with local history, and to make them available to all interested parties. The intention of these objectives is to conserve Acton's heritage by creating an interest in them. It sponsors a variety of events each year including talks on local history, walks, building tours, etc. It



also owns and manages the historic Hosmer House and the Jenks Library at 300 Main Street, housing the Society's collection of historical books and papers.

### **Acton-Boxborough Cultural Council**

Established under the Town of Acton Charter in 1982 the ABCC helps develop cultural programs in Acton and Boxborough. It administers the Massachusetts Cultural Council grant program and sponsors concerts, public art, opera, and a variety of other cultural events.

### **Acton Recreation Department**

The Recreation Department hosts a wide variety of cultural events – ethnic, musical, film festivals, theater, arts & crafts, storytelling, and dance.

### **Acton Memorial Library**

Established in 1890 as a Civil War veteran's memorial by William Allan Wilde and governed by a Board of Trustees, the Acton Memorial Library plays a major role in collecting, displaying, and disseminating cultural information to the Town. In addition to collecting, cataloguing books and periodicals in circulation, the library holds information programs, displays work of local and regional artists, and shares information about its historical collections, including Early Town Records with selectman's minutes with details of pre-Revolutionary life, and Civil War Records, both available on-line. Since 2008 the library has a permanent exhibit "Not Afraid to Go: Acton's Part in the Birth and Preservation of our Nation".

### **West Acton Citizen's Library**

In addition to the main library there is also the West Acton Citizen's Library (The Secret Library). The library hosts an active schedule of events and community meetings including storytelling, book discussions, historic site explorations, musical events, movies, English language conversation groups, art exhibits, computer training, etc.

### **Cultural Activities**

In addition to the established historical/cultural organizations, Acton holds a variety of cultural events that contribute to the sense of tradition and quality of life in the Town. Such happenings include Family Campout, Chinese Culture Day, concerts at NARA Park, Lions Club Fair, July 4th celebration, West Acton Oktoberfest, and Acton Day at NARA Park. Many events celebrate the Town's cultural diversity.

### **Acton Area Newspapers**

Two newspapers provide frequent cultural information to the Town. The Beacon is a community newspaper, published weekly, covering Acton and Boxborough. The Action Unlimited has a weekly Acton/Maynard edition that is delivered to every home in town. Other papers like the Acton Citizen have ceased publication in recent years, but provide historical data for researchers. Online news outlets, like Acton Patch (<http://acton.patch.com>), are also becoming important sources for local news.

### **Acton Museums**

Acton has a variety of museums including the Discovery Museums – a science discovery museum and a children’s’ discovery museum; the Iron Work Farm in Acton is a non-profit, historical corporation founded in 1964 that operates two historic house museums, the Jones Tavern and the Faulkner House; and, as mentioned above, the Acton Historical Society operates the Revolutionary War-era Hosmer House.

### **Acton Theater Groups**

Acton has three active non-profit theater groups, Theatre III, Theatre with a Twist, and the Open Door Theater, that offer a variety of performances and cultural learning opportunities.

### **The Acton Woman’s Club**

Established in 1915, the Acton Woman’s Club owns and maintains the historic building at 504 Main Street in the Acton Centre Historic District. The Club offers ballroom dance classes in the building, sponsors a community supper, offers scholarships to High School seniors, provides fuel assistance to needy residents, and engages in other benevolent and civic activities.

In addition to the cultural organizations listed above many other cultural events and opportunities are available through the schools, churches, and also several private businesses that host cultural events.

## **Historic and Cultural Resource Preservation Efforts to Date**

Acton values and has actively worked to protect its historic and cultural resources. The Historic Districts, historic places, and other cultural resources listed above have been identified for decades as key factors in defining the Town’s character and sense of place. The town established three Local Historic Districts in 1990-91 after an extensive effort to inventory its historic assets. At the same time it adopted the Local Historic District Bylaw. Earlier it had adopted a Demolition Delay Bylaw that applies to areas outside of the historic districts. The Demolition Delay Bylaw has been utilized to delay the demolition of an architecturally or historically significant building for up to six months and work with owners to revise plans to save the building by incorporating it into their plans (Miller Farm – Station Master’s House, 2006).

The Local Historic District Bylaw (Chapter P) was approved unanimously by the fall 1990 Town Meeting. Its purpose “...is to aid in the preservation and protection of the distinctive characteristics and architecture of buildings and places significant in the history of the Town of Acton, the maintenance and improvement of their settings and the encouragement of new building designs compatible with the historically significant architecture existing in the Local Historic District(s) when this Bylaw was first adopted in 1990. This Bylaw does not seek to

establish an architectural museum, but instead to inform concerning the historical process of architectural growth and adaptation to heighten a sense of educated pride in our heritage.” The Bylaw established regulations for review and approval of changes to buildings with the three districts by the Historic District Commission (<http://www.acton-ma.gov/DocumentView.aspx?DID=360> ).

In 2002, Acton adopted the Community Preservation Act (CPA), statewide enabling legislation that allows towns to dedicate a portion of property tax revenues to historic preservation, open space and recreation, and affordable housing initiatives and receive matching funds from the state. According to the Community Preservation Coalition Acton has funded 79 projects. Recent historic preservation projects include:

- Antique fire apparatus restoration,
- Civil War artifacts restoration,
- Davis monument restoration,

Recent historic preservation projects include:

- the preparation of the Massachusetts Historical Commission area form for the Wright Holden Farm off Wetherbee Street;
- the restoration of the historic stone chamber in North Acton; and
- a town-wide archeological reconnaissance survey (CPA funded).

### **Trail Through Time**

Another historic preservation effort is the proposal to develop a heritage trail in North Acton and Carlisle. The trail will connect existing historic sites lying along Nashoba Brook where it flows through the North Acton including the Wheeler Farm complex, the Robbins Mill and dam complex, the Stone Chamber, the Pencil Factory site and sluiceways, and the quarry site for the Stone Chamber’s roof slabs. It will also include pre-colonial sites including certain stone structures located on a swath of landscape sacred to the Native Americans that passes through this region.

### **Overall Summary of Existing Conditions**

As indicated in the preceding sections, Acton’s rich history is well represented by the Town’s three historic districts and by individual houses, other structures, historic landscapes, and stone walls in many parts of town. The Acton Historical Commission and the Acton Historic District Commission have been successful in preserving many of these resources, and with non-profit organizations such as the Historical Society, in educating people as to their importance. Acton also has a diversity of modern cultural resources through the Town’s libraries, churches, museums, theater and cultural societies, groups, and clubs, as well as the Acton Boxborough Cultural Council.

## **Opportunities and Challenges Posed by Existing Historic and Cultural Resources Conditions**

- Public utilities have the potential to overwhelm the character of the villages.
- Efforts to update the inventory of historic resources are continuing.
- Farms that were central to Acton's history are slowly disappearing or are threatened.
- Acton retains many historic barns, reflecting the Town's agricultural past. They represent an opportunity for reuses that would help preserve character. Current measures to ensure their long term protection and productive use may not be adequate.
- Acton's many stonewalls that contribute to the Town's character are often threatened by new development.
- Traffic through the villages has increased and is a threat to the safety of pedestrians and detracts from the appeal of the villages.
- Some development along Massachusetts Avenue, Route 2A/119, and elsewhere does not complement the historic character of Acton.
- Acton's design requirements within the existing zoning regulations (for commercial development) do not always achieve the look and feel desired.
- The town has not developed a strategy for managing technological developments (such as cell towers) and ensuring these developments are implemented in a way consistent with and harmonious with the rural character of the Town.
- Acton has a number of sites of archaeological interest and many have not been researched, documented, and protected from destruction from land development.
- There has been ongoing discussion of expanding the historic districts to include more of the historic resources and revising the design guidelines.
- Much of the historic path of the Line of March (Isaac Davis Trail) is not protected.

In conclusion, historic and cultural resources are strengths of the town and an important ingredient in creating its unique character and supporting diversity. Ongoing effort is needed to preserve the past and to provide opportunities for cultural involvement by all.

## Chapter 5: Open Space and Recreation

This chapter inventories Acton's existing open space and recreation resources. Open space includes forest, wetlands and streams, most agricultural land and other undeveloped uplands. It can be viewed as the town's green infrastructure. This chapter includes:

- An inventory of existing protected open space.
- An inventory of existing recreation resources.
- A brief section on Acton's 2002 Open Space and Recreation Plan.
- A list of Opportunities and Challenges posed by the existing conditions.

### **Why Acton's Existing Open Space and Recreation Resources are Important to the Comprehensive Plan**

Acton was settled by European colonists in the 1600s because it had many open meadows for grazing. To this day Acton's open spaces and natural resources provide the Town's rural characteristics of protected natural areas with trails, tree-lined roads, stonewalls, ponds, meadows, wetlands, forests, wildlife habitats, and farmland. These characteristics and areas for recreation, help define its sense of place and contribute greatly to the quality of life of its residents.

One of the primary ways to help preserve the Town's character that was identified in developing a vision for Acton's future was the preservation, protection, and additional acquisition of open space.

Potential conflicts may exist between identified goals related to open space and natural resource protection and other components of the Plan, such as traffic and economic development.

### **Relationship to Planning Goals**

#### *Goal: Preserve and Enhance Town Character*

Natural resources and protected open spaces are critical aspects of Acton's character. Wetland, grassland, forest, ecological, and topographic/geologic features, as well as recreation potential and the connectivity to currently protected open spaces, are major factors considered when deciding to protect open space.

#### *Goal: Ensure Environmental Sustainability*

Open space and recreation are important for a sustainable future. Forests and wetlands help clean the air and water, convert carbon dioxide to plant material, provide oxygen, and help keep the surrounding area cool. Recreation helps residents maintain their physical and mental health. Open space in agricultural use advances a sustainability objective. Protecting open space can help ensure that significant wildlife habitat does not become further fragmented and is sustained.

#### *Goal: Improve Connections*

Open space and recreation provide places for quality connections between people as they enjoy nature or sports together. Open spaces can also directly provide connections via trails—connecting one place to another.

## Open Space and Recreation

### *Goal: Enable Diversity and Inclusion*

Recreation and enjoying nature have nearly universal appeal. Diverse forms of recreation promote inclusion as diverse groups play together.

### *Goal: Provide Places for Gathering*

Open space and recreation areas include important gathering places and provide opportunities for developing future places for gathering safely.

### *Goal: Maintain and Enhance Town Assets*

Open space and recreation areas are among the Town's most important assets. Open space is also a means for protecting other town assets such as water resources, historical sites, plants, and wildlife.

### *Goal: Maintain and Improve the Financial Well-being of the Town*

Investment in open space must be considered in the context of competing priorities for the use of Community Preservation Act funds and other funds. Open space almost always consumes less town services than developed space. Some, but not all, developed space generates more in tax revenue than it uses in services. Some open space is privately owned and still generates some tax revenue.

## **Key Points**

### *Open Space Resources*

- Approximately 29% of Acton's 13,000 acres of land (3,717 acres) is in some form of public open space or recreation use. This is a higher percentage than Chelmsford, Westford, Boxborough, and Littleton, but less than Concord, Carlisle, Maynard, and Stow.
- More than 2,000 acres are considered permanently protected (Conservation Commission – 1,642 acres, Water District – 395 acres).
- There are over 6 miles of paved paths and 15 miles of trails in Acton including a portion of the Bay Circuit Trail – a 200 mile greenway corridor between Rt. 495 & Rt. 95.
- Some of the major open spaces include: Acton Arboretum, Great Hill, Camp Acton, Spring Hill, Grassy Pond, Wills Hole, NARA Park, and Nagog Hill – All have trail systems and maps available on-line (see <http://www.actontrails.org>).
- Many of the Town's open spaces protect important natural resources, as well as historic and geological features.
- Many privately owned open spaces (common land, back land, etc.) contribute to the Town's sense of nature, and some create important corridors. Open space in cluster developments is protected by Special Permit Conditions.

### *Recreation Resources*

- Recreation Department has an active and varied program of activities and events.
- Recreation Department manages activities at:
  - 7 baseball/softball fields
  - 9 soccer fields
  - 1 outdoor basketball court
  - 7 playgrounds
  - 2 practice fields

## Open Space and Recreation

- 2 fishing areas
- 1 swimming beach
- 1 amphitheater
- a skate park
- 3 picnic areas
- Schools have fields and indoor recreation facilities.
- There are two Community Garden sites – North Acton Community Gardens and Morrison Farm Community Gardens.
- Major recreation sites include NARA Park, School Street Field, Veteran’s Field, Elm Street Fields, Great Hill, Jones Field, and Gardener Field.
- There is one golf course in town and several in adjacent towns.

## Existing Open Space

Acton has a considerable amount of open space. The following table summarizes the major town, state, and privately owned open space acreage (excluding private agricultural land) according to MassGIS and Acton GIS information.

Table 5.1: Open Space Acreage

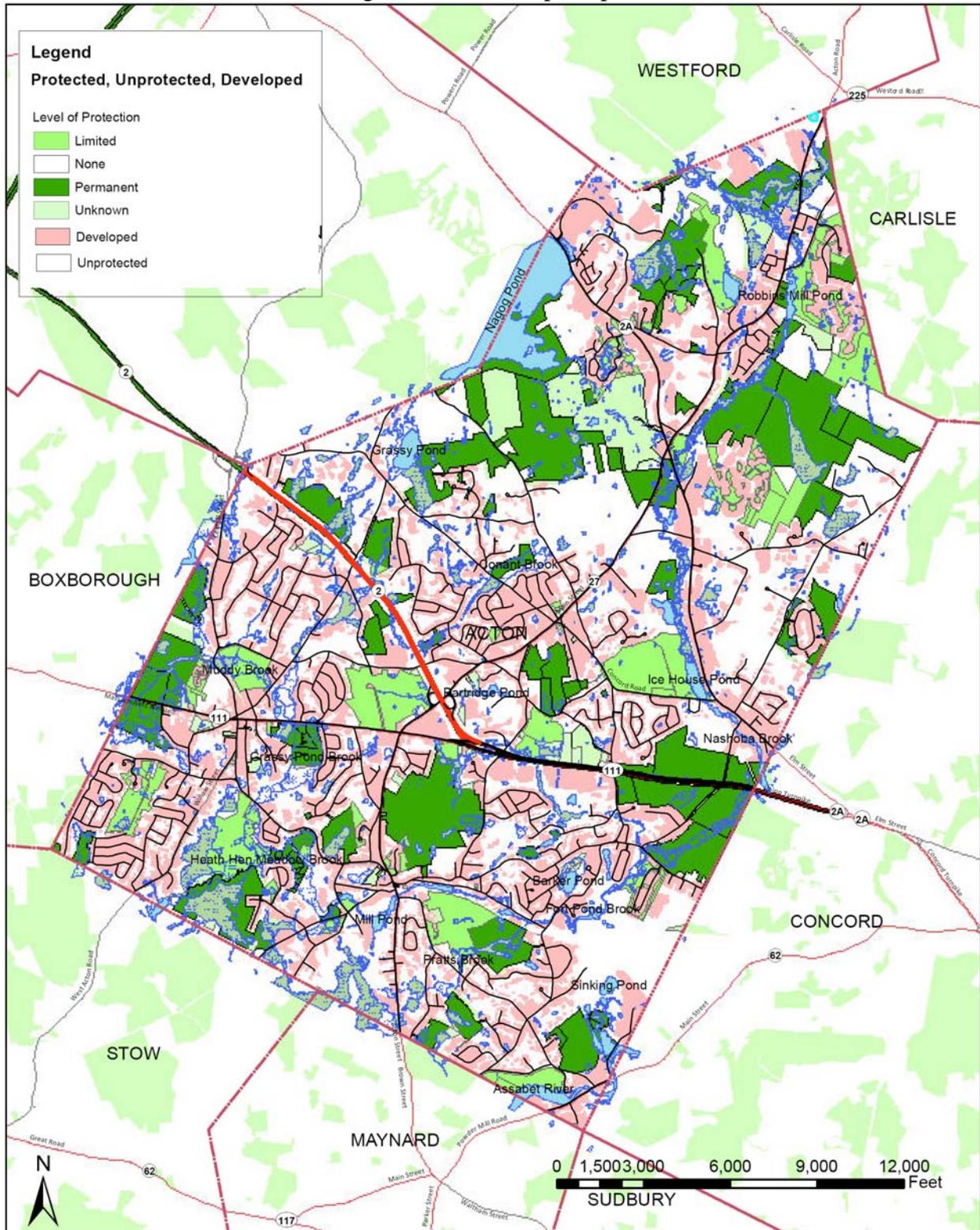
<b>Owner</b>	<b>Total Acres</b>
Town of Acton (includes School Dept. & other)	773
Town of Acton Conservation Commission	1,642
Town of Acton Water Department	395
Commonwealth of Massachusetts (includes Department Of Corrections)	192
Non-profit Land	78
Private Land (includes golf course, common land & other)	659
Other Town (Maynard, Concord) Land	71
<b>Total</b>	<b>3,810</b>

This represents 29% of the town’s total area. This is higher than Chelmsford, Boxborough, Westford and Littleton, but less than Concord, Carlisle, Maynard and Stow. However, not all of the open space is permanently protected. Conservation Commission (1,642 acres) and Water Department (395 acres) lands are generally considered permanently protected. Some advocate additional layers of protection, such as conservation restrictions, for key conservation areas to assure that they are truly permanently protected. The Massachusetts Department of Conservation and Recreation (DCR) generally considers most Commonwealth lands, other than Executive Office of Transportation land, as permanently protected but some may be subject to future development. School Department, cemeteries, and Recreation Department lands are considered to have limited protection because their character can be altered by future facility construction. Much of the other Town land is considered to be unprotected and some is developed for town services.

An additional 119 acres of open space land are coming for an acceptance vote at the 2011 Town Meeting. This will be common land/open space set aside for municipal use as part of the Robbins Mill subdivision. It will include about four acres of recreation land (playground and ball field).

*Figure 5.1 shows the town’s extensive open space.*

Figure 5.1: Acton Open Space



There are over 6 miles of paved paths and 15 miles of trails in Acton including a portion of the Bay Circuit Trail – a 200 mile greenway corridor between the two major highways that circle Boston, Rt. 495 & Rt. 95.

Many of the town's open spaces protect important natural resources, as well as historic and geological features. The Massachusetts Audubon Society has developed an "Index of Ecological Integrity" that tracks and ranks towns in terms of their ecological quality of wildlife habitat as sites for biodiversity. Acton ranks 176 out of 351 in terms of percent of land protected. (See appendix for a chart comparing Acton and nearby towns developed from the Massachusetts Audubon Losing Ground website.)

In 1975 Acton had permanently protected just over 1,000 acres and by 2010 more than 2,300 acres (about .1 acre per capita). The open space map shows protected, developed, and unprotected land in Acton.

The Massachusetts Audubon Losing Ground report (based on MassGIS orthophoto interpretation) showed that, from 1999 to 2005, a total of 141 acres (92 acres of forest, 33 acres of farmland, and 16 acres of other open land) were converted from natural land (unprotected open space) to development.

### **Existing Recreation Resources**

The Conservation Commission lands are available for passive recreation—hiking, nature study, etc. Active recreation areas, fields for sports, etc., are distributed around town. Town-owned lands provide the most significant areas of recreational space for residents. The most obvious of these lands are several recreation areas and some sites owned by the School Department that have ball fields, courts and play equipment that are available to residents in off-school hours. There are also several privately owned areas and sport/exercise clubs that provide recreation opportunities for their members and town residents. See the Appendix for a complete listing of the town's park and recreation resources. The locations of recreation resources, with a one half mile radius to show convenient walking distance, are shown on Figure 5.4.

### **Recreation Standards**

The National Recreation and Park Association is the only organization that has suggested standards for recreation facilities—including playgrounds, playfields, neighborhood parks, community parks, regional parks, baseball fields, trails, tennis courts, soccer fields, football fields, picnic areas, golf courses, indoor recreation centers, and water sports facilities.

The accompanying table is a brief analysis of Acton's existing recreation facilities compared to national standards.

Table 5.2: Recreation Standards

Type	Standard	Suggested for 2010 Population	Suggested for 2020 Population	Existing	Needed to Meet 2020 Suggestion
Playgrounds and Playfields	1.5 acres per 800 persons	39.4 acres	42 acres	14.7 acres	27.3 acres
Neighborhood Parks	2 acres per 1,000 persons	44 acres	acres	?	?
Community Park Min size 40 acres	3.5 acres per 1,000 persons	74 acres	77 acres	40 acres NARA	37 acres
Regional Park Min size 500 acres	15 acres per 1,000 persons	500 acres	acres	?	?
Baseball/Softball Fields	1 per 1,500 persons	14	15	11 including school fields	3
Trails	3 mile per 3,000 persons	7 miles	7.3 miles	?	?
Tennis Courts	1 per 1,500 persons	14	15	11 + many private or commercial	3
Football/Soccer Fields	1 per 2,000 persons	10	11	14	0
Picnic Areas	4 acres per 1,000 persons	84 acres	90 acres	2.6 acres + other areas available	?
Golf Course	1 per 25,000 persons	1	1	1 plus several nearby	0
Indoor Recreation Center	1 per 10,000 persons	2	2	Schools Access? Private/ membership facilities	?
Water Sports Rowing, Fishing	1 lake or river per 25,000 persons	1	1	3	0

*Standards suggested by National Recreation and Park Association.*

*Note: Some fields are multi-use. 2020 Population is projected to be 22,500.*

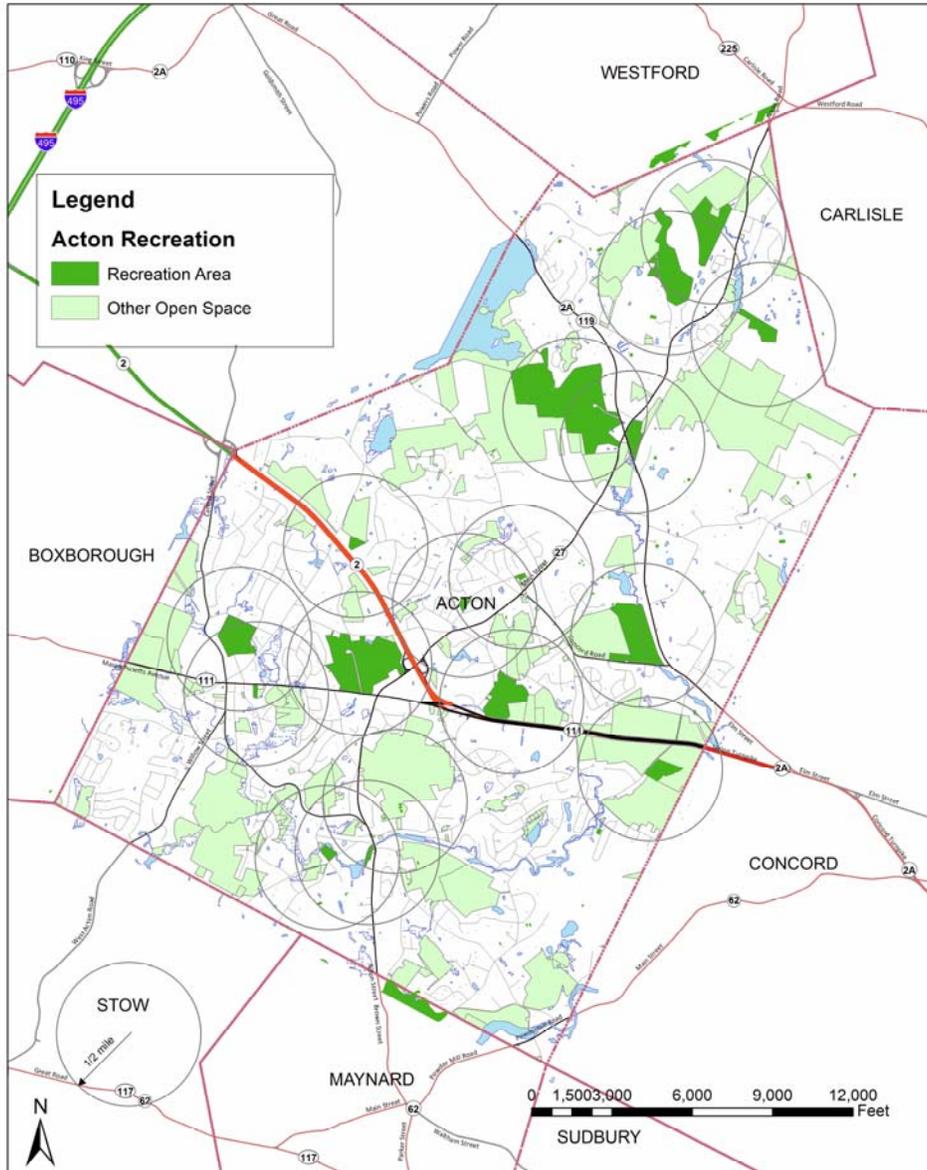
## Open Space and Recreation

While national standards are useful for comparisons they do not define local needs and should not limit the desires of residents to improve their quality of life—minimums are not meant to be maximums. It should also be noted that the standards are developed from national averages and may not be appropriate for every city or town. Adequate recreation facilities are important for good health and enjoyment. It is also important to recognize the quality of the town's facilities. Good maintenance and management are crucial.

It can also be noted that recreation facilities are a form of development that is not without environmental consequences in terms of impacts on natural resources.

*Figure 5.2 shows the town's recreational resources.*

Figure 5.2: Acton Recreational Resources



## Acton's 2002 Open Space and Recreation Plan

Acton has a rich natural heritage worthy of recognition and pride. Several important initiatives have focused attention on the importance of open space and recreation. In 2002 Acton completed its Open Space and Recreation Plan. It included the following three goals and their related objectives. The goals were the result of a town-wide survey and the input of the Conservation Commission, Open Space Committee, Land Stewardship Committee, Recreation Commission, and the Natural Resources Department staff. These groups are currently involved in an update of the Open Space and Recreation Plan that is due to be completed in 2011.

- Preserve the remaining elements of Acton's rural character.
  - Improve communication from town staff and/or the Board of Selectmen regarding potential change of use for open space parcels.
  - Address citizens' concerns about mitigating growth.
  - Maintain the present ratio of protected open space per resident of 81 acres per 1,000 residents.
  - Preserve natural and manmade features that contribute to Acton's character such as open fields, woodlands, ponds, country roads, scenic vistas, and stone walls.
  - Preserve open space and develop additional public open spaces and parkland bordering Fort Pond Brook, Nashoba Brook, and the Assabet River.
  - Protect and maintain the remaining farmland in town, including the preservation of the open fields along Route 2.
  - Through advocacy create an environment that facilitates and encourages farming in Acton.
- Protect Acton's environmental resources.
  - Protect the quality and quantity of Acton's water supply.
  - Protect wildlife corridors, through land acquisition and public education.
  - Ensure the restoration of polluted environmental resources.
  - Strictly enforce federal, state, and local environmental laws.
- Improve recreational opportunities.
  - Promoted the development of the two regional bike trails planned to run through Acton.
  - Enhance possibilities for hiking, cross-country skiing, and horseback riding, boating and fishing on conservation lands. Expand public outreach to better inform the public of our available passive recreation opportunities.
  - Provide additional athletic fields to meet the needs of the town's growing population.
  - Encourage regional planning with abutting towns in order to create more expansive human (see 3b above) and wildlife (see 2b above) corridors.

- Ensure handicapped accessibility is available for recreation activities (e.g. trails, picnicking, athletic fields, water-based recreation and camping) at both recreation and conservation areas.

## **Overall Summary of Existing Conditions**

Acton has a large proportion of public open space and recreation land, two-thirds of it considered permanently protected. The Open Space Committee has considered conservation restrictions on all of the Town owned conservation land to assure an even greater level of protection. This open space includes many important natural resources and historical and geological features, and the active recreation land supports a wide variety of organized and informal activity. Acton's Open Space and Recreation Plan (currently being updated) includes goals that are consistent with the goals of the Acton 2020 Plan, and it identifies priority sites for acquisition that can help advance the Acton 2020 goals including sustainability and preservation of town character. The following are opportunities to advance the open space and recreation goals and the challenges that must be addressed to do that.

## **Opportunities and Challenges Posed by Existing Open Space and Recreation Conditions**

- Acton still has some small privately owned and operated farms producing produce sold in local markets. These agricultural areas are highlighted in the Open Space and Recreation Plan as important assets deserving of protection. They also that help provide some diversity of habitat. These scattered agricultural areas have value for wildlife and help provide some of the distinctive character of the town. They also have a greater value as sustainable, local sources of food.
- Much of the town's wildlife diversity is a result of its variety of habitat types. The challenge of maintaining that diversity will require protection of both small and large areas like those identified in the Priority Habitats and BioMap Core Areas and areas of different habitats; non-forested wetlands, forested uplands, open/vacant areas, grasslands, and open space corridors that make connections between areas.
- Protection of Priority Habitats and BioMap Core Areas is an important conservation priority for the region as well as the town. These areas include several already protected areas. There is an opportunity to expand protection of these important resource areas.
- Part of the town's scenic quality is due to the visual impact of broad vistas and more intimate views. Retaining that quality will be an on-going challenge and opportunity.

In conclusion, Acton has done an admirable job of preserving and managing open space and recreation resources, but continuing investment and effort to manage these resources will pay dividends in the Town's quality of life, help to preserve its character, and advance the goal of ensuring environmental sustainability.

## Appendix

### Protected Land

What's protected and what's not and how does Acton compare to other towns?

Table 5.3: Protected Land in Acton and Surrounding Towns

	Acton	Concord	Carlisle	Westford	Maynard	Stow	Littleton
<b>Protected Acres</b>	2,328 (169)	4,910 (74)	2,698 (149)	2,055 (189)	1,081 (263)	1,883 (198)	1,040 (267)
<b>Percent Protected</b>	17.9% (176)	29.7% (68)	27.2% (89)	10.2% (264)	31.5% (57)	16.4% (194)	9.3% (275)
<b>Protected Acres/Capita</b>	0.11 .19	0.28 .24	0.55 .39	0.09 .23	0.1 .19	0.28 .38	0.12 .22
<b>1971 IEI</b>	(250)	(226)	(136)	(229)	(244)	(140)	(231)
<b>2005 IEI</b>	.09 (256)	.16 (198)	.24 (155)	.10 (251)	.14 (212)	.23 (160)	.11 (246)
<b>% Loss in IEI 71-05</b>	49.3% (62)	30.5% (172)	40.0% (117)	57.4% (13)	25.8% (200)	39.0% (123)	51.1% (50)

Note: IEI = Index of Ecological Integrity (Massachusetts Audubon Society, *Losing Ground*, 2009 [www.massaudubon.org/losingground](http://www.massaudubon.org/losingground) ), Rank in relation to other towns/cities is shown in parentheses. There are 351 towns/cities in Massachusetts

## Acton Recreation Sites

Table 5.4: Acton Recreation Sites

Site Name	Location	Facilities	Acres
North Acton Community Gardens	off Route 27 in North Acton	Community garden plots	5.1
Morrison Farm Community Gardens	116 Concord Road	Community Gardens	2
Concord Road Field	near Ice House Pond	Soccer Field	1.5
Elm Street Fields	next to Douglas School	Playground, picnic area, tennis courts, multi-purpose field	4.8
Gardner	Mass. Ave. near Kinsey Road	Playground, basketball court, practice field	1.7
Goward Playground	Back of Town Hall	Playground, basketball court	0.6
Great Hill	Off School Street behind South Acton Firehouse	Soccer fields, practice field, natural area	190
Hart Field	80 Taylor Road/Conant Elementary School	Baseball/softball field, playground, school	24
Ice House Pond	Off Concord Road	Picnic area, fishing area., pond	19.4
Jones Field	Off Martin Street	Playground, Baseball diamond	4.4
Little Great Hill	Off School Street behind South Acton Firehouse	Soccer Field (small)	0.2
MacPherson Field	Conant School	Baseball diamond	0.7
NARA Park	25 Ledge Rock Way	Playground, Pond and Beach, trail, 1-mile accessible path, softball field, picnic area with pavilion, amphitheater, fishing area, soccer field	40
School Street Field	347 School Street	Soccer fields	14.4
T J O'Grady Skate Park	Hayward Road near ABRHS	Skateboarding and rollerblading park	?
Canoe Landing	Route 62 at Assabet River	Canoe launch site	?
Veteran's Field	655 Main Street	Playground, baseball diamonds	13
Acton-Boxborough Schools	Hayward Road	Tennis courts, football/soccer field, track, baseball diamonds, playground, multi-purpose field, soccer fields, school facilities	102

*Source: Acton Recreation Department Webpage, MassGIS, ActonGIS, Acton Stream Teams brochure, 2008 aerial photos.*

## **Farm Land in Acton**

### Chapter 61 lands – 97 acres

- Stonefield Farm  
91 Martin Street, South Acton  
61.5 acres including cropland and greenhouses
- Cucurbit Farm  
32 Parker Street  
18.4 acres including cropland and small forest area
- Idlewilde Farm  
366 Central Street  
25 acres and some other scattered fields

### Chapter 59 land

- Butter Brook Farm  
982 Main Street  
10.7 acres including cropland and forest

### State Land

- Northeastern Correctional Facility farm fields  
Route 2 gateway area  
73 acres

**Acton Conservation Restrictions**

FY	Grantor	Grantee	Acres	Term	Received	Approved	Book	Page	Comments
79	Harold & Devena Buxton	Town	13.90		12-Dec-78	27-Dec-78	13615	339	
90	R.Smith Associates, Inc.	Town	49.77	p	2-Oct-89	02-Feb-90	20065	420	
98	The Haartz Corp.	Con.Com.& town	14.5	p	15-Oct-96	10-Jan-97	27757	537	Industrial District Buffer
02	James & Mary Donald	SVT	11.20	P	15-Mar-00	13-Dec-01	34449	6	660' unnamed tributary to Fort Pond Brook
05	Leo F. Bertolami	Town	3.59	P	15-Apr-04	28-Oct-04			Canoe access part of DEP wetlands permit
05	Paul & Alan Wagner	Acton Water Supply	0.12	P	21-Jul-04	25-May-05			Groundwater protection/See Concord #118
07	The Haartz Corp.	Con.Com.& town	6.30	P	6-Jun-06	21-May-07	50696	555	Condition of permit
	The Woodlands @ Laurel Hills	Town	6.67	P	5-Oct-06				See Westford CR#59
07	William & Nancy Kingman	Acton Cons. Trust	6.41	P	17-Oct-06	07-Dec-06			Protects scenic view
08	John and Elizabeth Valintine	Carlisle Cons. Foundation	14.19	P	29-Oct-08	29-Dec-08	13615	339	See Carlisle #63

## **Horse Farms in Acton**

Compiled by Susan Mitchell-Hardt (updated January 28, 2010)

For the purpose of this list a horse farm is defined as a property where one horse or more are kept, will be kept, or were recently kept.

Marilee Havel, 54 Esterbrook Road

Kim Sieurin, Esterbrook Horse Farm, 41 Esterbrook Road

Bill and Nancy Kingman, 65 Esterbrook Road

Stephanie & Graham Knowland, 29 Esterbrook Road

Rita McConnon, Hybrid Farm, 217 Nagog Hill Road

Morene Bodner, Lythrum Farm, 310 Nagog Hill Road

David & Carol Stone, Liberty Tree Farm, 24 Liberty Street

Amy Davis, 42 Carlisle Road

Ben and Andrea Starr, 22R Elm Street

Judy Kotanchik 48 Nashoba Road

Ainslee Sheridan, 14 Breezy Point

James and Maria Crowley, 19 Spring Hill Road

Pine Feather Farm, 366 Pope Road

Spring Hill Farm, 328 Pope Road

Stonemeade Farm, 181 Pope Road

Bear Spot Farm, 276 Pope Road

David Veo, 145 Strawberry Hill Road (currently has cows, but has had horses)

Paul and Peggy Hebert, Hennesey Farm, 88 Prospect Street (currently has sheep, but has had horses)

## Chapter 6: Transportation and Circulation

This chapter addresses transportation system in Acton in terms of the facilities available for travel and the way that people and businesses use the transportation system.

It includes:

- Relationship of Transportation to Planning Goals
- Information on:
  - The travel patterns of residents and employees
  - The network of roads, trails, sidewalks, and shared use paths
  - Traffic circulation
  - Public transportation
  - Walking
  - Bicycling
- Opportunities and Challenges Posed by Existing Transportation Conditions

### Why the Comprehensive Plan Addresses Transportation and Circulation

Almost everyone needs access to transportation resources on a daily basis. Because those who cannot get around easily are often disconnected from the rest of the community, transportation access and circulation becomes an essential component of community comprehensive planning.

### Relationship of Transportation to Planning Goals

Each of the seven planning goals incorporates an aspect of transportation; Goal 3 (Improve Connections) makes the most direct reference to “supporting these connections through physical means including sidewalks, bike paths, trails, and public transportation to connect people and places, and to support independent and safe travel for all.” The following describes how each of the seven goals relates to transportation and circulation.

*Goal: Preserve and Enhance Town Character*

Each transportation project provides the Town with an opportunity to both preserve and enhance town character in terms of construction materials, streetscape amenities, and overall design.

*Goal: Ensure Environmental Sustainability*

While the automobile will continue as the primary mode of transportation in Acton, alternatives to driving alone offer myriad opportunities to make the Town more sustainable.

*Goal: Improve Connections*

Transportation is all about connections; in some cases, these connections need to be improved while in other cases, existing facilities and systems need to be preserved.

*Goal: Provide More Opportunities for Community Gathering and Recreation*

As Actonians consider potential investments in new community facilities, transportation access and convenience are critical elements of location choices.

## Transportation and Circulation

### *Goal: Support Inclusion and Diversity*

Without good access, it is often impossible for some people to participate in activities outside of their homes. This is particularly important to seniors, persons with disabilities, and young people who are collectively often referred to as the “transportation disadvantaged.”

### *Goal: Maintain And Enhance Town-Owned Assets*

Acton is responsible for maintaining most of the roads, sidewalks, and pathways and some of the parking resources in the town. Preserving transportation resources is an essential component of any municipality’s public functions.

### *Goal: Maintain and Improve the Financial Well-Being Of the Town*

The transportation system requires considerable ongoing public investment; deferred maintenance of transportation resources can lead to considerable financial strain when costlier replacement projects are eventually needed. New or substantially upgraded transportation facilities are typically expensive; and often create new requirements on the operating budget for maintenance.

## **Summary of Key Points**

### *Overview*

- As the cost of transportation continues to increase (both driving and using public transportation), the cost of commuting will likely be an important factor in residential and employment decision making.
- As with neighboring communities, the 2000 Census showed that nearly 90 percent of workers living in Acton drove or rode in a car to work and 4.5 percent used public transportation.
- While car travel and to a lesser extent regional commuter transit will continue to predominate in the Town, participants in the planning process have expressed a desire for other viable alternatives.

### *Roadways*

- Acton’s principal roadways were never designed to carry high traffic volumes. Also, because of the historical importance of some roads, maintaining their visual character is an important element in how the community views and considers roadway improvements.
- Many of the intersections along these corridors are uncontrolled, which means that left-turning traffic creates backups; left-turns entering from side streets can also be difficult. This is particularly challenging along Great Road (Route 119) where multiple driveways permit entries and exits that can result in conflicts and potentially in crashes.
- Speeding is a problem on many of the Town’s roadways, particularly on road segments between congestion hot spots.

### *Public Transportation*

- The MBTA recently began improvements to the Fitchburg Line, which include extending double tracking from Boston to Ayer to increase train speeds and on-time performance. The project also includes renovating the South Acton Train Station (SATS).

## Transportation and Circulation

- In March 2010, the MBTA adopted the design alternative proposed by Acton residents. The Acton Historic District Commission has approved the latest design proposal from the MBTA (details [here](#)).
- The MBTA is working on improvements to the Littleton/495 commuter rail station. When construction is completed, express service currently available at SATS will be moved to the new station, thereby relieving some parking congestion at SATS.
- Although the MBTA provides commuter rail service to Acton, the town is also part of the Lowell Regional Transit Authority (LRTA) service area for paratransit service to Acton's senior and disabled communities. LRTA does not provide fixed route bus service in Acton.
- In 2009, Acton received \$95,188 in federal funding to initiate the MinuteVan shuttle service between the SATS and a 22-space satellite parking lot behind the West Acton Fire Station.
- The MinuteVan shuttle also offers dial-a-ride service outside of the commuter service hours to any destination in Acton and to seven locations in adjacent towns.
- The Acton Council on Aging also provides shuttle service for Acton residents 60 years old and older and for residents with disabilities as space allows.
- Yankee Line, Inc. provides weekday morning and evening charter-bus trips between East Acton, Concord Center, and Copley Square in Boston.

### *Pedestrian Facilities*

- Acton's sidewalks often exist on only one side of the street. With the notable exception of recent sidewalk projects, most of Acton's sidewalks are narrow. Often, for reasons that include avoiding historic stone walls, large street trees, or property takings, sidewalks sometimes shift from one side of the street to the other.
- Acton Subdivision Rules and Regulations require developers to provide pedestrian improvements as deemed necessary by the Planning Board. They also require local streets to have a sidewalk on at least one side, while collector and arterial streets must have sidewalks on both sides.
- The town's Sidewalk Committee helps set priorities for pedestrian improvements, and Acton has recently completed construction of many sidewalks.
- Since one of the challenges to providing pedestrian facilities is the perception of many residents that they are inconsistent with the town's rural character, it is noteworthy that the Sidewalk Committee has published design guidelines for sidewalks that address this concern.

### *Bicycle Facilities*

- Acton has many two-lane roads that are ideal for recreational cycling during off-peak times. However, these same roads are less than optimal for cycling when vehicular traffic volumes are higher and there are no marked bicycle lanes in the Town.
- At present, there is no bicycle committee or TAC (Transportation Advisory Committee) subcommittee on bicycling.

## Transportation and Circulation

- Acton is directly involved in two major rail trail projects: The Assabet River Rail Trail (ARRT) Phase 2 is under design, which would provide an important commuter link to SATS, and the Bruce Freeman Rail Trail (BFRT), for which the Town has selected a design firm for final design.
- The Acton Subdivision Rules and Regulations also address bike paths as deemed necessary by the Planning Board.

## Travel Patterns of Residents and Employees

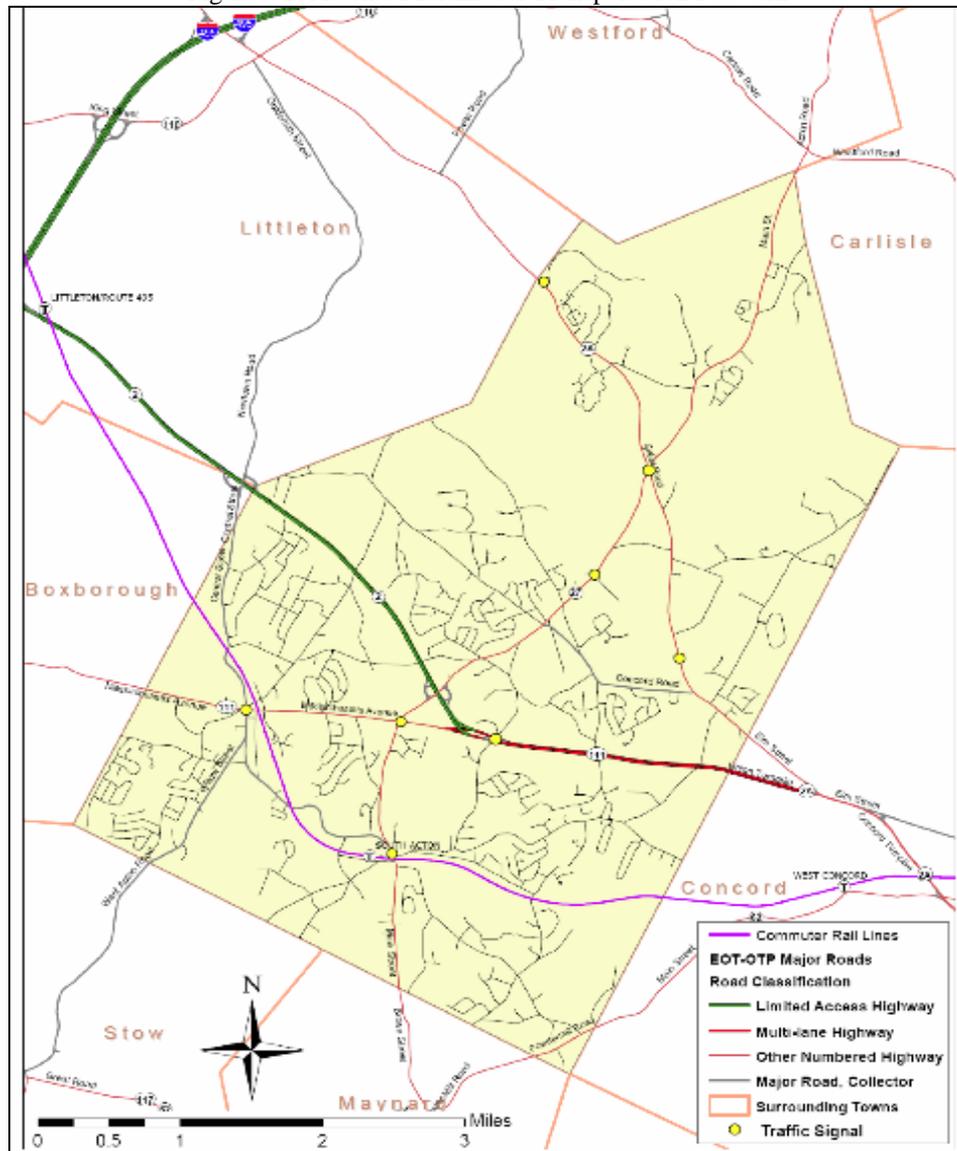
The relationship between residential and employment locations is an essential element in a person's daily life. Almost everyone who works desires a short commute but this is often difficult to achieve for a variety of reasons related to economic and lifestyle choices and options. According to the 2000 U.S. Census, 11,744 people were employed in Acton, of whom 79.5 percent did not live in Acton. Similarly, of the 10,942 Acton residents in the workforce, 77.9 percent worked outside of Acton. The three most common places where Acton residents worked were Boston (9.9 percent), Concord (8.5 percent), and Cambridge (5.6 percent). The appendix provides additional details on how residents of Acton and adjacent communities commuted to work in 2000.

It will be important to compare the 2000 data with the forthcoming 2010 census data when it becomes available to see how these patterns may have changed. The cost of fuel is likely to continue to increase and public transportation fares are also likely to grow faster than wages. Increases in the cost of commuting will thus likely be an important factor in residential and employment decisionmaking.

## Transportation System Overview

Route 2, the main east-west highway traversing northern Massachusetts dominates Acton's transportation network. Just east of Acton, Route 2 changes from a limited-access highway to a severely congested roadway between Concord and Route 128. The bottleneck begins at the Concord Rotary, which is discussed further below. In the other direction, Interstate 495 is just over two miles from Acton's western boundary, which affords excellent regional highway access.

Figure 6.1: Acton's Multimodal Transportation Network



The Fitchburg commuter rail line runs through Acton with a stop at the South Acton Train Station (SATS). This station is very popular for commuters in the region, and its parking is oversubscribed. Other public transportation resources include a commercial express bus service to Boston. Acton's Council on Aging (COA) provides senior transportation service within the Town and to destinations in Concord and Maynard, and the Lowell Regional Transit Authority (LRTA) provides limited service to seniors and persons with disabilities.

While Acton has approximately 119 miles of roads, there are approximately 48 miles of sidewalks, which translates to approximately 40 percent coverage. The majority of these sidewalks are in the Town's villages and some are along well-traveled roadways such as Massachusetts Avenue and Main Street. Acton has an active sidewalk committee that is focusing resources on increasing the sidewalk network and improving deficient facilities.

Acton is unique in its position of having two important rail trail projects in development. The Assabet River Rail Trail will be extended northward into Acton from Maynard while the Bruce Freeman Rail Trail will be extended southward from Westford. While these important shared use path projects are highly anticipated, the roadway network in Acton is also important to bicycle transportation both today and into the future, particularly for non-recreational cycling.

As with neighboring communities, the 2000 Census showed that nearly 90 percent of Acton residents drove or road in a car to work and 4.5 percent used public transportation. While car travel and to a lesser extent regional commuter transit will continue to predominate in the Town, participants in the planning process have expressed a desire for other viable alternatives. As described previously, 37 percent of the ideas in the transportation –related goals and policies document relate to bicycle, sidewalk, and trail facilities and 14 percent relate to transit.

### **Roadways**

With the exception of Route 2, Acton’s street network features two-lane roadways, a number of which have served as principal roadways since Acton was founded. As such, these principal roadways were never designed to carry high traffic volumes. Also, because of their historical significance, maintaining their visual character is important to Acton residents. These principal roadways connect Acton’s villages, and they experience congestion during peak-periods and on Saturdays. Many of the intersections along these corridors are uncontrolled, which means that left-turning traffic creates backups; left-turns entering from side streets can also be difficult. This is particularly challenging along Great Road (Route 119) where multiple driveways permit entries and exits that can result in conflicts and potentially in crashes. The East Acton Village Transportation Study discusses these issues in more detail (see appendix.)

According to Acton’s planning and engineering staff, Transportation Advisory Committee (TAC) members, and outreach event participants, speeding is a problem on many of the Town’s roadways, particularly on road segments between congestion hot spots.

In addition to traffic issues on various principal roadways, congestion from the Concord Rotary presents particular problems resulting from motorists looking to bypass congestion and using streets like Hosmer Street.

The appendix provides a detailed discussion of the roadway network in Acton, including functional classification of roads, traffic speeds and volumes, and crash data.

### **Public Transportation**

In recent years, as an outgrowth of a United Way forum on local transportation issues, Acton’s TAC has been focusing its energies on improving public transportation services, particularly related to the commuter rail service and parking at South Acton Train Station (SATS).

#### **Commuter Rail**

The MBTA Fitchburg Line provides commuter rail service to SATS. Seventeen trains operate each way between Boston and Fitchburg – including one express rush hour train each way between SATS and Porter Square in Cambridge, where commuters can transfer to the MBTA’s Red Line for rapid transit. According to the MBTA, nearly 900 passengers board at SATS each weekday.

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According to the Fitchburg Line Analysis Report, the MBTA recently began improvements to the Fitchburg Line, which include extending double tracking from Boston to Ayer to increase train speeds and on-time performance while reducing operations and maintenance costs. The project also includes renovating SATS to improve compliance with the Americans with Disabilities Act (ADA). In April 2009 the MBTA's design contractor, HNTB, presented conceptual designs, which included a single center platform with a 600' ADA-compliant ramp and station access from just one side of the tracks. A citizens group petitioned the MBTA to provide side platforms, to accommodate station access from both sides, to install two smaller ramps, and to add an elevator. In March 2010, the MBTA adopted the design alternative proposed by Acton residents. The Acton Historic District Commission has approved the latest design proposal from the MBTA (details here).

Residents and non-residents alike complain that there is too little parking at SATS. While renovations there will not expand parking capacity, the MBTA is working on improvements to the Littleton/495 commuter rail station that includes construction of a parking garage to attract and accommodate drivers from the nearby interstate highway. When construction is completed in Littleton, express service currently available at SATS will be extended to the new station, thereby relieving some parking congestion at SATS attributable to the express train. Town staff expects that investments in shuttle service and the planned Assabet River Rail Trail from Maynard to SATS will further relieve parking constraints.

### **Bus and Paratransit**

The Town of Acton is a member of the Lowell Regional Transit Authority (LRTA). While the LRTA does not provide fixed-route bus service in Acton, it provides paratransit service to Acton's senior and disabled communities. The Road Runner is a curb-to-curb service available to residents within the LRTA service area who are 60 years old or older or who are disabled. The service operates Monday–Friday 8:30 a.m.–2:30 p.m. There is no weekend service.

### **Shuttle**

Because the parking facilities at SATS are routinely oversubscribed, the TAC applied for grant funding to provide a shuttle service (MinuteVan) from West Acton to SATS and to operate a dial-a-ride (DAR) service. In 2009, Acton received \$95,188 in federal funding to initiate a shuttle service between the station and a 22-space satellite parking lot behind the West Acton Fire Station with half of the spaces available to residents and half to non-residents. The funding is through the Federal Congestion Mitigation Air Quality (CMAQ) program with diminishing contributions for each of three years; a replacement-funding source will be needed to make up the loss of these program funds.

The MinuteVan operates 6:45–9:25 a.m. for inbound commuters and 5:10–7:30 p.m. for outbound commuters. Acton residents may pay \$250 for an annual park-and-ride membership, while non-residents must pay \$500. Acton residents may pay \$200 for the shuttle service alone (i.e., without parking), and anyone may pay \$10 for a book of ten ride tickets.

In addition to commuter service, the shuttle offers dial-a-ride service outside of the commuter service hours to any destination in Acton and to the following locations:

- Food Pantry, Boxborough
- Emerson Hospital, Concord

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- Concord Hillside Medical Offices, Concord
- Cooperative Elder Services Inc., Concord
- West Concord Center
- Nashoba Skating Rink, Boxborough
- Maynard Center

The dial-a-ride service is available to Acton residents 12 years old and older. It operates Monday–Friday 8–11 a.m. and 3:15–8:15 p.m. There is no weekend service. Each ride with this shuttle service costs \$2 within Acton and \$4 to or from locations outside Acton.

Acton Council on Aging also provides shuttle service for Acton residents 60 years old and older and for disabled residents as space allows. An in-town trip costs \$1, while an out-of-town trip to Maynard Center or Emerson Hospital in Concord costs \$1.50. The service operates Monday–Friday 8 a.m.–4:15 p.m. It does not operate on weekends.

### Private Carrier

Yankee Line, Inc. provides weekday morning and evening bus trips between East Acton, Concord Center, and Copley Square in Boston. The morning bus leaves East Acton from Colonial Spirits at 7 a.m. and arrives in Boston at 7:50 a.m., while the evening bus departs Boston at 5:05 p.m. at Copley Square and arrives in East Acton at 5:50 p.m. The one-way ticket costs \$8, or passengers may buy a book of 10 tickets for \$65.

## Pedestrian Facilities

According to the town’s Engineering Department, Acton has 47.7 miles of bituminous, concrete, and gravel sidewalks. Sidewalks extend along 40 percent of the town’s roads. Acton’s sidewalks often exist on only one side of the street. With the notable exception of recent sidewalk projects detailed below, most of Acton’s sidewalks are narrow (typically 3-5 feet) and often exist on only one side of the street. Often, for reasons that include avoiding historic stone walls, large street trees, or property takings, sidewalks sometimes shift from one side of the street to the other.

Section 8.1.4 of the Acton Subdivision Rules and Regulations requires developers to provide pedestrian ways for adequate circulation between schools, playgrounds, parks, shops, open spaces, and other community facilities and between existing or proposed neighborhoods as deemed necessary by the Planning Board. Section 9.6 requires local streets to have a sidewalk on at least one side, while collector and arterial streets must have sidewalks on both sides. In addition, the Town requires sidewalks on any existing public street upon which the subdivision has frontage. Sidewalks must be five feet wide and constructed in accordance with the standards of the Massachusetts Architectural Access Board, with several sections of the state’s “Standard Specifications for Highways and Bridges,” and with the typical structural cross-section provided in the subdivision regulations. Furthermore, the Planning Board may reduce the width of streets at pedestrian crossings or require raised crossings to accommodate walking. While these rules have resulted in the addition of significant sidewalk pieces in certain locations during the last 20 years, many of the town’s existing roads and streets require a significant public investment to link these pieces and add additional sidewalks.

The town’s Sidewalk Committee helps set priorities for pedestrian improvements, and Acton has recently completed construction of many sidewalks: on Prospect Street between Central Street

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and Main Street, on Central Street from Windsor Avenue to Summer Street, on Main Street from Post Office Square to Great Road, and on High Street from Audubon Hill to 46 High Street. In the coming year, Acton plans to construct sidewalks on Summer Street between Central Street and Willow Street, on Summer Street at the gap near Ethan Allen Dr., on Great Road between Davis Road and the Woodvale Condominiums, on Martin Street from Central Street to the railroad tracks, and on High Street from Conant Street to Parker Street.

In addition, the Acton Planning Board asks developers contribute to a sidewalk fund in lieu of (or in addition to) paying for sidewalks in new subdivisions. That way, the Town has a source of funds for building sidewalks.

Since one of the challenges to providing pedestrian facilities is the perception of many residents that they are inconsistent with the town's rural character, it is noteworthy that the Sidewalk Committee has published design guidelines for sidewalks that address this concern.

Figure 6.2: Acton Sidewalk Locations



## Bicycle Facilities

Acton has many two-lane roads that are ideal for recreational cycling during off-peak times. These same roads are less than optimal for cycling when vehicular traffic volumes are higher and there are no marked bicycle lanes in the Town. While there are bicycle lockers at SATS and limited bicycle parking elsewhere, the TAC has been investigating the MAPC bicycle rack program and is identifying suitable locations for their installation in coordination with retail businesses. There are bike racks at the town hall / library complex, but none at the public safety building. At present, there is no bicycle committee or TAC subcommittee on bicycling.

Acton is directly involved in the two rail trail projects described in the transportation overview. Assabet River Rail Trail (ARRT) Phase 2 would extend northeasterly from Stow, through Maynard Center to SATS, which would provide an important commuter link to the station. In addition the trail would serve Clocktower Place, an office park in Maynard. AART is a top priority for Acton. The project is in final design, with construction expected to begin before federal fiscal year 2015. Funding for the final design comes from a Federal transportation earmark for the ARRT that the Town obtained with the help of former Congressman Meehan and Senators Kennedy and Kerry.

The Town has selected a design firm for the final design of Phases 2A and 2C of the Bruce Freeman Rail Trail (BFRT). Massachusetts is funding the final design work. Phase 2A of the trail would continue southerly from the completed Phase 1 in Westford, through Carlisle into North and East Acton and then to Route 2 west of the Concord Rotary; Phase 2C would extend the project in Concord from the south side of Route 2 through West Concord to the Concord/Sudbury border, from which point the trail would eventually continue to Framingham. Phase 2B, which would cross Route 2, was recently separated from planning for the Concord Rotary project; The State has committed to funding and contracting for the 25 percent design of Phase 2B independent of the Rotary project; however, the cost of a grade-separated crossing of the highway will be substantial. In December 2010, the Boards of Selectmen of Acton and Concord both expressed a preference for the lower-cost bridge option for the BFRT over Route 2.

Section 8.1.4 of the Acton Subdivision Rules and Regulations also addresses bike paths to provide adequate circulation between schools, playgrounds, parks, shops, open spaces, and other community facilities and between existing or proposed neighborhoods as deemed necessary by the Planning Board. Sections 9.6.5 through 9.6.7 state that bicycle paths may be required to improve circulation and connections with existing, proposed, or potential streets and ways, and that paths must be a minimum of ten feet wide. Furthermore, the planning board may reduce the width of streets at crossings or require raised crossings to accommodate bicycling. However, the Planning Board has not found opportunities to implement any of these provisions in new developments.

## Overall Summary

Acton's transportation system is primarily a network of roadways, most of which were not designed for today's traffic volumes. At the same time, many Acton residents are interested in better public transportation, pedestrian, and bicycle facilities. Efforts by Acton's TAC and its Sidewalk Committee, and interested citizens have resulted in a new shuttle service to the South Acton Train Station, a better station design, and new, well-designed sidewalks and sidewalk

design guidelines. Two major shared use paths, the Assabet River Rail Trail, and Bruce Freeman Rail Trail are moving closer to construction. However, Acton does not have a bicycle committee, and in general, the Town lacks staff dedicated to encouraging public transportation use and bicycle improvements other than the rail trails.

### **Opportunities and Challenges Posed by Existing Transportation Conditions**

- Some improvements in conditions on Acton's roadway network are possible, but the areas in which Acton can improve transportation most appear to be in public transportation, walking, and bicycling. These improvements would ultimately help to reduce traffic (as would housing and economic development choices that would reduce commuting and would make walking, biking, and use of public transportation more feasible for many people by reducing the distance one needs to travel to shopping, work, and other destinations).
- As the cost of transportation continues to increase because of the increasing fuel prices and public transportation fares, the expense of commuting will likely be an increasingly important factor in residential and employment decision making.
- Federal and state funding for the MinuteVan is expected to decline in future years, and Acton will need to decide how and whether to continue funding these services.
- The addition of the MinuteVan Dial-a-Ride (DAR) service has shown that a more locally tailored service is popular. Discussions with adjacent towns and Montachusett Area Transit Authority (MART) are underway regarding MART provided contracted transportation services, which could be more locally tailored than the service currently provided by LRTA.
- The market for the MinuteVan service exists, but to maximize use, the current pricing options for parking and using the shuttle should be evaluated (annual subscription, ten-ride passes, and pay-by-the-day hangtags), and options such as schedule improvements and route extensions should be explored.
- Although controlling traffic speeds, particularly in residential areas through design ("traffic calming") and enforcement, and managing traffic entering principal roads are both challenges, these initiatives may be worthwhile in terms of improvements in safety and livability.
- Sidewalk maintenance, particularly in winter months, is an ongoing challenge, owing to its cost.
- Pathway linkages can be explored, particularly where connections can be made between adjacent parcels and from residential areas to commercial areas.
- With two shared use paths in development and bicycle parking program expansion, there is an opportunity for the Town to form a bicycle committee, either independently or as part of the TAC.

In conclusion, some improvements in conditions on Acton's roadway network are possible, but the areas in which the Acton 2020 plan can improve transportation most appear to be in public transportation, walking, and bicycling.

## Transportation Appendix

### Census Journey-to-Work Data

The U.S. Census notes residents' employment addresses and employees' residential addresses in its decennial survey. This information is commonly known as Journey-to-Work data.

According to the 2000 U.S. Census, 22.1 percent of Acton's 10,942 employed residents also work in Acton. Other popular job locations for Acton residents include neighboring Concord (8.5 percent), and regional economic centers in Cambridge (5.6 percent) and Boston (9.9 percent).

The following details other popular employment destinations, with neighboring towns italicized.

Table 6.A1: Employer Locations of Acton Residents, 1 percent or greater

<b>City/Town Workplace</b>	<b>Number</b>	<b>Percent</b>
<i>Maynard</i>	107	1.0%
Natick	109	1.0%
<i>Sudbury</i>	119	1.1%
Newton	128	1.2%
Chelmsford	132	1.2%
Framingham	144	1.3%
<i>Boxborough</i>	151	1.4%
Billerica	164	1.5%
Woburn	168	1.5%
Andover	173	1.6%
<i>Littleton</i>	181	1.7%
Lowell	186	1.7%
<i>Westford</i>	245	2.2%
Marlborough	277	2.5%
Bedford	282	2.6%
Burlington	383	3.5%
Waltham	385	3.5%
Lexington	391	3.6%
Cambridge	613	5.6%
<i>Concord</i>	930	8.5%
Boston	1,080	9.9%
<b>Acton</b>	<b>2,418</b>	<b>22.1%</b>

The 2000 U.S. Census also details the residences of those who work in Acton. Of 11,744 Acton-based jobs, 20.5 percent of employees also live in Acton, while at least 1.6 percent of them live in each of Acton's six below listed neighboring municipalities.

The following lists those towns whose residents account for at least 1.0 percent of Acton's workforce, with neighboring towns italicized.

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Table 6.A2: Residential Locations of Acton Workers, 1 percent or greater

<b>City/Town Residence</b>	<b>Number</b>	<b>Percent</b>
Malden	117	1.0%
Dracut	125	1.1%
Shirley	133	1.1%
Ayer	144	1.2%
Nashua	151	1.3%
Fitchburg	153	1.3%
Harvard	159	1.4%
Townsend	165	1.4%
Waltham	179	1.5%
Groton	182	1.5%
Framingham	193	1.6%
<i>Stow</i>	<i>193</i>	<i>1.6%</i>
Pepperell	198	1.7%
<i>Concord</i>	<i>209</i>	<i>1.8%</i>
Marlborough	212	1.8%
Billerica	222	1.9%
Boston	236	2.0%
<i>Boxborough</i>	<i>251</i>	<i>2.1%</i>
<i>Littleton</i>	<i>295</i>	<i>2.5%</i>
<i>Westford</i>	<i>330</i>	<i>2.8%</i>
Lowell	338	2.9%
Leominster	345	2.9%
Chelmsford	357	3.0%
<i>Maynard</i>	<i>371</i>	<i>3.2%</i>
<b>Acton</b>	<b>2418</b>	<b>20.5%</b>

The following table summarizes how residents of Acton and adjacent communities commuted to work in 2000.

Table 6.A3: Commuting Modes in Acton and Surrounding Towns

Town/Census District	Mode of Commuting					
	Drive Alone	Car Pool	Public Transit	Walk	Work at Home	Other
Acton	80.8	7.4	4.5	1.2	5.6	0.4
Boxborough	84.6	5.9	2.4	1.1	5.9	0.0
Carlisle	77.1	4.3	2.8	1.7	13.9	0.2
Concord	76.8	5.2	5.2	2.8	9.1	0.9
West Concord	84.3	3.4	5.7	1.2	4.7	0.6
Littleton	85.5	4.5	3.0	1.1	5.2	0.7
Littleton Common	86.2	3.9	2.9	1.1	6.0	0.0
Maynard	82.6	8.6	2.6	2.3	3.3	0.6
Stow	84.2	4.6	3.5	1.2	5.8	0.7
Sudbury	84.8	3.8	3.1	1.7	5.9	0.7
Westford	88.0	5.3	1.2	0.6	4.8	0.1

Source: 2000 Census Journey-to-Work Data

## Roadways

Acton has approximately 119 miles of roads over 20 square miles. All of the numbered routes except Route 27 (Main Street) are under the jurisdiction of the Massachusetts Department of Transportation (MassDOT). These include Route 2, most of Route 111 (Massachusetts Avenue), and Route 119/2A (Great Road). Routes 27, 119/2A, and Route 111 serve as Acton’s major arterials, most of them intersecting to resemble a triangle overlaying the eastern part of town and serving as main streets for the town’s distinct villages and commercial areas. Local streets lead from these major arterials and serve residential neighborhoods and recreational venues. Many soft-surface trails serve pedestrians within town open space.

## Traffic Speed and Volume

The Massachusetts Department of Transportation (MassDOT) Highway Division publicizes traffic volume data on a selection of roads in Acton from 1998–2007. As one may expect, traffic volume has steadily increased on Route 2, where the speed limit ranges from 55 mph west of Piper Road/Taylor Road to 45 mph east of Piper Road/Taylor Road. However, for reasons that are not clear, traffic volumes on Routes 2A/111, where the speed limit is 40 mph, and Route 27, where the speed limit is for the most part 35-40 mph, have decreased, according to this data. The following summarizes the available traffic volume data for Acton’s state highways as well as local roads.

Transportation and Circulation Appendix

Table 6.A4: Traffic Volumes on State Highways and Local Streets in Acton, 1998-2007

Street	Intersection	1998	1999	2000	2001	2002
2 (Union Tpk.)	W of 27	36,145	36,544	37,736	38,060	38,331
2/111 (Mass Ave.)	E of Windsor				20,200	
2A/119 (Great Road)	E of 27					
2A/119 (Great Road)	Littleton T/L	18,100			17,500	
2A/119 (Great Road)	N of Pope					
2A/119 (Great Road)	S of Esterbrook					
27 (Main Street)	N of 2					
27 (Main Street)	N of 2A	11,300			10,200	
27 (Main Street)	S of Beverly					
27 (Main Street)	S of High					
27 (Main Street)	S of 2/111					
27 (Main Street)	S of 2A					
Arlington	E of Central				6,200	
Central	S of Elm				7,200	
Concord	W of 2A/119					
Martin	S of Central				3,600	
Parker	S of River				2,900	
School	W of Parker		3,300			3,000
Street	Intersection	2003	2004	2005	2006	2007
2 (Union Tpk.)	W of 27	38,094	39,693			
2/111 (Mass Ave.)	E of Windsor					
2A/119 (Great Road)	E of 27				16,600	
2A/119 (Great Road)	Littleton t/l		15,500			15,200
2A/119 (Great Road)	N of Pope				19,000	
2A/119 (Great Road)	S of Esterbrook				18,200	
27 (Main Street)	N of 2		16,600			
27 (Main Street)	N of 2A		10,400			10,000
27 (Main Street)	S of Beverly		15,700			
27 (Main Street)	S of High		12,300			
27 (Main Street)	S of 2/111		18,700			
27 (Main Street)	S of 2A		11,400			
Arlington	E of Central					
Central	S of Elm					
Concord	W of 2A/119				5,500	
Martin	S of Central					
Parker	S of River					
School	W of Parker			4,000		

## Crash Data

No location in Acton ranked among Massachusetts' Top 200 Crash Locations between 2006 and 2008, the most recent years for which data is available. However, there were 1,048 crashes in that three-year span, most of them in predictable locations with heavy traffic volumes: interchanges on Route 2; state numbered highway intersections; and arterials and collectors. The number of crashes each year has consistently decreased: 393 crashes in 2006, 340 crashes in 2007, and 315 crashes in 2008. This decrease is likely a result of lower traffic volumes.

## East Acton Village Transportation Study

In 2002, VHB studied Great Road (Route 2A/119), the transportation spine of East Acton Village, to promote a sense of community through improving safety, improving bike access, and improving vehicular circulation in the study area. The study followed a similar format to that of the 2001 Main Street study.

High-volume, often-congested traffic characterizes this commercial corridor. Replete with curb cuts and un-signalized left-turns to commercial uses and side streets, the study measured peak-hour level of service (LOS)<sup>1</sup> between LOS C (acceptable) and LOS E (somewhat congested). Where they exist, sidewalks are partially poor condition, and there are no crosswalks. Bicyclists may ride in the road's five-foot shoulders, but the vehicle speeds and congestion of traffic deters bicyclists.

The town and the East Acton Village Planning Committee developed two zoning scenarios with slight or significant modifications to the existing conditions. Scenario 1 assumes build-out of current zoning, yielding more than 125,000 square feet of additional floor area. Scenario 2 assumes commercial build-out at 140 percent of the existing floor-area ratio allowance, yielding more than 741,000 square feet of additional floor area. Based on either scenario, the corridor would continue to operate at or over its peak-hour capacity.

The study proposes several alternatives in the short-, medium-, and long-terms, including:

- Traffic improvements
  - Consolidating curb cuts at Keefe Road to reduce traffic conflict (short-term).
    - Follow-up: The Town has not to date made efforts to consolidate curb cuts.
  - Constructing left-turn lanes on Great Road onto Concord Road, and vice versa, to improve traffic movement (medium-term).
    - Follow-up: Great Road does not have a left-turn lane at Concord Road, and there are no plans to construct one; however, there is sufficient width on Concord Road to queue for a left-turn onto Great Road, albeit in an un-stripped lane.
  - Discontinuing through traffic on Wetherbee Street to Route 2 to reduce poor traffic circulation and to encourage bike-friendly uses near the Bruce Freeman Rail Trail (BFRT) (long-term).

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<sup>1</sup> Level of service is a traffic engineering concept that rates traffic flow from "A" (high-speed free-flowing) to "F" (congested, involving stop-and-go traffic and waiting for more than one signal cycle at traffic lights). LOS C and D are generally considered acceptable for areas like East Acton.

## Transportation and Circulation Appendix

- Follow-up: The Town has not addressed this recommendation.
- Extending Bayberry Street to Concord Road and discontinue Pope Road from Bayberry Street to Great Road to improve circulation at Concord Road/Great Road (long-term).
  - Follow-up: Recent private land development has obviated this alignment.
- Creating a median on Great Road between Keefe Road and Concord Road to reduce traffic conflicts and to improve pedestrian safety (long-term).
  - The Town has not addressed this recommendation.
- Pedestrian improvements
  - Calming traffic on Pope Road, including gateway effects, to improve pedestrian movement (short-term).
    - Follow-up: The Town has not addressed this recommendation.
  - Constructing continuous sidewalks on northern (short-term) and on southern (medium-term) sides of Great Road to accommodate pedestrians, and upgrading sidewalks throughout town to ADA standards to accommodate the disabled (short-term).
    - Follow-up: The Town has not addressed this recommendation
  - Constructing crosswalks across Wetherbee Street, Pope Road, and Concord Road, and crosswalks across Great Road at Concord Road and Wetherbee Street to improve pedestrian safety (medium-term).
    - Follow-up: None of these crosswalks along Great Road are painted, and MassDOT has expressed concerns in the past few years about constructing crosswalks across Great Road.<sup>2</sup>
- Bicycling improvements
  - Discontinuing through traffic on Wetherbee Street to reduce poor traffic circulation and to encourage bike-friendly uses near BFRT (long-term).
    - Follow-up: The Town has not addressed this recommendation.

In addition to these recommendations and actions, nearby Brookside Shops has installed a traffic signal on Great Road, and the Town's Transportation Advisory Committee has discussed partnerships with area businesses to install more bike racks outside their stores.

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<sup>2</sup> Great Road is a State highway owned and controlled by MassDOT.

## Chapter 7: Facilities and Services

This chapter addresses the services that Acton provides to residents and businesses and the capital facilities such as buildings and infrastructure needed to provide those services. It includes:

- Relationship of Facilities and Services to Planning Goals
- Information on
  - Schools
  - Municipal Buildings
  - Water supply
  - Management of stormwater (rain and snowmelt)
  - Management of wastewater from residential and business sanitary systems
  - Services for seniors
  - Libraries
  - Public Safety
- Opportunities and Challenges posed by the Existing Facilities and Services Conditions

(Open space and recreation are addressed in Chapter 5.)

### **Why the Comprehensive Plan addresses Facilities and Services**

Facilities and services are the core functions of town government. The way they are provided determines what residents and businesses get from the town and, conversely, what taxpayers must pay to provide those services and facilities. Particularly for capital facilities such as schools and other town buildings, the level of investment today affects Acton's ability to provide the services Actonians desire, and today's investments have implications for future budgets.

### **Relationship to Planning Goals**

Facilities and services information is relevant to six of the seven Acton 2020 goals; (the exception is "Improve Connections," which is addressed in Chapter 6, Transportation and Circulation).

#### *Goal: Preserve and Enhance Town Character*

Town buildings like Town Hall and Memorial Library help to define Acton Center and have symbolic importance in expressing Acton's character. The quality of school buildings and grounds also communicates an important value for education that is part of the Town's character.

#### *Goal: Ensure Environmental Sustainability*

Town buildings use energy to fulfill their functions. The manner in which they are improved to conserve energy (and resulting carbon emissions) and water use is an important part of the Town's overall sustainability, both tangibly and as a civic example.

#### *Goal: Enable Diversity and Inclusion*

Facilities and services like the libraries and senior center and the services they provide are important in providing opportunities for people of all ages and backgrounds.

*Goal: Provide Places for Gathering*

Town buildings are important places for gatherings ranging from small meetings to large festivals and activities that are part of civic life.

*Goal: Maintain and Enhance Town Assets*

More than any other element, Town Facilities are assets that must be carefully managed, maintained, and preserved. This includes the public assets of the groundwater under our feet that provides most of Acton's drinking water and is a part of the water cycle that includes wastewater disposal.

*Goal: Maintain and Improve the Financial Well-being of the Town*

The services and facilities the Town provides and invests in are the cost side of the financial equation. Acton's Town Government works through the Town Manager and staff, School Superintendent, Board of Selectmen, Finance Committee, and finally the Town Meeting to set the priorities for spending that reflect the values of Acton's residents. Tradeoffs between competing priorities are always needed. Wastewater management needs can in some areas limit the potential for commercial development that would increase Acton's tax base.

## **Summary of Key Points**

- Acton provides excellent services to its residents and businesses, of which education and public health and safety are major parts with substantial costs.
- Since FY 2004, Acton has had the highest residential tax rate of all towns around it (except Stow in FY2004 and FY2005). However, the tax bill, which is the tax rate times the assessed value, is more significant than the tax rate itself; on this basis Acton is in the middle of this group of towns.
- Acton does not use a separate tax rate for commercial and industrial property.

### *Schools*

- Acton's schools provide high quality education at a lower cost per pupil than most school systems of comparable quality.
- The portion of the municipal budget that goes to education is large in Acton, as is the case in most communities.
- Acton has made substantial investments in two elementary schools, and the ABRSD junior high school and high school; three elementary schools were built in 1965 and 1970. Although ongoing improvements are needed, particularly in the three older schools, the School Department has regularly maintained and improved the school buildings.
- Based on detailed enrollment projections, Acton's schools are currently just past peak student population, and enrollments are expected to gradually decline, making expanded school facilities unnecessary.
- Many families undoubtedly move to Acton because of its good schools, and while some of them leave the Town when their children have graduated, many others plan to stay; this is not unusual for a town with relatively affordable housing and topnotch schools.

### *Municipal Buildings*

- Along with the school projects described above, several other major facility needs identified in 1991 have been fulfilled.

## Facilities and Services

- The Town buildings are generally in good condition. The Municipal Properties Department, which maintains these buildings, has made a series of improvements to make them more energy efficient.
- The primary municipal facilities issues and constraints are the amount of Town Hall office space for town departments, insufficient public meeting space, the amount of space in the Senior Center, and the Fire Department's proposal to build a new facility in North Acton to improve response times.

### *Water Supply*

- Water supply and wastewater management are both partly dependent on Acton's soils, subsurface geology, aquifers and groundwater. These natural resources are as much a part of these systems as the public and private infrastructure that supplies water and treats wastewater.
- The Acton Water District has supplied approximately 600 million gallons per year (MGY), which is equivalent to 1.64 million gallons per day (MGD) over the past six years; the trend is essentially flat because conservation and use of private wells offset increases in demand due to growth.
- Water demand varies seasonally because of outdoor water use in the summer.
- Maximum daily demand is often greater than 2.0 MGD and in the summer months reaches 2.6 MGD, the District's self-imposed limit. As a result, summer watering bans have been instituted.
- The water supply system is composed of groundwater wells, water treatment facilities, storage and pumping facilities, and water mains.
- The water being supplied meets the primary standards promulgated by the U.S. EPA, as the law requires. Secondary standards are currently not required to be met, but should these become enforceable, additional treatment facilities may be needed.
- The wells are surrounded by protection zones. Land uses in the protection zones around the wells are limited through Acton's zoning bylaw to protect the quality and quantity of the groundwater resource.
- The capacity of the water system is limited by the capacity of the individual wells and well-fields, but more importantly, by state regulation. The current withdrawals are well within the permitted amount.
- The Water District has identified the replacement of aging water mains as a priority and has been doing so on an ongoing basis.

### *Wastewater Management*

- Wastewater management involves a combination of private-on site disposal systems as well as the public "centralized" Middle Fort Pond Brook wastewater treatment plant on Adams Street in South Acton.
- There is additional capacity available at the Middle Fort Pond Brook Plant of approximately 50 percent of that which is currently used.
- An additional 10 percent of properties are estimated by the Health Department to be served by clustered on-site septic systems or package treatment plants.
- The remaining 80 percent of properties have on-site systems.
- The majority of these on-site systems are believed to function well. Nonetheless, the proportion of systems that require variances is an indication of the limitations of many Acton's soils for wastewater disposal.

## Facilities and Services

- The town's water supply and its wastewater treatment and disposal exist within a complicated system that has multiple interactions between stormwater, surface water bodies (ponds and brooks), and groundwater both within and outside Acton's borders.
- Innovative/Alternative (I/A) systems are now allowed for replacement of conventional systems (sometimes for new construction), which assists in finding solutions for difficult lots.
- The Comprehensive Water Resources Management Plan (CWRMP) concluded that over 90% of the existing on-site wastewater systems can remain as on-site systems for the planning period (which extends to 2024), with approximately 3.5% of these requiring I/A technology.
- In summary, on-site treatment is viable for most, but not all, residential lots in Acton; meeting on-site treatment standards on some lots may involve additional cost, compared to lots that have soils that are considered "good" for on-site disposal.
- The great majority of on-site wastewater systems identified for replacement has been through the mandatory inspection requirement when a house is sold.
- The Phase II CWRMP completed in 2006 identified 15 wastewater planning "Areas of Need" and categorized five of those as high priority needs areas.
- The initial implementation of the CWRMP has focused on evaluating which Areas of Need could feasibly be served by the existing wastewater treatment plant and identified priority areas for sewer extensions. There is additional capacity available at the Middle Fort Pond Brook Plant of approximately 50 percent of that which is currently used.
- The CWRMP identified Wastewater Management Districts (WMD) as the primary or secondary solution to be considered for most of the 15 Needs Areas.

### *Stormwater Management*

- Management of stormwater includes both measures to reduce the rate of flow and to improve quality through settling or other means. Together these measures are known as Best Management Practices (BMPs). The 2003 Acton Stormwater Management Plan (SWMP) contains recommendations for managing stormwater to reduce quality impacts and comply with federal regulations.
- Acton has had bylaws and regulations since the late 1980s that embodied what are now called BMPs, and these regulations have been modified as necessary to comply with Massachusetts Department of Environmental Protection MADEP standards under the permit.
- The Town has implemented all of the measures identified in the SWMP, including outreach, public education, and regular maintenance and cleaning of stormwater structures such as catch basins.

### *Services for Seniors*

- The number of Acton residents 65 years or older is expected to increase over the next two decades. The Acton Council on Aging believes that a larger senior center is needed to serve current and future needs.

### *Libraries*

- Demand for Acton's libraries is steadily increasing and meeting it requires more resources; however, the library buildings are generally adequate for the future.

*Public Safety*

- The recently constructed Public Safety Building is adequate for the future needs of the Police Department.
- Acton's Fire Department has three fire stations built 40 or more years ago. With the steady growth of the northern part of the town, there is a case to be made for a new fire station in North Acton replacing one of the existing stations.

## **Town Expenditures**

Acton provides excellent services to its residents and businesses, of which education and public health and safety are major parts with substantial costs. In Fiscal Year 2010 (FY 2010), which ended June 30, 2010, the total municipal budget was \$26.14 million and the budget for education (Acton Public Schools and Acton's share of the Acton Boxborough Regional School District) was \$44.83 million (after Chapter 70 state aid of \$10.4 million) for a total of \$70.97 million. This budget does not include the Acton Water Supply District, which is self-financing through metered water sales, or the Middle Fort Pond Brook Wastewater Treatment System, which is financed by the Sewer Enterprise Fund with revenues from user fees.

In principle, there are two kinds of municipal expenditures: operating and capital. Capital expenditures are for the purchase, construction, and improvement of buildings and equipment. Capital expenditures are generally included in a Capital Improvement Plan (CIP) if they are large enough to be considered "major," such a purchase of vehicles, extensive building improvements, new buildings, or property acquisition; smaller items such as routine maintenance are part of the operating budget. Large capital expenditures are generally financed, and the municipal budget includes annual payments of principal and interest. At present, Acton does not have a coordinated, unified CIP, although the School Department and Municipal Properties Department maintain annual CIP's for items such as improvements to building envelopes and heating/ventilation systems.

The services provided by the town, including carrying out State and Federal mandates, can be broken into categories, such as the following list:

- Education
- Direct services to residents and businesses
- Public health and safety
- Management and improvement of town facilities and other assets
- Administration of the town government

Figure 7.1: FY 2009 Expenditures by Purpose

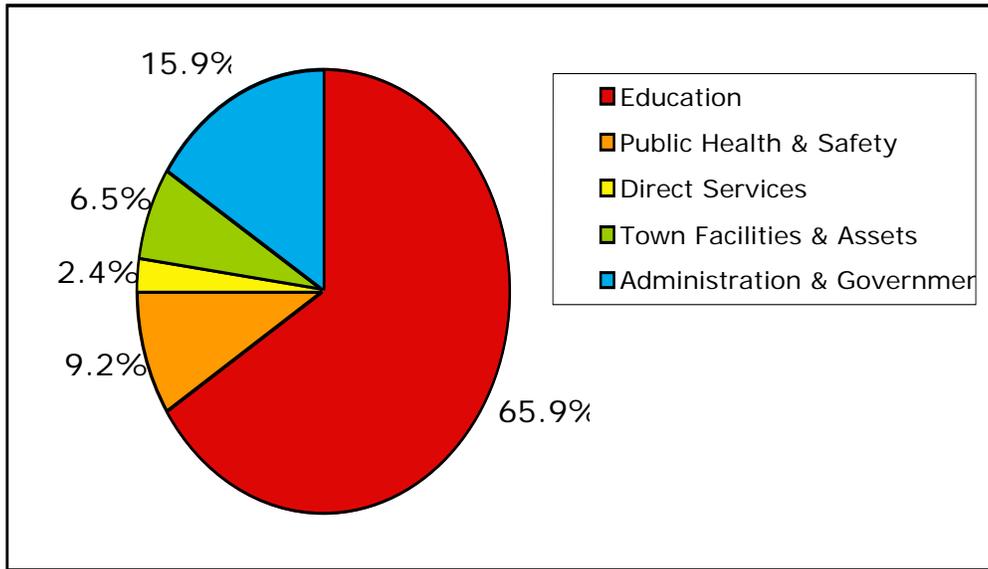


Table 7.1: FY 2009 Actual Expenditures by Purpose

Department	Expenditure	Education	Public Health & Safety	Direct Services	Town Facilities & Assets	Admin & Government
Accountant/Comptroller	\$273,113					0
Assessors	\$217,222				0	0
Building Dept	\$169,741		0			
Celebrations	\$73,384			0		
Civil Defense	\$416		0			
COA/Council on Aging	\$203,020		0	0		
Collector	\$133,545					0
Common Disabilities	\$133		0			
Dispatch	\$390,363		0			
Dog Officer	\$14,524		0			
Elections	\$58,514					0
Engineering	\$252,624			0	0	
Finance Committee	\$268					0
Finance Director	\$8,849,093					0
Fire	\$2,819,743		0			
Health	\$137,746		0			0
Highway	\$2,245,740				0	
Historical Commission	\$0				0	
Human Resources	\$178,472					0
Information Technology	\$874,466			0		0
Memorial Library	\$1,017,270			0		
Moderator	\$40					0
Municipal Properties	\$1,411,606				0	
Natural Resources	\$646,248				0	
Planning	\$185,726		0		0	
Police	\$2,924,375		0			
Town Clerk	\$147,751					0
Town Manager	\$1,223,331					0
Veterans Services	\$52,712		0	0		
West Acton Library	\$42,085			0		
Zoning/ Board of Appeals	\$37					0
Schools	\$47,345,823	0				
<b>% of Total</b>	<b>100.0%</b>	<b>65.9%</b>	<b>9.2%</b>	<b>2.4%</b>	<b>6.5%</b>	<b>15.9%</b>

Source: 2009 Acton Town report

Figure 7.1 and Table 7.1 show a rough estimate of how the FY 2009 Expenditures divide into these categories.

Data is available from the Mass. Department of Revenue only back to 2003. By town and fiscal year the following are tax rates for the last eight years. Please note the table is in two parts. The first part is for residential tax rates. The second part is for commercial and industrial tax rates for those four towns that have a split rate (e.g., commercial and industrial property is taxed at higher rates than residential property).

Table 7.2 compares tax rates in Acton and surrounding communities.

Table 7.2: Property Tax Rates

<b>Tax Rates for Residential Property</b>									
<b>Town</b>	<b>FY 2011</b>	<b>FY 2010</b>	<b>FY 2009</b>	<b>FY 2008</b>	<b>FY 2007</b>	<b>FY 2006</b>	<b>FY 2005</b>	<b>FY 2004</b>	<b>FY 2003</b>
Acton	\$ 18.08	\$ 17.12	\$ 16.53	\$ 15.39	\$ 14.62	\$ 14.58	\$ 13.81	\$ 14.03	\$ 13.55
Boxborough	\$ 17.38	\$ 16.53	\$ 14.84	\$ 14.14	\$ 13.87	\$ 13.24	\$ 13.10	\$ 13.32	\$ 12.78
Carlisle	\$ 16.13	\$ 14.62	\$ 14.04	\$ 12.68	\$ 11.96	\$ 12.99	\$ 12.62	\$ 12.47	\$ 15.05
Concord	\$ 13.19	\$ 13.09	\$ 11.90	\$ 10.72	\$ 10.56	\$ 10.23	\$ 9.80	\$ 10.59	\$ 9.64
Littleton	\$ 15.33	\$ 14.63	\$ 13.85	\$ 12.62	\$ 12.11	\$ 12.17	\$ 11.35	\$ 11.32	\$ 11.15
Maynard	\$ 17.50	\$ 16.14	\$ 14.51	\$ 13.33	\$ 12.76	\$ 12.91	\$ 13.16	\$ 12.97	\$ 17.46
Stow	\$ 17.05	\$ 16.58	\$ 15.28	\$ 14.73	\$ 13.82	\$ 14.04	\$ 14.36	\$ 14.64	\$ 14.48
Sudbury	\$ 17.03	\$ 16.08	\$ 15.29	\$ 14.27	\$ 13.12	\$ 13.55	\$ 13.46	\$ 13.46	\$ 16.78
Westford	\$ 15.23	\$ 14.63	\$ 13.97	\$ 13.40	\$ 13.10	\$ 12.92	\$ 13.68	\$ 14.00	\$ 14.51
<b>Property Tax Rates for Commercial and Industrial Uses (for Towns with a Split Tax Rate)</b>									
	<b>FY 2011</b>	<b>FY 2010</b>	<b>FY 2009</b>	<b>FY 2008</b>	<b>FY 2007</b>	<b>FY 2006</b>	<b>FY 2005</b>	<b>FY 2004</b>	<b>FY 2003</b>
Littleton	\$ 24.40	\$ 23.11	\$ 22.76	\$ 20.57	\$ 20.11	\$ 19.02	\$ 17.98	\$ 18.16	\$ 10.36
Maynard	\$ 26.91	\$ 25.71	\$ 23.63	\$ 22.76	\$ 21.78	\$ 24.86	\$ 23.70	\$ 23.39	\$ 28.95
Sudbury	\$ 22.27	\$ 20.13	\$ 19.30	\$ 18.47	\$ 20.29	\$ 21.71	\$ 20.53	\$ 20.81	\$ 22.26
Westford	\$ 15.50	\$ 14.82	\$ 14.15	\$ 13.58	\$ 13.27	\$ 13.10	\$ 13.68	\$ 14.18	\$ 14.66

Source: Massachusetts Department of Revenue

From FY 2004 to the present, Acton has had the highest residential tax rate of all towns around it, except for Stow which had a higher rate from 2003 to 2005. Concord has consistently had the lowest residential property tax rate, in part because of the relatively high value of its taxable property.

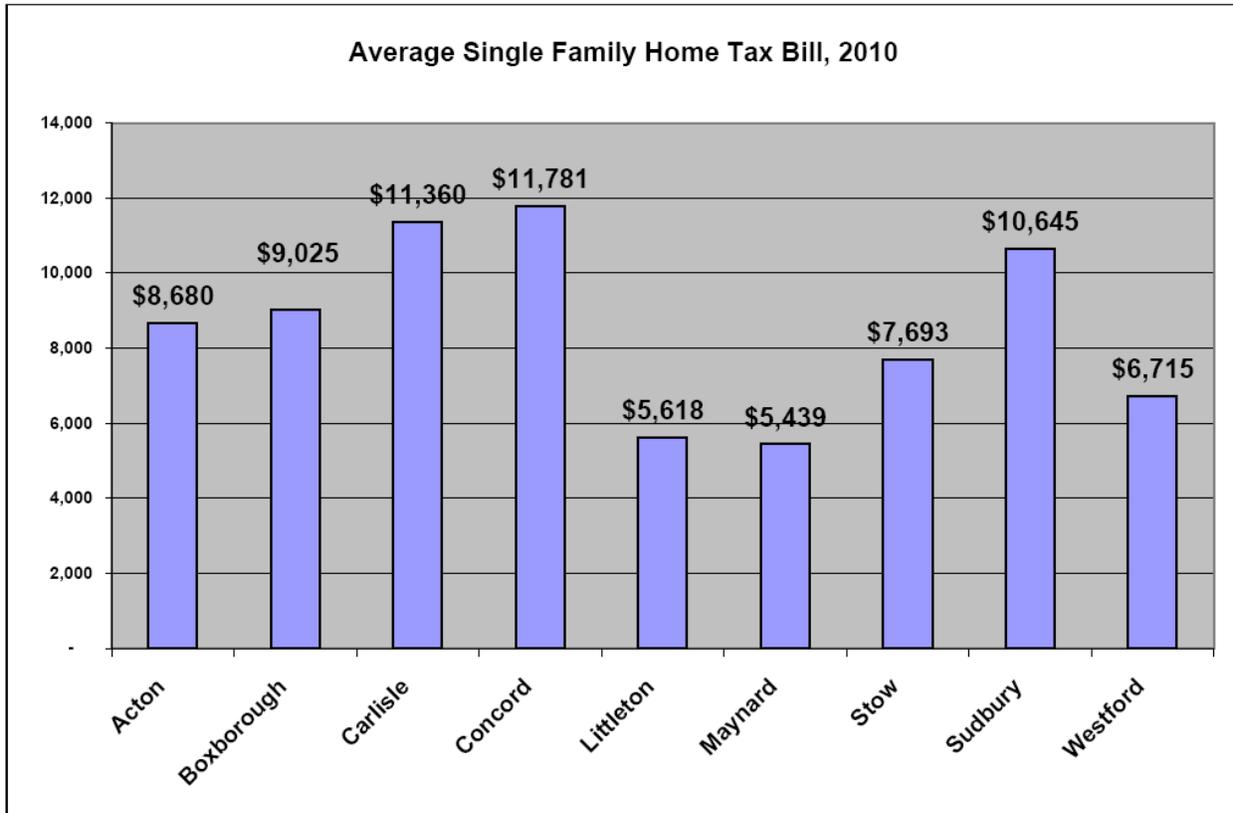
Acton does not use a separate tax rate for commercial and industrial property, as Littleton, Maynard, Sudbury, and Westford do to shift some of the tax burden to non-residential uses.

Acton's property tax rate increased 28.9 percent from FY2004 to FY2011. This percentage increase is in the middle (median) of the increases for the nine towns, although it is slightly higher than the average increase for these towns, 26.2 percent.

However, the tax bill, which is the tax rate times the assessed value, is more significant than the tax rate itself. Figure 7.2 shows the average tax bill for Acton and its neighboring towns; on this basis it is in the middle (median) of this group of towns.

Figure 7.2 shows that despite a high tax rate, Acton is in the middle of this group of town in terms of the tax bill that homeowners pay.

Figure 7.2: Average Single Family Home Tax Bill for Acton and Neighboring Towns, FY2010.



Source: Massachusetts Department of Revenue

## Schools

Acton's schools provide high quality education at a lower cost per pupil than most school systems of comparable quality, but like other quality systems Acton's schools account for the large majority of the town budget.

The Acton Public Schools (APS) are responsible for education from pre-Kindergarten through Grade 6. The Acton Boxborough Regional School District (ABRSD) is responsible for Grades 9-12; expenses are allocated to the towns in proportion to enrollments, of which Acton currently comprises 79.3%. Administration and facilities for both APS and ABRSD are provided by the School Department in Acton.

For the academic year 2010-2011, the enrollments and budget are shown in Table 7.3. A substantial part of the school expenses are paid by Chapter 70 funds and other state programs including the school construction assistance program.

Table 7.3 is a summary of the school facilities, enrollments, and school budgets.

Table 7.3: Acton Enrollments and Budgeted Expenditures, 2010-2011 School Year

		Students on Oct 1, 2010			2010-2011 Budgeted Expenditures* (\$million)
	Grades	Acton Students	School Choice and Faculty Children	Total Students	
Acton Public Schools					
	K-6	2,535	28	2,563	\$ 25.9
Acton Boxborough Regional School District					
	7-8	796	14	810	
	9-12	1,543	30	1,573	
Subtotal ABRSD		2,339	44	2,383	\$ 30.2
<b>Total</b>		<b>4,874</b>	<b>72</b>	<b>4,946</b>	<b>\$ 56.1</b>
Estimated State Aid					\$ 11.2
Cost to Town					\$ 44.8

\* Budget for ABRSD shows Acton share only (79.3% of total)

Source: Acton School Department

Enrollment Projections prepared in December 2009 are shown in Figure 7.3.

Source: Acton Public Schools and ABRSD forecasts for 2010-2011 school year and beyond.

The portion of the municipal budget that goes to education is large in Acton, as is the case in most communities. Table 7.4 shows the education portion of the municipal budget funded by property taxes for Acton and the neighboring towns.

*Table 7.4 compares school expenditures as a share of total town budget for Acton and four nearby towns with good schools.*

Table 7.4: FY 2009 Expenditures

<b>Town</b>	<b>Total</b>	<b>Education</b>	<b>% of Total</b>
Acton	\$71,898,131	\$47,354,823	65.9%
Boxborough	\$18,716,683	\$11,305,043	60.4%
Concord	\$72,168,677	\$44,855,013	62.2%
Sudbury	\$89,903,334	\$63,231,792	70.3%
Westford	\$95,899,795	\$55,424,474	57.8%

Source: Massachusetts Department of Education

APS and ABRSD are excellent schools as indicated by reputation and the opinions of residents as well as consistently high MCAS scores, graduation rate, and college acceptances. Yet, as shown in Table 7.5, Acton spends less per pupil than most of the other surrounding towns with good schools. The quality of education offered in Acton unquestionably depends on the efforts of teachers, administrators, and parents, but it is also affected by class size and the quality and capacity of the school facilities.

*Table 7.5 compares cost per pupil in Acton and other towns with good schools. Table 7.6 compares school expenditures and tax bases to support them. Both tables show that relative to both personal resources and town tax base, Acton schools achieve excellent results for lower cost than comparable school systems.*

Table 7.5: Cost per Pupil in Acton and Other Towns

<b>Town/School District</b>	<b>FY 2009</b>	<b>FY 2008</b>	<b>FY 2007</b>
Acton	\$11,011	\$10,283	\$10,086
Acton-Boxborough	\$12,733	\$12,228	\$11,582
Boxborough	\$12,927	\$11,627	\$11,687
Carlisle	\$14,619	\$13,477	\$13,122
Concord-Carlisle	\$18,328	\$17,486	\$16,331
Concord	\$16,342	\$15,926	\$15,514
Littleton	\$11,231	\$11,357	\$10,358
Maynard	\$13,478	\$12,230	\$12,004
Stow (Nashoba)	\$12,398	\$12,071	\$11,410
Sudbury	\$11,248	\$11,158	\$10,395
Lincoln-Sudbury	\$15,775	\$15,549	\$14,534
Westford	\$10,151	\$9,796	\$9,298
<b>Nine-Town Average</b>	<b>\$13,353</b>	<b>\$12,766</b>	<b>\$12,193</b>
<b>State-Wide Average</b>	<b>\$13,006</b>	<b>\$12,448</b>	<b>\$11,858</b>

Source: Massachusetts Department of Education

Additionally, the following table compares the Acton-Boxborough School District with similar districts, based on community income and property valuation. Both tables show that the Acton

elementary schools and the junior and senior high schools compare well in per-pupil expenditures. Acton has been consistently the second lowest in cost per pupil when compared to surrounding towns and to regional school districts with similar household incomes and property valuations. As shown in Tables 7.5 and 7.6, only Westford is lower in the surrounding towns, and Masconomet (Topsfield, Middleton and Boxford) is lower in comparable regional districts.

Table 7.6: Community Income and Property Value by School District<sup>1</sup>

<b>District Name</b>	<b>Equalized Property Valuation (EQV) per Capita 2006</b>	<b>District Hi-Low Rank in EQV</b>	<b>Median Household Income 1999</b>	<b>District Hi-Low Rank in Income</b>	<b>Rank in Average Wealth</b>	<b>Total Full-Time Equivalent Pupils</b>	<b>Total Expenditures FY 2009</b>	<b>Expenditures per Pupil FY 2009</b>
Acton-Boxborough	\$195,562	87	\$90,767	23	55	3039	\$38,691,546	\$12,733
Concord-Carlisle	\$319,339	31	\$105,212	11	21	1272	\$23,321,570	\$18,328
Dover-Sherborn	\$369,219	21	\$132,199	3	12	1133	\$17,891,877	\$15,787
Lincoln-Sudbury	\$251,199	52	\$112,477	9	31	1638	\$25,841,729	\$15,775
Masconomet	\$212,808	72	\$98,353	14	43	2192	\$26,263,741	\$11,979
Northborough Southborough	\$197,143	84	\$88,485	26	55	1414	\$18,942,975	\$13,396

Source: Massachusetts Department of Education

Acton has made substantial investments in two elementary schools, and the ABRSD junior high school and high school; three elementary schools were built in 1965 and 1970. Although ongoing improvements are needed, particularly in the three older schools, the School Department has regularly maintained and improved the school buildings.

<sup>1</sup> Equalized valuation per capita is the total assessed value in the towns that make up the district, divided by their total population; “equalized” refers to an adjustment that is made by the Massachusetts Department of Revenue to reflect assessing practices that differ slightly from town to town; in general, equalized valuations are slightly higher than actual valuations. Hi-Low Rank is where the towns in the district rank in relation to all towns in Massachusetts, with the highest value ranking 1<sup>st</sup>. Average wealth is the estimated amount of all assets that town residents possess. Full-time equivalent pupils adjusts the student population for part-time students such as half-day kindergarteners.

Acton’s school facilities are shown in Table 7.7. This table gives an at-a-glance look at the inventory of buildings in use and when they were built or last expanded.

Table 7.7: Acton Schools Facilities

Building	Gross Square Feet	Built	Students	
			2010-11	2001-02
Acton Boxboro High School (ABRSD)	390,000	1964, expanded 2004		
RJ Grey Jr. High (ABRSD)	144,280	1955, expanded 2001		
<b>Total, Grades 7-12 (incl. Boxboro)</b>	<b>534,280</b>		3,017	2,428
Parker Damon Building (McCarthy Towne School and Merriam School)	139,639	2001		
Luther Conant School	55,017	1970		
Douglas School	47,100	1965		
Gates School	53,933	1970		
<b>Total, Grades K-6</b>	<b>295,689</b>		2,642	2,511
Merriam Administration Building	37,123	1959		
<b>Totals</b>	<b>867,092</b>		<b>5,659</b>	<b>4,939</b>

Source: Acton School Department

The 1991 Comprehensive Plan listed several major school facilities needs, including improvement of the McCarthy-Town and Merriam elementary schools; these were replaced by the Parker Damon building, with McCarthy-Town remaining as a large vacant building<sup>2</sup> and Merriam’s building converted to the Administration Building, which also houses school programs. The R.J. Gray Junior High Schools was expanded and renovated, and the High School was expanded.

Ongoing improvements will be necessary for the Conant, Douglas, and Gates elementary schools, but the School Department believes that the necessary quality improvements to these schools and their grounds can continue to be done incrementally as they have in recent years, e.g., recent roofing replacement at Douglas and planned envelope repairs at Conant. With very few exceptions, the school buildings are free of asbestos and compliant with environmental regulations and the Americans with Disabilities Act; the exceptions are older floor tiles in some buildings and the need for some programmatic adaptations to insure accessibility.

**Will the current schools have capacity for future enrollments?**

The biggest question for Acton, as in other towns, is whether the school facilities have adequate capacity for expected enrollments. Based on detailed enrollment projections, Acton’s schools are currently at peak student population and enrollments are expected to gradually decline,

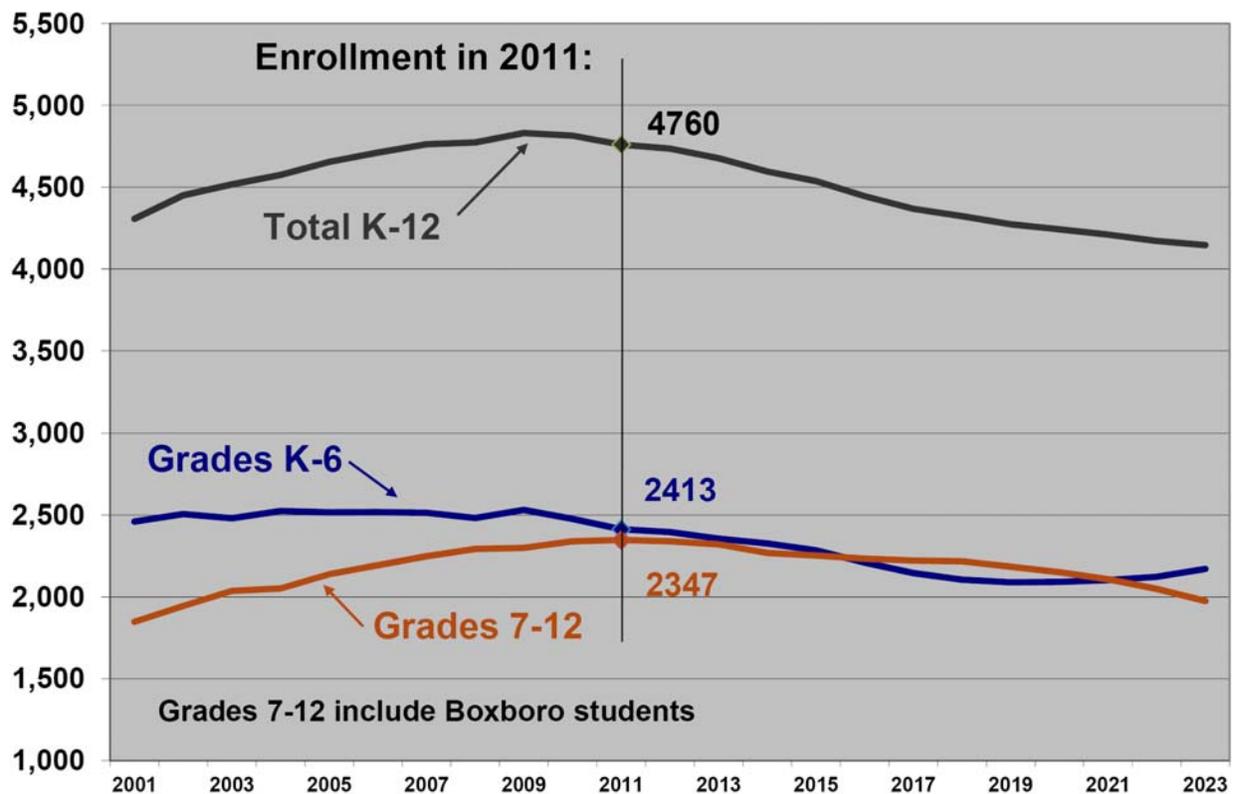
<sup>2</sup> The original core of McCarthy Towne is the old Acton High School building. It is presently being converted to affordable housing.

making expanded school facilities unnecessary. This is consistent with the population projections discussed in Chapter 2.

The School Department prepares annual enrollment projections using a widely accepted methodology that considers town growth, local births, and the movement of the cohorts of students that are currently enrolled as they advance through the grades from K to 12.

Figure 7.3 shows historical and projected enrollments for APS and ABRSD.

Figure 7.3: School Enrollment Projections



Source: Acton School Department

Based on these projections, the school populations are just past their peak and are expected gradually to decline in coming years, making it unnecessary to increase school capacity to maintain class sizes. These enrollment projections appear to be reliable, based on the expected demographic changes described in Chapter 2: despite continued increases in the number of households in Acton, the age profile of the population is expected to shift to older age groups, and the number of school age children is expected to decline over the next two decades.

Are the enrollment projections correct? Two issues need to be considered: a recent increase in the number of Kindergarten enrollments beyond what was projected, and potential changes in Acton’s housing policies that could be recommended by the Comprehensive Community Plan, which could either encourage or discourage more families with school-age children to move to Acton. The results of the 2010 U.S. Census will help to inform this question, but will not be

available until 2012. The School Committee is closely watching enrollments and examining projection methodologies and assumptions.

Many families undoubtedly move to Acton because of its good schools, and while some of them leave the town when their children have graduated, many others plan to stay; this is not unusual for a town with relatively affordable housing and topnotch schools.

Closely related to the issue of school capacity and school costs is the belief expressed by many people that Acton is a relatively affordable place to live relative to the high quality of its schools, and that many families with school-age children move to Acton and then leave for locations with lower property taxes when their children graduate. No doubt many families do this, but it is difficult without the 2010 Census results to say exactly how many. Cross-tabulation of results from the Phase 1 telephone survey compared what people with children in the home said about their plans: the average for people who responded was 1.9 children.

*These results of the survey are shown in Table 7.8.*

Table 7.8: Predicted Length of Stay in Acton

Predicted Length of Stay	# of Respondents	% of Respondents (incl. "don't know")	% of Respondents (excl. "don't know")
1-5 years	17	11%	15%
6-10 years	31	20%	27%
11+ years	66	43%	58%
don't know	40	26%	--
Total	154	100%	100%

Source: Acton 2020 Phase 1 telephone survey

The phone survey was a carefully selected 5% random sample with 366 usable responses, 154 (42%) of these respondents had school-age children (under the age of 18). This agrees very well with the 2000 Census figure of 43%.

Although a substantial proportion said they planned to move in 1 to 5 years or in 6 to 10 years, a majority said they planned to stay for 11 years or longer (58 percent when the “don’t know” responses are set aside). As discussed in Chapter 2, there is some evidence from the 2000 Census that a higher proportion of Acton residents lived in a different house five years previous (42 percent versus 31 to 37 percent in the neighboring towns other than Boxborough).

Some observations:

- People in many places move after their children have graduated from high school.
- Although the tax rate in Acton is relatively high compared to neighboring towns and Massachusetts as a whole, the tax burden is lower than that of several neighboring towns because of the good housing value, one of the reasons people are thought to move to Acton. This is illustrated by Figure 7.2, showing the average single family home tax bill.
- Growth and housing turnover will be relatively slow for several years, based on population projections and a slow housing market.

- Year-to-year changes are small enough that even unexpected growth can be accommodated without major capital expenses.

## Municipal Services and Facilities

### Town Buildings

Along with the school projects described above, several other major facility needs identified in 1991 have been fulfilled: major expansion and complete renovation of the Memorial Library, the new Public Safety Building<sup>3</sup>, and the Senior Center<sup>4</sup>. In addition, the Town Hall was expanded and renovated in 1988.

*Table 7.9 summarizes the buildings owned by the town. These buildings total approximately one-fifth of the size of the APS and ABRSD schools.*

Table 7.9: Acton’s Town-Owned Buildings (Excluding Schools)

<b>Building</b>	<b>Gross Square Feet</b>
Town Hall (expanded 1988)	24,144
Memorial Library (expanded 1998)	48,259
Public Safety Facility (built 2005)	26,033
Public Works	19,200
3 Fire Stations (built 1951, 1958, 1961)	15,688
Senior Center (built 1995)	6,704
Citizen’s Library	2,008
3 other occupied buildings	10,516
5 vacant buildings	32,793
<b>Total: 17 buildings</b>	<b>185,345</b>

Source: Acton Municipal Properties Department

Notes: “Other occupied” includes Civil Defense, Kennedy Service Building, and the former residence next to Town Hall now occupied by the Municipal Facilities Department. The vacant buildings are the Vaillancourt and Morrison houses, Windsor Building, building at 6 Piper Lane, all 2,900-3,400 square feet, plus the former Towne School.

Except for the vacant buildings and other small buildings, the town buildings are generally in good condition. The Municipal Facilities Department, which maintains these buildings, has made a series of improvements to make them more energy efficient, and there are CIPs for the next five years calling for improvements ranging from \$2 million to \$9 million per year.

<sup>3</sup> The new Public Safety Building does not include a fire station; only the police station, the fire department administration, and the joint dispatch center. It does not include a fire station as originally envisioned and proposed; see the section on Fire Department facilities.

<sup>4</sup> It appears that in recent years the programs for seniors and acceptance of senior services have outgrown the Senior Center capacity; see the section on services for seniors.

The primary municipal facilities issues and constraints (other than Open Space and Recreation facilities, which are discussed in Chapter 5), are the amount of Town Hall office space for town departments, insufficient public meeting space, the amount of space in the Senior Center, and the Fire Department's proposal to build a new facility in North Acton to improve response times.

Proposals to build an additional Senior Center and a fire station in North Acton have been publicly discussed for several years. They are discussed below under Services to Seniors and Public Safety. More recently, discussion of public meeting space needs has also begun.

## **Water Supply and Management of Wastewater and Stormwater**

One of the purposes of a Comprehensive Plan is to help the town deal with risk: what is prudent given the costs that are inherent in reducing risk. As described in this section, protection of the quality of the groundwater resource that supplies most of Acton with drinking water is an important issue that is mentioned in each of the sections below. People differ in their opinions about the severity of risks to the groundwater resource and how much should be done to manage these risks, as eliminating them altogether would be very costly. As part of the inventory phase of work for the Acton 2020 Plan, this chapter aims to identify these issues but not to attempt to prescribe what the Town's response should be. That is the task of the following phases of work in which options for action will be identified and debated so that choices can be made that balance cost and risk.

### **Water Supply**

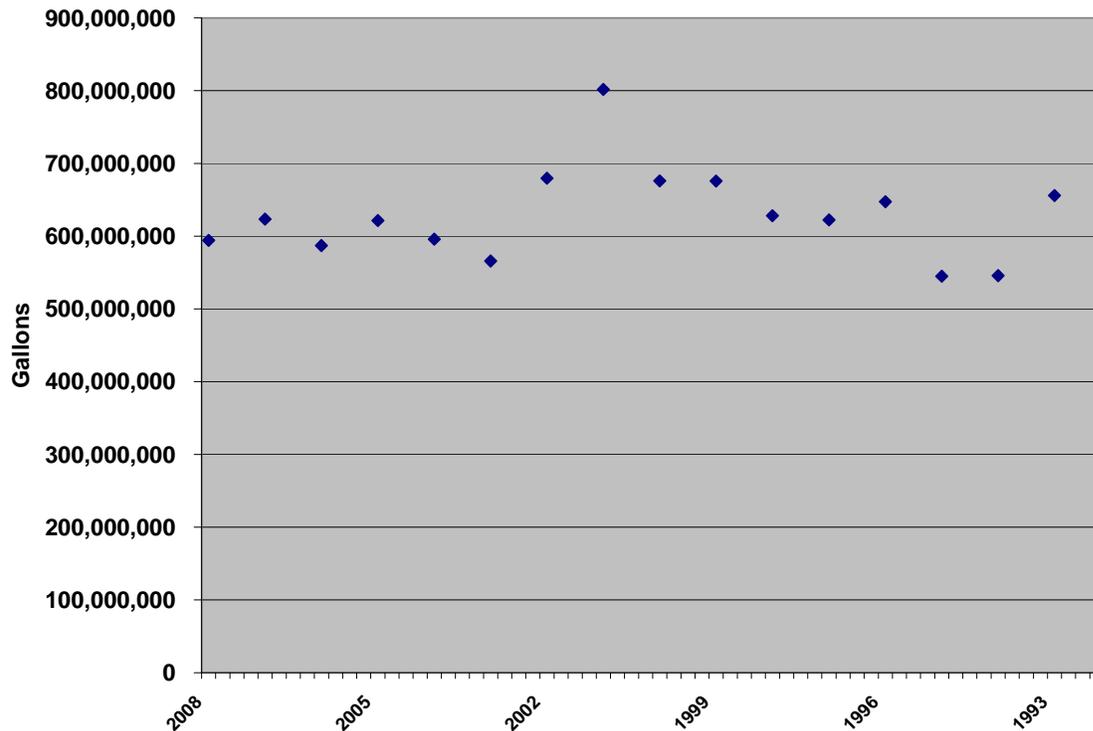
Water supply and wastewater management are both dependent on Acton's soils, subsurface geology, aquifers and groundwater. These natural resources are as much a part of these systems as the public and private infrastructure that supplies water and treats wastewater. Water supply for consumption and fire protection is mostly provided by the Acton Water Supply District (AWD), which is self-financed through its revenues for water delivery, both for operating and capital expenses. The District staff estimates that it serves all but approximately 500 residences, which instead are served by on-site wells<sup>5</sup> (approximately 6 percent of the town's residential units) and approximately 150 residences and business' connected to the Concord Water Department (approximately 2 percent).

Water demand varies seasonally because of outdoor water use in the summer. It also varies from year to year as more residences and non-residential uses are developed and as water conservation efforts, which the District promotes through its programs, are implemented. The net effect of the conservation programs over the past ten years and the increase in users over the past 15 years have resulted in essentially a net zero trend (i.e., no change) in water supplied by the District as shown in Figure 7.4.

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<sup>5</sup> Private on-site wells have a combination of no treatment to extensive individual treatment, which has not been inventoried. On-site well owners are required by the Board of health to test their wells on a regular basis. But, test records are not collected and the testing requirement is not enforced, so the quality of individual well supplies is assumed to be good but this has not been confirmed quantitatively. A substantial percentage of on-site bedrock wells have been installed for residential irrigation, in response to watering bans imposed by the Acton Water District. The Water resources Advisory Committee estimates that more than 20 percent of on-site wells serve this purpose as opposed to residential potable water supply.

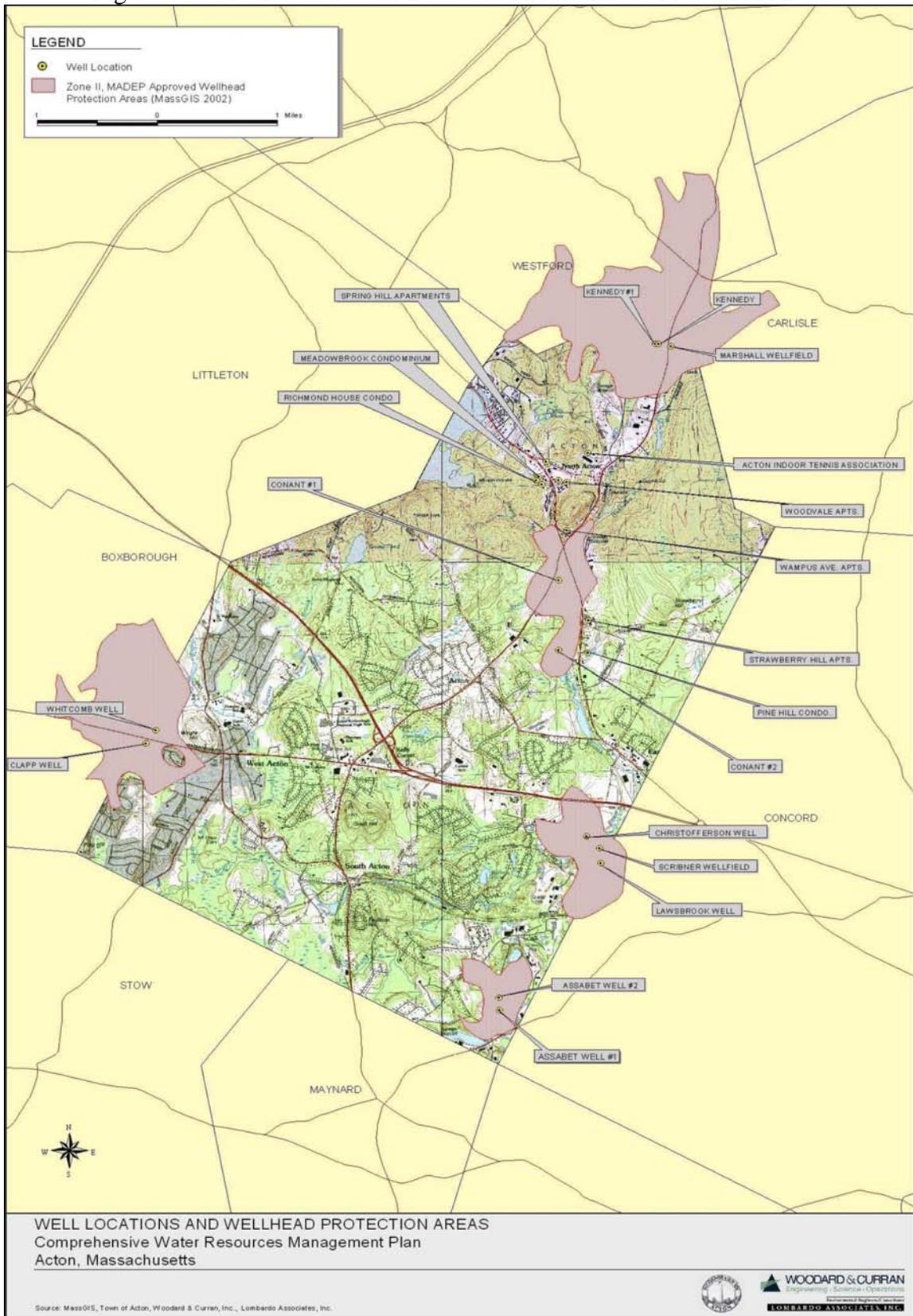
Figure 7.4: Water Supplied by the Acton Water District 1993 – 2009 (gallons)



Source: Acton water District

The water supply system is composed of groundwater wells, water treatment facilities, storage tanks, and water mains. The wells are located in several different locations as shown in Figure 7.5. There are 22 AWD wells located in several locations throughout Acton; some of the locations have clusters of wells. These wells enter the water distribution system at six points after treatment. The Water District regularly tests the water for contaminants as defined by the U.S. Safe Drinking Act, and it has consistently found that the water being supplied meets the primary standards promulgated by the U.S. EPA, as the law requires. Secondary standards are currently not required to be met, but should these become enforceable, additional treatment facilities may be needed for manganese and iron removal. Treatment is generally limited to aeration and adjustment of acidity to reduce contaminants leaching into the water from the plumbing it passes through. However, a treatment plant using membrane filtration was recently constructed to remove organic color, iron, and manganese. Although nitrate concentrations are well below EPA standards, their presence in some of the tested water at the Christofferson and Lawsbrook wells raises the concern that nitrates are entering the groundwater from residential and commercial on-site septic systems and/or fertilizer runoff from abutting turf areas and agricultural fields.

Figure 7.5: Groundwater Well Locations and Wellhead Protection Areas



The wells are surrounded by protection zones defined by Massachusetts Department of Environmental Protection (MADEP) that limit development near public wells based on soil and groundwater characteristics<sup>6</sup>. Zone 1 areas immediately surround the wells and are intended to protect against direct sources of pollution; most of these Zone 1 areas are owned by the Water District. A Zone 2 is a wider area within which groundwater should be protected but the effects of contamination on the water being withdrawn would not be immediate. There are five Zone 2 areas, as shown in the figure. A Zone 3 extends even farther from the well and encompasses the surface drainage area contributing to a Zone 2. Land uses in these protection zones are limited through Acton's zoning bylaw to protect the quality and quantity of the groundwater resource. Additional protection is provided by the zoning bylaws of Concord and Sudbury for Zone 2 areas that extend into those communities. The AWD recommended that efforts to have Boxborough, Carlisle, and Westford protect Acton Zone 2 areas should continue.

It should be noted that Acton's Zones 1, 2 & 3 are not the same as MADEP's Zone's 1, 2 & 3; in particular for Zone 1 Acton uses hydrogeological data to estimate the area from which groundwater will travel to a pumping well within a one year time period, based on average recharge conditions and anticipated pumping, rather than relying on the MADEP fixed value of 400 feet, which is not specific to local conditions.

One of the challenges that Acton faces is protection of water quality in its groundwater resource. The Assabet wells 1 and 2 were offline between 1978 and 1982 due to contamination by W.R. Grace but have been in production since that time with no problems in meeting the EPA Drinking Water standards. Through the early 1980's, various other wells were shutdown due to contamination issues. Advances in treatment (such as using aeration to remove volatile organic contaminants) have allowed those sources to be safely used again. The Assabet well 3 was not a public supply well when contamination from the W.R. Grace site was detected. It was transferred to the AWD in 1987 as part of the legal settlement between the AWD and W.R. Grace. Significant capital improvements will be required to make this source operational and meet existing drinking water standards.

Two of the current producing wells have Zone 1 areas that are bisected by heavily traveled roads, including commercial traffic. The AWD issues sodium advisories on an annual basis when finished water is above the State Health Advisory limit of 20 milligrams per liter. The Christofferson well has been classified by the Mass DEP as Groundwater Under the Direct Influence (GWUDI) of surface water, requiring advanced treatment technologies that meet the Surface Water Treatment Rule (SWTR)..

The capacity of the water system is limited by the capacity of the individual wells and well-fields but more importantly by state regulation. MADEP regulates municipal water supply facilities and other large water users such as industry and golf courses through the Water Management Act (WMA) registration and permitting process. This is to protect the amount of groundwater and surface water within the State's river basins; maintaining stream flow is a major purpose of this regulation<sup>7</sup>. The WMA also serves to protect current and future water needs by allocating

<sup>6</sup> MADEP defines Zone I as the protective radius required around a public water supply well or wellfield. Zone II is defined as that area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation).

<sup>7</sup> The MADEP fact sheet states that the purpose of the Massachusetts Water Management Act (MGL 21e) "is to ensure adequate water supplies for current and future water needs. The Water Management Act (WMA) consists of

volumes of water to specific purposes. The authorized withdrawals in Acton consist of a large “registered” withdrawal (based on historic use at the time the regulations were put in place), plus a smaller increment of “permitted” withdrawal. The current permit, which is scheduled to be renewed in August 2011, authorizes a total annual withdrawal of 708.1 million gallons per year (MGY). (This authorized annual volume is equivalent to an average of 1.94 million gallons per day (MGD)). The MADEP permit also limits the maximum daily withdrawal rate for four of the well fields. The Water District uses an engineering definition of the peak pumping rate that can be sustained without drawing down the groundwater immediately surrounding the wells; it backs off from this “safe yield” to provide a margin of safety; this maximum withdrawal rate is 2.6 MGD; this is a limit to peak, not average, withdrawal.

The District has supplied approximately 600 MGY (equivalent to 1.64 MGD) over the past six years; the trend is essentially flat because conservation and use of private wells offset increases in demand due to growth. Thus, Acton is within the DEP-authorized annual withdrawal rate, and has “headroom” that should be adequate for many years at the rate projected in Chapter 2. However, further growth in Acton could increase yearly demand.

Maximum daily demand is often greater than 2.0 MGD and in the summer months reaches 2.6 MGD, the District’s self-imposed limit. As a result, summer watering bans have been instituted. An additional well, “Assabet 3” has been permitted and could be developed to further diversify withdrawal points, a key management tool to meet seasonal demands. As permitted, this well would not necessarily increase the overall authorized maximum annual withdrawal permitted by MADEP.

It should also be noted that due to the restrictions on outside water use, the number of private irrigation wells increases annually. (It should be noted that some communities in MA are regulating private irrigation well use when public water suppliers have restrictions. This is a concept being discussed as a statewide policy to manage water resources.) The Board of Health requires that these wells draw from bedrock resources to limit conflict with the Water District’s use of the shallow aquifer and that they meet all of the local potable drinking water standards.

The Water District has identified replacement of aging water mains as a priority and has been doing so on an ongoing basis.

### **Wastewater Management**

Wastewater management involves a combination of private-on site disposal systems as well as the public “centralized” Middle Fort Pond Brook wastewater treatment plant on Adams Street in South Acton. The plant discharges to open sand beds near the Assabet River. The beds are also largely within the Zone 2 of the Assabet well fields. The public system serves only approximately 10 percent of the town’s properties<sup>8</sup> through sewers which currently extend through South Acton and Kelley’s Corner. The system also serves the schools on Charter Road and all businesses in South Acton village and the Kelley’s Corner area. This system began operation in February of 2002 and was financed almost entirely by betterments – charges to the

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a few key components, including a registration program and a permit program. Large water users had the ability to register their existing water withdrawals based on their water use between 1981-1985. The registration program established the renewable right of previously existing water withdrawals over 100,000 gallons per day (gpd) on average, per river basin, between the years of 1981-1985. DEP issued registration statements to document these registrations. The last day to register was January 4, 1988.”

<sup>8</sup> Not including vacant properties

owners of property with frontage along the sewer lines – of \$12,311 per single family home. Treatment plant operation is budgeted through an Enterprise Fund, and financed with revenues from user fees.

There is additional capacity available at the Middle Fort Pond Brook Plant of approximately 50 percent of that which is currently used; this unused capacity has yet to be allocated.

An additional 10 percent of properties are estimated by the Health Department to be served by clustered on-site septic systems or package treatment plants that are owned by homeowner associations or building managers and regulated by the Board of Health and MADEP. The remaining 80 percent of properties have on-site systems that are largely septic tanks and leach field (“Title 5” systems, named for the state regulation that they must comply with) as well as some single-family Innovative/Advanced (I/A) treatment systems.

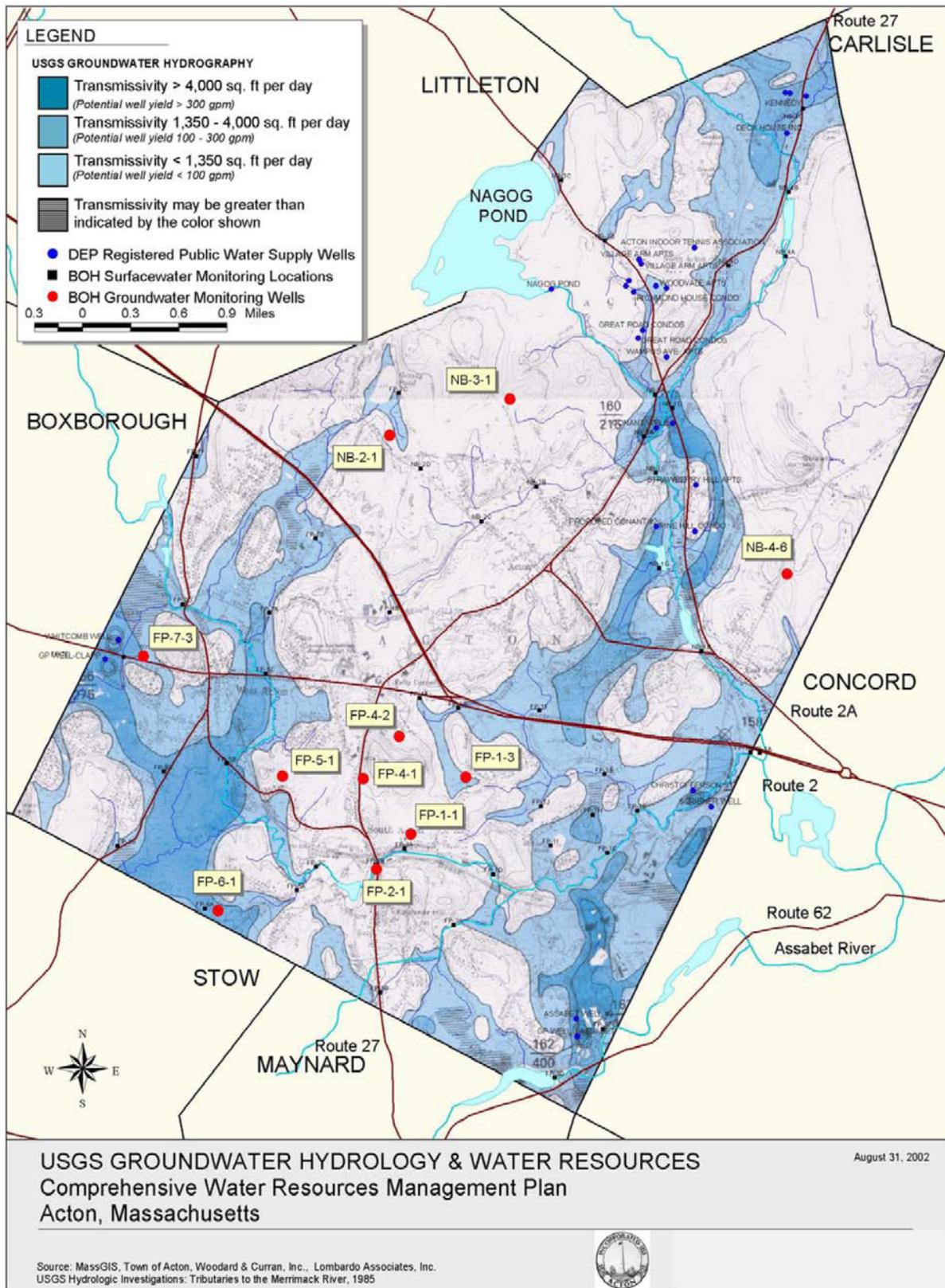
The majority of these on-site systems are believed to function well. Current town by-laws require that each individual Title 5 system be pumped at least every two years. Between 1995 and 2010, 1072 Title 5 systems have been replaced; 27 percent of these properties have required variances from the Title 5 standards and 34 percent have required variances from Board of Health Article 11 standards. Variances are only granted when it is demonstrated that the functioning of the system will not be impaired; for example, additional soil may be brought to the site to increase the vertical distance to groundwater. Nonetheless, the proportion of systems that require variances is in indication of the limitations of many Acton’s soils for wastewater disposal as described in Chapter 3, Natural Resources.

The town’s water supply and its wastewater treatment and disposal exist within a complicated system that has multiple interactions between stormwater, surface water bodies (ponds and brooks), and groundwater (surficial deposits and bedrock) both within and outside Acton’s borders. The Acton Water District’s public water supply wells draw solely from aquifers whose strata are able to transmit ground water fast enough to be practical for a municipal-scale well – in Acton this is the shallow aquifer. The groundwater that the wells draw upon is recharged mainly by natural rain, snowmelt and to some extent wastewater discharges, primarily in areas of soil with a high level of transmissivity. Figure 7.6 shows the location of these aquifers. Consequently, all potential sources of contaminants that fall within the Zone 1 and Zone 2 protection areas need to be carefully monitored and managed.

Available treatment technologies and the significance of soil types in ensuring removal of contaminants from on-site systems are all discussed in detail in the Phase One and Phase Two Comprehensive Water Resource Management Plan (CWRMP).

Adjacent communities also draw from surface water bodies (Concord), surficial groundwater deposits (Boxborough and Concord), or bedrock groundwater (Maynard), which reside, or potentially (with respect to bedrock sources) reside within Acton’s borders. In the same way some stormwater and wastewater discharged within those adjacent communities contributes to the recharging of Acton’s groundwater resources.

Figure 7.6: Groundwater Hydrology and Water Resources



Traditional Title 5 systems provide treatment of wastewater in the septic tank before it is discharged as “leachate” by the leaching field. In addition, much of the treatment is provided by the soils underlying the leachfield in which natural beneficial bacteria digest remaining contaminants and filter out pathogens.

Soils are rated by the U.S. Natural Resource Conservation Service (NRCS) according to their capability to process the wastewater that is discharged by on-site Title 5 systems. Two kinds of soil limitations exist: if the soils have poor permeability, it is physically difficult to transmit the wastewater down and away from the leachfield, and wastewater may break out on the ground surface; accordingly, Title 5 systems are located in soils that have sufficient percolation rates as determined by a “perc” test witnessed by the Health Department.

The other type of limitation is found in soils that have too high a permeability or “fast” percolation rate. In these soils, wastewater passes through the soils too fast for the soil bacteria to fully treat the wastewater, so additional depth to groundwater is required through “mounding” to provide the necessary soil filtration.

A large proportion of Acton’s soils are classified by NRCS as having “severe” limitation for on-site disposal. As part of its Phase I Comprehensive Water Resources Management Plan (CWRMP), completed in 2004, the town produced estimated design parameters for all parcels in the town. With this plan the Board of Health (BOH) witnessed percolation rates for 1,851 parcels. This information was then correlated with the NRCS soils map. To a lesser extent groundwater elevations from 165 lots were also correlated with the NCRS data. Correlation of the BOH design data with the NCRS soil classifications significantly improved upon the design parameter estimates published by NCRS.

Design parameters are critical in implementing an effective on-site disposal system program. Conventional septic tank-leaching area designs were the only option available until Title 5 was amended in 1995. However, Innovative/Alternative (I/A) systems are now allowed for replacement of conventional systems (sometimes for new construction), which assists in finding solutions for difficult lots. These more advanced on-site treatment systems release more fully treated water and therefore are a viable option. They are more economical when utilized by a larger number of dwelling units, but single-unit systems are available.

The Phase I CWRMP conducted an exhaustive study of all design parameters to identify parcels requiring off-site solutions over the long term. The parcels identified fell under the following conditions:

1. Parcels currently exhibiting septic problems and requiring immediate solutions
2. Parcels that will require off-site solutions due to:
  - a. Wetlands
  - b. Floodplains
  - c. Inadequate space
3. Parcels that can rely on replacing systems on site but require:
  - a. Large mounds (over 3 ¼’ feet tall)
  - b. Small mounds (under 1 ¾’ feet tall)
  - c. Use of I/A technology

The CWRMP concluded that over 90% of the existing on-site wastewater systems can remain as on-site systems for the planning period (which extends to 2024), with approximately 3.5% of these requiring I/A technology. Parcels identified as requiring offsite solutions to wastewater disposal problems are dispersed throughout the community. Attempting to service only the dispersed parcels with off-site solutions would be technically impractical and cost prohibitive.

In summary, on-site treatment is viable for most, but not all, residential lots in Acton; meeting on-site treatment standards on some lots may involve additional cost, compared to lots that have soils that are considered “good” for on-site disposal.

The life expectancy of an on-site wastewater system in the optimum can be 40 to 50 years. Obtaining that optimum can be impacted by the following:

- Septic tank pumping frequency
- How the Septic System is used (including the amount of water discharged to the system and the presence of chemicals that can impede the biological breakdown of solids.
- Soil conditions and depth to groundwater
- Proper design and installation
- Local environmental conditions

An additional dimension of on-site wastewater management is inspection. The Acton Health Department inspects Title 5 systems, but only when a permitted expansion or replacement of a system takes place. Since changes in Title 5 15 years ago, the great majority of on-site wastewater systems identified for replacement has been through the mandatory inspection requirement when a house is sold. (Inspection of the system is required when a property is sold; this is done by licensed inspectors who file their reports with the Health Department.) Since this requirement was put in place, little to no change has been observed between the numbers of houses selling and the failure rate of their on-site wastewater systems. From these results we can infer that homes that are not being sold must also have a similar percentage of on-site wastewater systems that are in failure, but are not being replaced.

System failure can be a problem where soil permeability is low if the homeowner does not take necessary steps to remedy the situation. It can also be a problem for the quality of the groundwater being used for public water supply if permeability is high and the soils transmit only partially treated wastewater to the groundwater; this is why depth to groundwater is a key parameter in septic system design. Testing by the Water District has found some nitrates in the water supplied by the Christofferson and Lawsbrook wells. Nitrates pose a health risk, although the detected concentrations are within the EPA Safe Drinking Water limit. As noted above in the water supply section, it is not clear whether the nitrates are due runoff from farm fields or residential lawns, which may include fertilizer and/or animal waste, or incompletely treated leachate from a nearby residential or commercial septic system failure or to a combination of these causes.

The Phase II CWRMP completed in 2006 identified 15 wastewater planning “Areas of Need” and categorized five of those as high priority needs areas. One of those, (Powdermill Plaza) has already been addressed. The CWRMP suggested several alternative management and treatment strategies to achieve appropriate wastewater management for each of those needs areas.

The CWRMP developed recommended options for the Areas of Need including a combination of the following:

- Continued reliance on on-site wastewater systems (do nothing) under the existing management framework for the majority of Acton
- Continued reliance on on-site wastewater systems but with a town-driven management system that includes expanded monitoring and stricter treatment standards – this includes shared systems
- Cluster collection and treatment systems, which can include private entities and private/public solutions
- Expansion of the Middle Fort Pond Brook sewer system with treatment and disposal at the Adams Street treatment facility to address high priority areas and optimize the operation of the system
- Use of existing in-town private treatment facilities
- Continued monitoring of new technologies and opportunities over the course of the 20-year planning period for new solutions

The initial implementation of the CWRMP has focused on evaluating which Areas of Need could feasibly be served by the existing wastewater treatment plant and identified priority areas for sewer extensions. The areas currently considered top candidates for sewers are the Spencer/Tuttle/Flint Road neighborhood and West Acton Village east of the railroad tracks. However, the betterment cost to property owners for this sewer extension is estimated at approximately \$24,000 including the on-site cost to connect to the system. There has been public discussion of the CWRP recommendations, but no consensus on how to implement them has been reached.

The CWRMP identified Wastewater Management Districts (WMD) as the primary or secondary solution to be considered for most of the 15 Needs Areas. As an alternative to sewer extension, which is not feasible for the northern half of Acton, WMDs can be an effective solution. Within these districts there would be performance standards for on-site systems and mandatory inspections at identified intervals. Where performance standards are not met, the property owner could be required to do more frequent pumping of the septic tank or to replace, modify, or enhance the non-performing system as necessary to meet the performance standard.

### **Stormwater Management**

Stormwater is the runoff from precipitation that is not absorbed by pervious ground surfaces and not otherwise recharged into the ground with infiltration devices. The water that is absorbed or infiltrated helps to recharge the groundwater aquifer. Rain and snowmelt that runs off from impervious surfaces such as building roofs, paved areas, etc., makes its way to surface water, primarily brooks and rivers. If not managed, this water can carry sediment and contaminants such as lawn chemicals, oil, and salt, and thus increase turbidity and add to contaminant loadings in the streams. If not managed properly, contaminated runoff compromises water quality in the streams and often creates peaks in the streamflow that can cause erosion and scouring of natural channels. The destination for Acton's stormwater is the Assabet River which flows into the Concord River.

Management of stormwater includes both measures to reduce the rate of flow and to improve quality through settling or other means. Together these measures are known as Best Management Practices (BMPs). The 2003 Acton Stormwater Management Plan (SWMP) contains recommendations for managing stormwater to reduce quality impacts and for complying with federal regulations.

The National Pollution Discharge Elimination System (NPDES) is a federal program administered by the US Environmental Protection Agency (EPA). Phase II of the program applies to communities such as Acton; it requires permits for Municipal Separate Storm Sewer Systems (MS4). Acton's MS4 is completely separate from the town's sanitary sewer system. Stormwater is conveyed to outfalls at 18 locations in the town.

The permitting process is managed by MADEP under its Final NPDES General Permit, which sets standards for six Minimum Control Measures (MCM) that must be implemented by the town. As listed in the SWMP, they are:

1. Public Education and Outreach
2. Public Participation/Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post- Construction Runoff Control
6. Pollution Prevention/Good Housekeeping

A key step in the process was Acton's July 2003 submission to MADEP of a Notice of Intent with a schedule for implementing BMPs to manage stormwater impacts. In particular, the BMPs for Post-construction runoff control (MCM #5) address the design of stormwater facilities in new residential and commercial development, including subdivisions, and includes the use of retention basins and other devices in the stormwater collection and conveyance system to control the rate of runoff in storm events of various intensities, and to achieve removal by settling of 80 percent of total suspended solids (such as soil particles) before the stormwater reaches a surface water body. Acton has had bylaws and regulations since the late 1980s that embodied what are now called BMPs, and these regulations have been modified as necessary to comply with MADEP standards under the permit.

Since 1982, the Board of Health has been monitoring for fecal coliforms, which can be transported by stormwater, and taking measures to eliminate illicit discharges of sanitary wastewater to the stormwater system as required in MCM #3. And, the Town has implemented all of the other MCMs, including outreach, public education, and regular maintenance and cleaning of stormwater structures such as catch basins.

The Board of Health has also implemented measures to reduce phosphorus from non-point sources such as surface runoff to compensate for phosphorus entering the Assabet River from the Middle Fort Pond Brook wastewater treatment plant. These measures include the construction of a wetland at NARA to remove phosphorus, solids, and nitrogen from runoff.

The Acton Water District noted that statewide stormwater policies are complicating drinking water protection initiatives by encouraging groundwater recharge of stormwater. Care must be taken not to contaminate wells in an effort to protect streams. The AWD hopes stormwater

improvements made by the Town will be recognized by MADEP as a credit toward increasing permitted withdrawal limits.

### **Services for Seniors**

As discussed in Chapter 2, the number of Acton residents 65 years or older is expected to increase over the next two decades. The Acton Council on Aging (COA) believes that a larger senior center is needed to serve current and future needs.

The COA serves this age group with food programs, transportation, and the gathering place for social activity that is provided by the Senior Center on Audubon Lane. This includes organized bridge (card game) groups, art lessons in several media, craft groups (knitting, crocheting, quilting), movie showings, cultural discussions, and almost-monthly field trips. The COA also provides health and wellness programs, which include cardio-flex and tai chi classes.

According to the COA director, 7,400 meals were served at the Senior Center in FY2010 and an additional 4,500 meals were delivered to seniors' homes. The shuttle van that is leased from LRTA but operated and dispatched by the Council provided 4,500 rides in FY2010 to destinations throughout Acton as well as to destinations in Maynard and Concord.

These services, and the opportunity to socialize at the Senior Center, are particularly important to the older half of the age group, people aged 75 and older. The Director estimates this group to comprise approximately 40 percent of COA's clients.

The current Senior Center was built in 1995. It totals approximately 6,700 square feet and has 45 parking spaces. The Director feels that this facility is constrained by its parking, size, layout, and kitchen. From their offices, staff cannot monitor people coming and going, and in the two meeting areas. The kitchen is not adequate to provide meals, which are purchased from a vendor. There is inadequate storage, and the configuration of the meeting/dining room and the multipurpose room is less than ideal.

The COA commissioned a concept for a new 25,000 square foot Senior Center in 2008. It would replace the current facility at a cost in the range of \$7-8 million. Three potential sites were identified in North Acton. No action has been taken on this proposal to date. During Phase 1 of Acton 2020 there was substantial support for a new Senior Center, with many people expressing support for a combined Senior and Community Center serving all ages.

### **Libraries**

Demand for Acton's libraries is steadily increasing and meeting it requires more resources; however the library buildings are generally adequate for the future.

Acton's Memorial Library's (AML) circulation increased from approximately 366,000 in FY2002 to nearly 672,000 in FY2010, a 66% increase. The library is increasing its use of technology and provides materials in ten languages. 14,696 Acton residents have library registrations. Approximately 600 meetings are held in the library each year. The library was renovated and substantially expanded in 1998.

During Phase 1, the head librarian identified challenges including

- Need for more staff due to growing usage
- Need to communicate rapidly changing technologies to users and staff
- Language issues as library users become more diverse

AML's circulation per full-time equivalent library staff is 11th in the state and almost twice the state average. AML supports residents from other cultures through foreign language collections, citizenship preparation materials, support for literacy in English (in terms of both collections and space for tutoring, literacy training, and conversation groups). The library also provides reference desk services and the transcribing and mounting on the web of historical documents such as Civil War era letters.

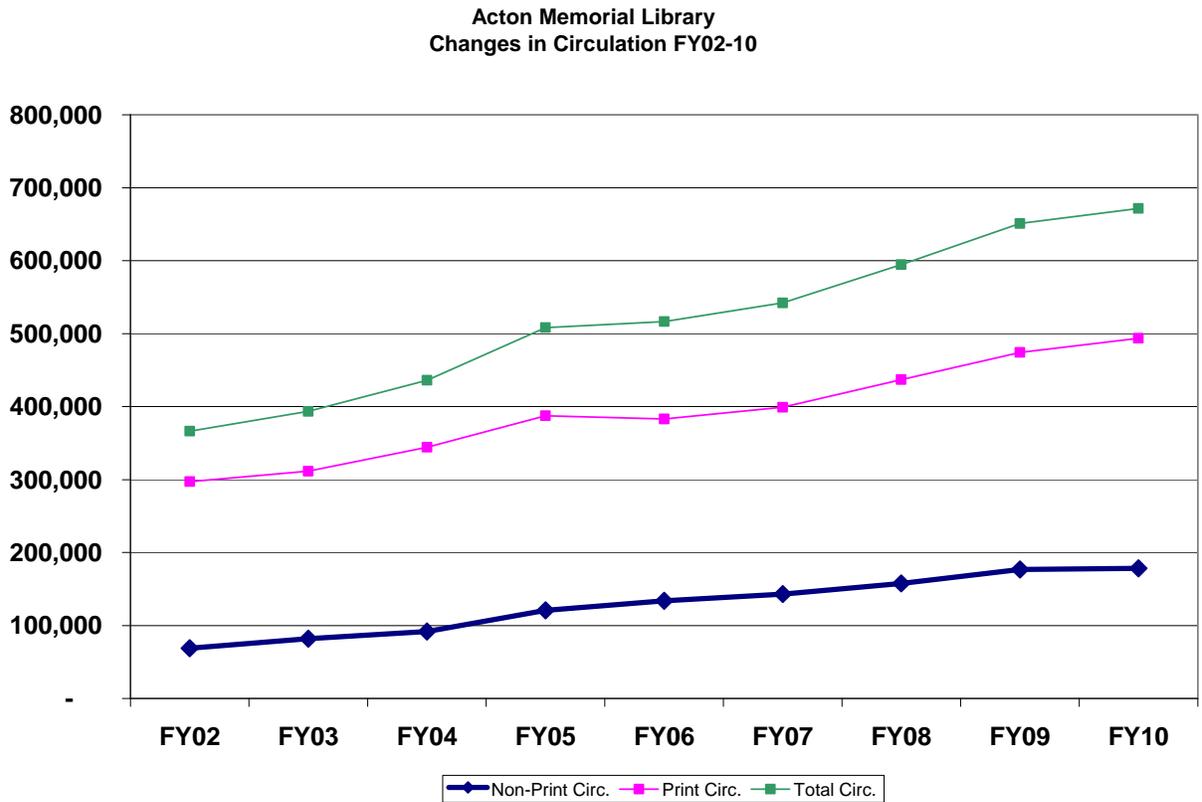
Programming is a substantial part of today's town libraries. The Library Director reported that AML's ability to do more programming is constrained by the size of the current staff, and budget constraints have limited staff size for several years. She also stated that despite the substantial enlargement of the library in 1998, AML's collection of materials is limited by the available space and the demand for meeting rooms exceeds their availability.

The Citizens Library in West Acton Village is independent from the much larger Memorial Library; it provides an important community resource for the village.

Both libraries encourage an early love of literature and reading by holding frequent story times, "pajama parties" for children, and other activities.

*Figure 7.7 shows that the number of items circulated has increased 66 percent since 2002. Figure 7.8 shows that nearly two public meetings per day take place at the library.*

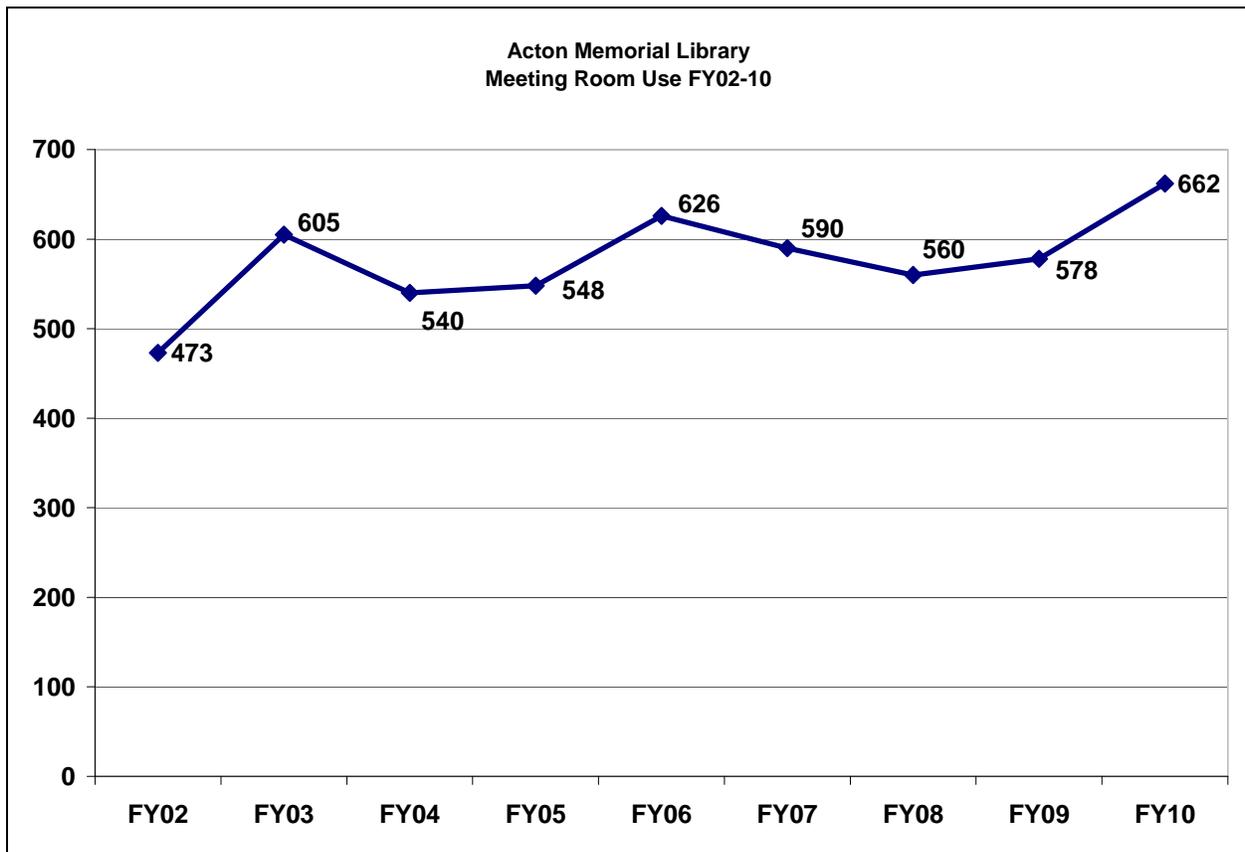
Figure 7.7: Circulation Trends at the Acton Memorial Library



Source: Acton Memorial Library

Note: From FY2004-FY2007, the library hours were reduced on Thursday and Saturday, which affected circulation.

Figure 7.8: Use of Meeting Rooms at the Acton Memorial Library



Source: Acton Memorial Library

Note: From FY2004-FY2007, the library hours were reduced on Thursday and Saturday, which affected meeting room use.

### Public Safety

The recently constructed Public Safety Building is adequate for the future needs of the Police Department. The Public Safety Building was built in 2005. It contains the Police Department, dispatch functions, and administrative space for the Fire Department. It should satisfy these functions for the foreseeable future, so Police services are not addressed here.<sup>9</sup> In contrast, the Fire Department has a number of facility needs.

### Fire Department

Acton's Fire Department has three fire stations built 40 to 60 years ago; with the steady growth of the northern part of the town, there is a case to be made for a new fire station in North Acton replacing one of the existing stations.

The Fire Department has three fire/EMT stations: Acton Center (1951), West Acton (1958), and South Acton (1961). While still functional, the stations have not been renovated since they were

<sup>9</sup> However, the Acton Police Chief regularly points out that Acton's Police Department is understaffed compared to other communities and national standards for officers to population ratios.

constructed except for replacement of overhead doors and heating improvements in the two older stations. There are deficiencies in heating and air conditioning, fire protection systems, space for paperwork, bunkrooms for fire fighters, and storage for equipment. There is no dedicated space for decontamination of fire fighters and their gear. Only the South Acton station is able to accommodate the department's aerial ladder truck.

While most of these issues can be addressed incrementally through on-going capital improvements of moderate size, studies conducted for the department indicate the need for better coverage in the northern portion of the town.

Response time is critical in responding to both fires and medical emergencies. The Fire Chief stated that response time from Acton Center to the northernmost part of town is estimated at more than 9 minutes, substantially higher than the national standard of 5 minutes, and an additional 3 to 4 minutes is needed to bring the aerial ladder truck from South Acton. With much new recent development in North Acton that is still ongoing, the seriousness of the gap in coverage is increasing.

An architectural concept was developed for a new fire station in North Acton, and Town Meeting authorized funding for the preliminary design of the facility, but this has not proceeded because of budget issues. The department's current thinking is that staff and equipment would be moved from the Acton Center station to the new station, and the vacated station could be used to stage construction of improvements at the West Acton and South Acton stations. Ultimately, the north, west, and south Acton stations would serve the town with essentially the current level of staff and equipment, and the Acton Center station could be converted to other municipal uses. The cost of the new facility was estimated at \$5-7 million. Some of the cost was to be provided by the developers of the Avalon residential development out of proceeds from condo sales, which have not occurred to date.

The Fire Chief stated that response time would be improved to North Acton, which has grown faster than the rest of the town over the past decade, and to much of the Great Road, which is the location of many fire department calls. Response times to the area surrounding Acton Center would be longer but still acceptable. However, this was a major issue among homeowners at the time the new facility was proposed.

As noted above under Municipal Facilities, the Town Hall office space occupied by many departments is tight, and if the Acton Center fire station is ultimately replaced by a new facility in north Acton, it could be converted to office space for these departments.

## **Overall Summary**

Acton provides a high quality set of services and facilities in return for the taxes paid by property owners. The Town's facilities are generally in very good condition and are for the most part adequate in size to serve the needs foreseen over the 20-year horizon of this comprehensive plan; the possible exceptions are the proposals to build a larger Senior Center and a new fire station. While not perfect, the Town's water supply meets enforceable standards and is adequate in capacity to serve all but summer outdoor watering needs. Stormwater is well-managed in accordance with federal and state regulations. The Comprehensive Water Resources Management Plan identified 15 Areas of Need, 14 of which need appropriate action to manage wastewater in a manner that preserves the quality the groundwater that supplies most of the Town's drinking water.

## **Opportunities and Challenges Posed by Existing Facilities and Services Conditions**

- As in all towns concerned with high quality schools and other public services, there is an on-going tradeoff between what the town provides and the cost to taxpayers.
- Acton has a generally very good inventory of schools and other town buildings that are adequate in capacity for future needs, but ongoing improvements are needed, particularly in the older buildings.
- The identified needs for new buildings are for a larger Senior Center and for a new Fire Station to replace one of the existing stations for better response time and up-to-date facilities.
- The water supply system is expected to be adequate in quantity for future needs, but ongoing improvements in the distribution system are needed, and ongoing efforts are needed to preserve quality.
- Water quality is an issue both in terms of land uses in the areas surrounding the groundwater wells and protection of the larger groundwater aquifer that supplies them but receives 90 percent of the town's sanitary wastewater.
- Because of the limitation of much of Acton's soils, better management of on-site wastewater disposal and/or some extension of the Fort Pond Brook wastewater treatment plant may be needed in identified Areas of Need.
- Acton's growing population of seniors would be better served by a new senior center large enough to serve current and future demand.
- Fire Department response times would be improved by replacing the Acton Center fire station with a new facility in North Acton.
- Acton's libraries are key resources for cultural information and as public gathering places; while adequate in size, they will continue to need more resources to serve demand.

In conclusion, Acton is fortunate to have excellent schools, very good facilities, and high quality services. Prudent budgeting to resolve competing priorities and maintain financial well-being is a continuous process that is well served by Town Government but requires the ongoing effort of officials and citizens. Continuing effort is needed to manage risk to the Town's water supply and surface water quality.

## Chapter 8: Land Use and Zoning

This chapter inventories Acton's 2008 land use and existing zoning. It includes information on:

- Relationship of Land Use to Planning Goals
- Acton's 2008 land use patterns.
- Acton's existing zoning
- Potential future land use at build-out (i.e., full development of available land)
- Opportunities and Challenges Posed by Existing Land Use Conditions and Zoning

### Why Acton's Land Use and Zoning are Important to the Comprehensive Plan

Land use and zoning are critical elements of the Comprehensive Plan. Land use planning defines the location of uses within the community. Where people live, work, shop, play, and educate is reflected in the land uses. Existing land use reflects past decisions about the locations of these activities and is the basis for future decisions. Zoning and subdivision regulations are among the town's legal tools for enforcing where and in some ways how these activities are located and built.

### Relationship of Land Use to Planning Goals

*Goal: Preserve and Enhance Town Character*

Much of the town's existing character is the result of the pattern of land uses as they have developed through history and as a result of zoning and subdivision regulations. Neighborhood densities and character vary based largely on zoning. Much of the future character of the town will be determined by the development of vacant land and redevelopment of existing areas as controlled by zoning and other regulations.

*Goal: Ensure Environmental Sustainability*

The patterns of land use have a major impact on the energy spent on getting to and from work, school, recreation, and shopping. The inefficiencies of traffic congestion, wasteful commuting times, air pollution, over reliance on foreign oil, loss of open space and habitat, and deteriorated sense of community are all consequences of land use patterns that separate land uses and force the use of private vehicles in place of a more historical pattern of walkable, mixed-use villages.

*Goal: Improve Connections*

Connections between neighbors, connections between home, work, recreation, education, services, and shopping, and the physical and social connections that define a community are all impacted by land use and zoning. The proximity between land uses and the connections between them affect the livability of the community. Improving provisions in regulations that foster connections strengthens community.

*Goal: Support Inclusion and Diversity*

Land use and zoning influence the diversity of housing types and costs, which also affects the diversity of the community and its sense of inclusion. Zoning provisions that encourage a

diversity of housing types in new developments and the variety of housing choices created by the town's mixture of land use patterns and densities result in a community that has a place for all.

*Goal: Provide More Opportunities for Community Gathering and Recreation*

Land use and zoning influence the provision of places to gather. Gathering places are generally located in recreation areas, open spaces, and institutional settings like schools, libraries, and government buildings. Gathering places can also be located in commercial and office settings as well as in residential neighborhoods. Zoning regulations can encourage the provision of gathering places.

*Goal: Preserve and Enhance Town-owned Assets*

A livable community's town-owned assets like schools, open space, recreation, natural resources, water resources, and gathering places are reflected in land use patterns and zoning. Several zoning provisions are designed to help maintain and enhance town-owned assets as well as encourage quality in privately owned community assets.

*Goal: Maintain and Improve Financial Well-being of the Town*

Land use reflects the history of development, and zoning is the most important tool for regulating future changes in land use. As such, this element has great importance to Acton's financial well-being, because some types of development and/or patterns of development cost more to serve than others. This will be a subject of the subsequent steps in the comprehensive planning process.

## **Summary of Key Points**

### *Land Use*

- Almost 27% of the Town's area is in residential use.
- About 63.7% is open, including agricultural, recreation, forest, forested wetlands, open wetlands, cemetery, and other relatively undeveloped land.
- About 5.1% of the Town's area is in commercial or industrial use.
- The dominant residential type is a single-family home on a variety of different sized lots.
- Multi-family homes are principally concentrated along Great Road and also at Kelley's Corner, and in parts of South Acton. A multi-family assisted living community is also located in North Acton. Other multi-family homes are dispersed throughout other parts of town.
- Since the late 1980s most subdivisions of more than five lots have been cluster subdivisions (either Planned Conservation Residential Communities or Open Space Developments).
- Commercial uses are concentrated along Great Road, Massachusetts Avenue (around Kelley's Corner), and along Powder Mill Road (Rte. 2) in Acton's southeast corner along the Assabet River, with smaller commercial areas in West Acton, South Acton, and a few other sections of town.
- Industrial uses are concentrated in North Acton, along Massachusetts Avenue east of Kelley's Corner (mixed with commercial/office uses), and in Acton's southeast corner, with a few smaller industrial areas located in other parts of town.

### *Zoning*

- The town has nine residential districts, five village districts, two office districts, three business districts, five industrial districts, two special zoning districts, and four overlay districts.
- More than 60% of the town is zoned for residential uses: 58.1% for single-family homes, and 1.7% for multi-family homes.
- A Village Residential District (VR, 0.5% of the town's area) allows mixed residential and commercial uses.
- Two provisions of the zoning ordinance allow Open Space Development (OSD) and Planned Conservation Residential Community (PCRC), to encourage the preservation of open space, thus facilitating the preservation of significant land, water, historic, archeological, and natural resources. They are special permit options for residential development in all the single-family residential districts (R-2, R-4, R-8, R-8/4, R-10, R-10/8).
- Multi-family dwelling units are allowed under the provisions of the Residence A district (5 units/acre) and Residence AA district (15 units/acre).
- The five village districts comprise 1.2% of the town's total area. They allow a mixture of business and residential uses and have a number of provisions to encourage compact development including transfer of development rights from the Great Road corridor to the North Acton and East Acton Village Districts (NAV and EAV), and within these village districts.
- Office and business zones comprise 6.9% of the land in Acton and are located along some of the key transportation corridors in the town, including Routes 2A (Great Road) and 111 (Massachusetts Avenue).
- There are three office parks, one located in the northwest corner of town and two along Massachusetts Avenue (Route 2 and 111).
- The main business zones are located along Great Road, at Kelley's Corner (KC), and the Powder Mill district (PM), with other business located in West Acton and the other villages.
- Industrial districts comprise 6% of the town's area and are located in North Acton, along Post Office Square and Hayward Road near Acton Center, the southern end of Main Street, and in the Powder Mill area in the southeast corner of Acton.
- The Technology District (TD) is located in the southeast corner of town off Independence Road and Knox Trail.
- The Agriculture-Recreation-Conservation District (ARC) (14.1% of the town's total area) applies exclusively to land owned by the State, the town, and the Acton Water District. It excludes all residential, office, commercial, and industrial uses. Agriculture, conservation, recreation, municipal, educational and religious uses are allowed by right.
- There are four overlay districts:
  - Affordable Housing – encourages the development of affordable housing in new development.
  - Flood Plain – regulates development in flood-prone areas.
  - Groundwater protection – regulates the development in the town's water supply protection areas.
  - Open Space Development – encourages the preservation of common land; significant natural, historical and archeological resources; scenic vistas; rural

character; village clusters; water supply resources; and better overall all site planning.

- PCRC is the preferred method of land development and may be applied to any of the single-family districts in Acton.
- Full buildout of all developable land would result in an increase of approximately 1,800 housing units from Acton’s current 8,530 units to an order-of-magnitude total of 10,300, depending on the assumptions used in the analysis. A key point is that residential buildout is unlikely to be reached in the next 30 years.

## 2008 Land Use Patterns

Land uses in Acton reflect the historic development of the town, physical constraints like wetlands, land ownership, public investments (like roads, utilities, and public facilities), and zoning. Public investments, zoning and other regulations are the Town’s primary means of controlling the types and quality of development and their locations. Early industrial uses were located along the Assabet River and other watercourses that originally powered the mills. Commercial and residential uses were once focused on the villages, and most of the town was farmland and orchards. Beginning after World War II, farms began to be converted to residential uses, and the character of the town, like many others, began to change from rural to suburban. According to the 1961 Master Plan agriculture and other undeveloped land in Acton totaled 82% of the total area. By 1971 this proportion had shrunk to 66% as land developed. The following table shows the changes in major categories of land use from 1971 to 1999.

Table 8.1: Major Land Use Categories, 1971 to 1999

	1971		1999	
	Acres	Percent	Acres	Percent
Agriculture	830.3	6.4	582.3	4.5
Undeveloped	7,724.4	59.6	6,329.7	48.8
Developed	4,411.5	34.0	6,054.2	46.7
Total	12,990	100	12,990	100

In 1953 zoning was adopted by the town. It created districts that limited the location and density of uses, laying the framework for the current land use patterns.

“Land use” refers to the actual use of land and is generally determined from interpretation of aerial photographs. The land uses for Acton were determined from 2005 Massachusetts Geographical Information System (MassGIS) information and updated based on 2008 aerial photos. Assessors’ parcel information was used to check the accuracy of the MassGIS interpretation in some areas. Assessors’ parcel information is included below in Table 8.2 for comparison. In most cases assessors assign a single land use to each parcel regardless of the actual size and use of the land. For example a five-acre parcel with a single residence would be counted as five acres of residential use while the land use interpretation would likely assign  $\frac{1}{4}$  to  $\frac{1}{2}$  acre to residential use and the remainder of the parcel would be counted as forest or open land<sup>1</sup>.

<sup>1</sup> Before the widespread availability of GIS, a computer mapping tool with extensive capabilities for data storage and analysis, Assessors’ parcel information was the common data source that formed the basis of land use analysis and mapping. The land use data and maps in the 1990 Master Plan and the 1998 update were primarily based on the Assessors’ parcel information.

## Land Use and Zoning

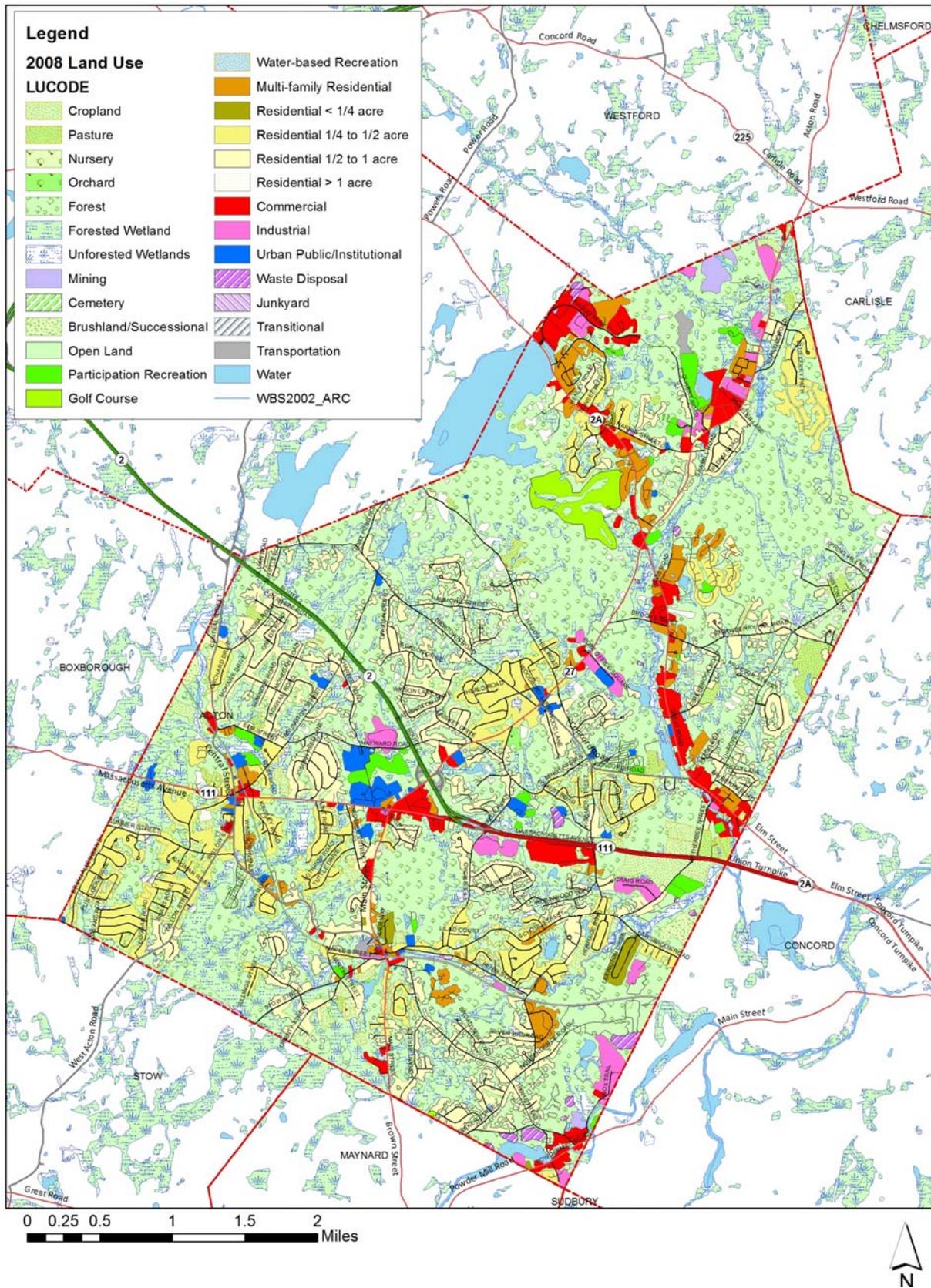
Land use in Acton is primarily residential and open. Almost 27% of the Town's land is in residential use, and about 63.7% is composed of agricultural, recreation, forest, forested wetlands, wetlands, cemetery, and other relatively undeveloped or open land. About 5.1% of the Town's area is in commercial or industrial use. The Town's land uses (based on 2008 aerial photos) are summarized in Table 8.2 and illustrated in Figure 8.1.

The map clearly illustrates the dominance of residential uses, forest and other undeveloped land, and the distribution of other land uses in Acton. The dominant residential land use type is single-family homes on a variety of different sized lots. Multi-family homes are principally concentrated along Great Road and also in Kelley's Corner, and in parts of South Acton. Other multi-family homes are dispersed throughout other parts of town.

Table 8.2: Acton Land Use and Parcel Use

	2008 GIS Area (Acres)	Percent of Town's Total Area	Assessors' Parcel LU (Acres)	Percent of Town's Total Area
<b>Residential</b>				
Very Low Density Residential	181.5	1.4%		
Low Density Residential	1,695.5	13.1%	5,971.0 <sup>1</sup>	46.0%
Medium Density Residential	1,238.4	9.5%		
High Density Residential	22.7	0.2%		
Multi-Family Residential	326.9	2.5%	1,270.1	9.8%
	3,465.0	26.7%	7,241.1	55.7%
<b>Commercial and Industrial</b>				
Commercial	457.7	3.5%	313.1	2.4%
Office	NA <sup>2</sup>		144.1	1.1%
Industrial	207.0	1.6%	232.5	1.8%
	664.7	5.1%	689.7	5.3%
<b>Public and Institutional</b>				
Urban Public/Institutional	101.5	1.0%	174.5	1.3%
Cemetery	37.9	0.3%		
	142.5	1.1%	174.5	1.3%
<b>Recreation</b>				
Participation Recreation	136.3	1.0%	63.7 <sup>3</sup>	0.5%
Water-based Recreation	2.3	0.0%		
Golf Course	102.4	0.8%	151.1	1.2%
	248.3	1.9%	214.8	1.9%
<b>Agricultural<sup>4</sup></b>	333.5	2.6%	131.2	1.0%
<b>Forest</b> (including forested wetlands)	7,048.4	54.3%	2,625.3	20.3%
<b>Open Land<sup>5</sup></b> (transmission lines, abandoned fields, etc.)	206.1	1.6%	1,242.9	9.6%
<b>Other</b> (including mining, waste disposal, etc.)	255.7	2.0%	44.7	0.3%
<b>Total Land Area</b>	12,364.2	95.2%	12,364.2	95.2%
Water	252.7	1.9%	NA	
Non-forested Wetlands	373.1	2.9%	NA	
<b>Total</b>	12,990	100%	12,990	100.0%
<sup>1</sup> Assessors assign residences to either single family or multi-family without regard for density <sup>2</sup> Included in Commercial <sup>3</sup> School recreation fields are included under Urban Public/Institutional by Assessors <sup>4</sup> Several agricultural fields are classified as residential by the Assessors <sup>5</sup> Assessors column includes undeveloped or vacant land				

Figure 8.1 Acton Existing Land Use



at Kelley's Corner, and in parts of South Acton. A multi-family assisted living community is also located in North Acton. Since the late 1980s most subdivisions of more than five lots have been cluster subdivisions (either Planned Conservation Residential Communities or Open Space Developments). The Acton Planning Board and its Subdivision Rules and Regulations encourage cluster subdivisions (see Residential Districts below).

Commercial uses are concentrated along Great Road, Massachusetts Avenue (around Kelley's Corner), and along Powder Mill Road (Rte. 2) in Acton's southeast corner along the Assabet River, with smaller commercial areas in West Acton, South Acton, and a few other sections of town.

Industrial uses are concentrated in North Acton, along Massachusetts Avenue east of Kelley's Corner (mixed with commercial/office uses), and in Acton's southeast corner, with a few smaller industrial areas located in other parts of town.

One industrial area, located off Independence Road, is the location of the W. R. Grace Superfund Site. The 260-acre site (including 80 acres in Concord) was used for industrial purposes since the 1800s. After purchasing the property in 1954, W. R. Grace & Co.'s manufacturing operations produced a variety of latex and rubber based products as well as cellulose battery separators. Many of the waste products from these operations were disposed on site. In early 1982, Grace discontinued its organic chemical operations at the site.

In 1978, groundwater contamination was detected in two Acton municipal supply wells, Assabet 1 and 2, located southwest of the Grace property. This discovery prompted the temporary closing of the wells and a series of investigations that culminated in the installation of the Aquifer Restoration System (ARS) in late 1984, which remains in operation, and the installation of a water treatment plant for the wells. In 1983, this site was included on the Superfund National Priorities List (NPL). In 2000, the Acton portion of the site was rezoned as part of the Technology District.

## **Existing Zoning**

The Town of Acton adopted zoning and created its first zoning map in 1953. The map had one residential district, one commercial district, and one industrial district. Acton adopted subdivision control in 1953 also, but did not adopt a comprehensive set of subdivision regulations until 1965. Concord, on the other hand, adopted zoning in 1928 and its first subdivision controls in 1938. With less regulation and more available land, property in Acton was relatively easy to develop when suburban development began in the 1950s.

Today the town has nine residential zoning districts, five village districts, two office districts, three business districts, five industrial districts, two special zoning districts and four overlay districts. Table 8.3 lists the primary districts; the overlay districts are listed in Table 8.4. Figure 8.2 depicts the primary districts.

Table 8.3: Acton Zoning

		<b>Total Acres<sup>1</sup></b>	<b>Percent of Town</b>	<b>Developable Acres Remaining<sup>2</sup></b>	<b>Percent of Total Acres</b>
<b>Residential Districts</b>					
Residence 2	R-2	3,941.9	30.3%	454.8	11.5%
Residence 4	R-4	593.2	5.0%	68.2	11.5%
Residence 8	R-8	1,162.6	8.9%	187.0	16.1%
Residence 8/4	R-8/4	765.7	5.9%	342.8	44.7%
Residence 10	R-10	74.1	0.5%	7.8	10.5%
Residence 10/8	R-10/8	1,554.8	12.0%	669.2	43.0%
Residence A (multi-family)	R-A	225.2	1.7%	39.6	17.6%
Residence AA (multi-family)	R-AA	7.7	0.0%	0.5	6.5%
Village Residential	VR	62.6	0.5%	4.6	7.3%
<b>Village Districts</b>					
East Acton Village	EAV	31.1	0.2%	1.7	5.5%
East Acton Village 2	EAV-2	19.8	0.2%	0.3	1.5%
North Acton Village	NAV	43.0	0.3%	22.7	52.8%
South Acton Village	SAV	34.2	0.3%	7.0	20.5%
West Acton Village	WAV	22.9	0.2%	0.8	3.5%
<b>Office Districts</b>					
Office Park 1	OP-1	119.2	0.9%	64.2	53.9%
Office Park 2	OP-2	105.4	0.8%	22.1	21.0%
<b>Business Districts</b>					
Kelley's Corner	KC	47.0	0.4%	3.4	7.2%
Limited Business	LB	158.6	1.2%	9.6	6.1%
Powder Mill District	PM	72.8	0.6%	9.5	13.0%
<b>Industrial Districts</b>					
General Industrial	GI	135.1	1.0%	5.7	4.2%
Light Industrial	LI	39.1	0.3%	5.5	14.1%
Light Industrial 1	LI-1	191.5	1.5%	5.7	3.0%
Small Manufacturing	SM	119.0	0.9%	8.5	7.1%
Technology District	TD	302.6	2.3%	255.8	84.5%
<b>Special Districts</b>					
Agriculture-Recreation-Conservation	ARC	1,837.0	14.1%	NA	NA
Planned Conservation Residential Community	PCRC	304.8	2.3%	0	0%
<sup>1</sup> . Zoning Districts generally exclude major roads and highways, so the total of this column is less than the total acreage in the land use table. <sup>2</sup> . The acreages indicated as developable excludes public open space, private common land, and areas like known wetlands that are clearly not developable, but they remain as rough estimates of development capacity, as many factors influence the feasibility of development of a parcel of land.					

Table 8.4: Overlay Districts

<b>Overlay Districts</b>		
Affordable Housing Overlay District		Applies to two “sub-districts” that are located in various areas
Flood Plain District	FP	Designated floodplains
Groundwater Protection District	GPD	Applies to Watershed Protection Areas

**Residential Districts**

More than 60% of the town is zoned for residential uses: 58.1% for single-family homes, and 1.7% for multi-family homes. A Village Residential District (VR, 0.5% of the town’s area) allows mixed residential and commercial uses. The Residence 10 and Residence 10/8 districts require a minimum lot area of 100,000 square feet and are located in the northern section of town. If the cluster option, with common open space, is used in the Residence 10/8 district, density can be reduced to 80,000 square feet of area per dwelling unit including common land. Likewise in the Residence 8/4 district density can be reduced from 80,000 square feet to 40,000 square feet per dwelling unit, including common land, if the cluster option is used.

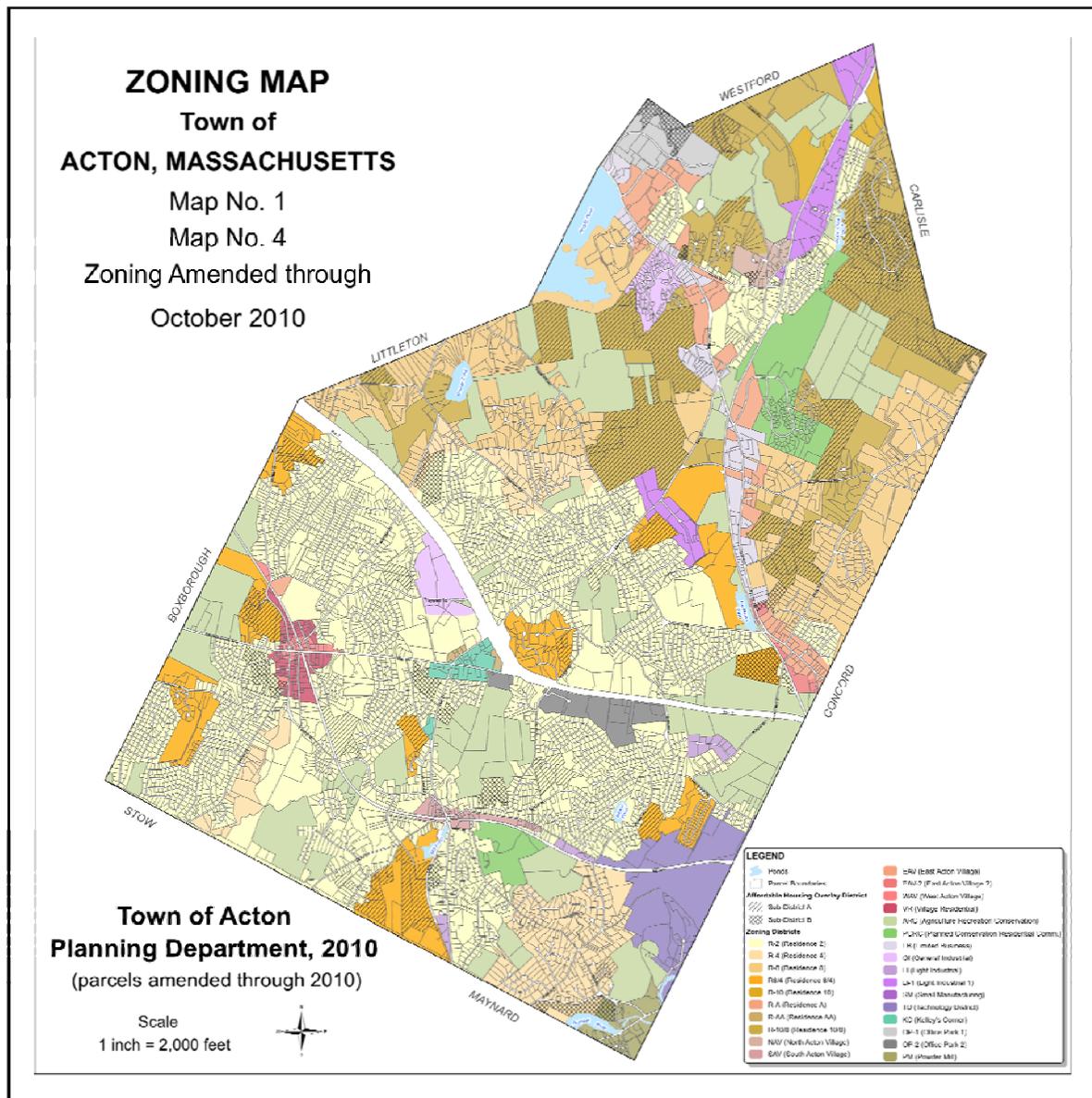
The Residence 2 district is located in the southern portion of town and requires a minimum lot size of 20,000 square feet. The other residential districts are smaller and more dispersed. There is also a Planned Conservation Residential Community (PCRC) district that encouraged the preservation of open space. The PCRC district is built out, with no more developable land, but the PCRC provisions can be applied to any single-family residential district. Two provisions of the zoning ordinance allow Open Space Development (OSD) and Planned Conservation Residential Community (PCRC), encourage the preservation of open space, facilitating the preservation of significant land, water, historic, archeological, and natural resources. They are special permit options for residential development in all the single-family residential districts (R-2, R-4, R-8, R-8/4, R-10, R-10/8). The PCRC district is built out, but the PCRC provisions can be applied to any single -family residential district.

Multi-family dwelling units are allowed under the provisions of the Residence A (R-A) district (5 units/acre), Residence AA (R-AA) district (15 units/acre), and the Village Residential (VR) district (4 units/15,000 square feet). The R-A and R-AA districts are located along the Great Road corridor. The minimum lot area in the Residence A district can be reduced if all single-family units are built on the lot.

**Village Districts**

The five village districts comprise 1.2% of the town’s total area. They allow a mixture of business and residential uses and have a number of provisions to encourage compact development including transfer of development rights from the Great Road corridor to the North Acton and East Acton Village Districts (NAV and EAV), and within these village districts. The South Acton and West Acton Village Districts overlap with the Local Historic Districts.

Figure 8.2: Existing Zoning



**Non-Residential Districts**

Office and business zones comprise 6.9% of the land in Acton and are located along some of the key transportation corridors in the town, including Routes 2A (Great Road) and 111 (Massachusetts Avenue). There are three office parks, one located in the northwest corner of town and two along Massachusetts Avenue (Route 2 and 111). The main business zones are located along Great Road, at Kelley’s Corner (KC), and the Powder Mill district (PM), with other businesses located in West Acton and the other villages. A few businesses are located in other parts of town.

Industrial districts comprise 6% of the town’s area and are located in North Acton, along Post Office Square and Hayward Road near Acton Center, the southern end of Main Street, and in the

Powder Mill area in the southeast corner of Acton. The Technology District (TD) is located in the southeast corner of town off Independence Road and Knox Trail.

### **Special Districts**

The Planned Conservation Residential Community (PCRC) district (2.3% of the town's total area) is a historic artifact that comprises two housing developments (Audubon Hill and Bellows Farm) that were initially approved under special rezoning rules in the early 1980s. The Agriculture-Recreation-Conservation (ARC) Districts (14.1% of the town's total area) applies exclusively to land owned by the State, the town, and the Acton Water District. It excludes all residential, office, commercial, and industrial uses. Agriculture, conservation, recreation, municipal, educational and religious uses are allowed by right.

### **Overlay Districts**

#### ***Affordable Housing Overlay District***

The affordable housing overlay provisions encourage the development of affordable housing in new development in Acton by a Special Permit. (See additional discussion of affordable housing in the Housing Chapter.)

#### ***Flood Plain Overlay District***

The Floodplain District is an overlay district whose boundaries and regulations are superimposed on all districts. The Flood Plain District regulates development in flood prone areas and includes all special flood hazard areas in Acton designated as Zones A and AE, in the Acton Panels of the Middlesex County Flood Insurance Rate Map (FIRM), dated June 4, 2010.

#### ***Groundwater Protection District***

Each of Acton's nineteen wells is located in one of the town's five water supply protection areas, known as "Zone IIs". The wells are located in shallow aquifers with a high vulnerability to contamination. Land uses and development within these Zone IIs are regulated under the provisions of the Groundwater Protection District that divides the Town into four zones with varying protection levels in relation to the proximity to the wells.

#### ***Open Space Development Overlay District***

Open Space Development and PCRC and Open Space Development are the preferred methods of land development and may be applied to any of the single-family districts in Acton.

## **Buildout Analysis**

Table 8.3 contains an estimate of undeveloped land in each zoning district that is not clearly foreclosed from development by open space protection or factors such as major wetlands. As noted in the table, this is necessarily a rough estimate because many factors may affect the feasibility of development for a specific parcel, and most of these factors cannot be ascertained from the "bird's eye view" of the town-wide land use analysis.

A simple order of magnitude of potential future development can be calculated by using the intensity of development prescribed by the zoning bylaw for each district. For example, in the R-2 district, the number of housing units per acre is approximately 2 (or potentially a little less when subdivision street layouts – typically about 15% of total land - are accounted for).

Using this simplified analysis, approximately 1,842 new units could be built on the land shown in residential districts in Table 8.3. Added to the 8,530 housing units in Acton counted in the 2010 U.S. Census, this would result in approximately 10,372 total housing units (not counting housing units that could be built in Village Districts or Business Districts). **This is roughly the same magnitude that other estimates made in the past.** It is somewhat higher than the most recent previous buildout estimate in the 2004 To Live in Acton Community Development Plan because the estimate of developable land by zoning district (Table 8.3) reflects a more detailed examination of 2008 land use data which identified additional developable land; however, the previous estimate also made assumptions of the likelihood that infill development would occur on parcels of various sizes, and this reduces the calculated buildout from full use of all developable land. As reported in Chapter 1, Population and Housing:

The buildout analysis done for the 1998 Master Plan Update estimated that a total of 10,600 housing units could be built in Acton, given its available developable vacant land at that time. The 2004 To Live in Acton Community Development Plan reduced the estimated future increment to 10,200 dwelling units. The 2010 Census reports that Acton has 8,530 dwelling units in 2010 and that the number could increase to 9,176 by 2020 and 9,515 by 2030, given current zoning. (The future estimates are based on MAPC projections of population and households.)

A detailed analysis of vacant lots approved for residential use done by the Acton Planning Department indicates that there are 343 lots ready for construction. These are scattered around town in various subdivisions and approved residential projects and in a few cases (15 lots) on land where subdivision approval is not required. The map in Figure 1.7 shows the scattered location of subdivisions as of 2007. The 343 lots are likely to accommodate more than 343 housing units since 2-family and multi-family and town house units are likely to be built on some of them. Potential demand estimates for housing units by 2020 by MAPC (roughly 600 new units) suggest that about half of forecast units can be accommodated on lots already approved.

**A key point is that residential buildout is unlikely to be reached within 20 years.** A more useful buildout analysis can be done by considering scenarios for development, including the use of overlay districts, or even the “what-if” scenario of zoning change. This is a step that goes beyond the inventory phase of the Acton 2020 plan. It also must be kept in mind that a buildout analysis does not necessarily provide any information about the time that it would take to reach full development, and that development does not necessarily stop when no more buildable land remains, because redevelopment at a higher or lower density could ultimately occur.

## **Overall Summary of Existing Conditions**

As noted in the beginning of this chapter, land use and zoning are critical elements of the Comprehensive Plan. Existing land uses in Acton are a reflection of past decisions; physical limitations, like steep slopes and wetlands; and regulations that control where daily activities are located. Future land use is limited by land available for new development and there is likely to be increasing pressure for redevelopment in some areas.

## **Opportunities and Challenges Posed by 2008 Land Use and Existing Zoning**

- Agriculture and some other relatively undeveloped land is challenged by continuing development.
- The use of Open Space Development and Planned Conservation Residential Community provisions in the last 20 years has provided a considerable amount of common land that is an opportunity for maintaining much of the Town's character.
- Concentrations of automobile-oriented businesses, especially along Great Road, result in congestion.
- The mixture of residences, businesses and industries provides some residents with an opportunity to live and work in the same community.
- Several relatively innovative zoning provisions encourage open space and a mixture of uses in some areas of town.
- There is very little space in several districts available for new development.
- Pressure for redevelopment will increase as areas for new development are filled.

In conclusion, zoning and future changes in zoning, along with the provision of services, can guide future land use. What future land use will be depends on the desires of Acton's residents and their determination to make and implement choices about the town's future.

## Chapter 9: Sustainability

This chapter covers the following topics:

- Relationship of Sustainability to Planning Goals.
- Preservation of water quality.
- Preservation of local biodiversity, soils, and local agriculture.
- The use and disposal of material goods.
- Reduction of greenhouse gas emissions.
- Opportunities and Challenges posed by the Existing Conditions.

### Why the Acton 2020 Plan addresses Sustainability

Traditional comprehensive community plans are comprehensive in the sense that they address all important aspects of a town, from housing and economic development to transportation and public facilities. But it has become clear that the world is rapidly changing and that climate, energy and resource use are interrelated topics that have enormous implications for our children and grandchildren but have not traditionally been part of a comprehensive community plan. As discussed below, water quality is addressed in traditional plans, but because it has characteristics similar to climate and energy, it is also a subject of this element.

### Summary of Key Points

#### *Water Quality and Quantity*

- Preserving water quality and quantity includes measures to ensure that well-fields are protected from development that would lead to contamination or depletion; ensuring that on-site wastewater disposal (which is used by approximately 90 percent of properties in Acton) is properly managed and regulated; and managing storm water to maintain the quality supply of both surface water and groundwater. All of these functions are being performed by the Town and the Acton Water District.

#### *Agricultural Land*

- Farmland, which was once the predominant land use in Acton (including most areas that are now forested), has become scarce with the replacement of farms with houses and business areas.
- Local agriculture has importance to human ecology as well as serving as habitat. Active farms illustrate our connection to the land and recall Acton's history as a farming community.
- Local farming also serves the sustainability goal by connecting us to the source of our food, which in modern American society has become a matter of long-distance transport.
- Many communities have encouraged local farming through community-supported agriculture (CSA).
- Community gardens are another way of connecting people to the land, furnishing fresh produce to families, providing a healthy and creative use of leisure time that can involve people of all ages, and educating children regarding where our food

comes from. Acton has community gardens in North Acton and at Morrison Farm.

*Biodiversity*

- Acton contains major wildlife resources including five “hotspots” for biodiversity identified in the state’s BioMap 2 Project.
- Protection of biodiversity within Acton is primarily a matter of protecting land from development and ensuring that land which is developed is developed in ways that preserve natural habitat.

*Reducing Waste and the Accumulation of Toxins in our Environment*

- The number of households using the Transfer Station is approximately 4,000, (roughly half of all households). The other half of Acton’s households are served by private solid waste disposal firms
- In calendar year 2008, Acton reported a recycling rate of 22 percent of its solid waste. This is similar to Littleton but substantially less than the other adjoining towns, five of which exceed 40 percent.

*Conserving Energy and Reducing Carbon Emissions*

- Acton’s contribution of carbon dioxide from energy use is clearly a small part of the worldwide problem of global warming and climate change. However, mitigating the problem by reducing carbon emissions requires that all energy users be part of the solution.
- Acton is already engaged. The Town has taken the step of becoming a member of ICLEI – Local Governments for Sustainability<sup>1</sup>. In addition, Acton has been awarded Green Community status under the Massachusetts Green Communities Act. These sustainability commitments are the foundation of an ongoing program to carry out the Green Community commitments and the ICLEI milestones.
- As a result of its Green Community status, Acton was able to receive a \$150,000 grant for capital improvements and education programs to reduce municipal building energy use.
- Electricity use per square foot varies widely among Acton’s public buildings.
- Acton’s public buildings also vary considerably in natural gas use per square foot.
- Acton recently converted all of its street lights to energy conserving metal halide luminaires.
- Since 2006 residential electric use has declined by 10.6 percent, which may reflect consumer awareness of the need to conserve and particularly the replacement of incandescent lighting with compact fluorescent lamps.
- However, even with the recent reduction, households in Acton had an average electricity use of approximately 8300 kWh. According to NStar, the average residential customer uses 6,000 kWh per year, indicating that Acton households use substantially more than the average, possibly owing in part to the 10-11% of households that use electricity for home heating.

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<sup>1</sup> In 2003 the organization changed its name from International Council for Local Environmental Initiatives to “ICLEI – Local Governments for Sustainability.”

- Non-residential use of natural gas for heating (which includes public buildings as well as private business and industry) is of roughly the same magnitude as for all residential customers.
- Although the sources of data differ, the estimated average Acton household uses approximately 830 to 894 therms of natural gas each year. NStar's average residential gas heating customer uses 850 therms per year.
- Approximately 27 to 29 percent of Acton households use oil heat.
- The largest use of energy by residents of Acton is for transportation, accounting for an estimated 43 percent of the Town's carbon footprint and 59 percent of the residential portion of the carbon footprint. 80.8 percent of Acton residents commuted to work in 2000 by driving alone; another 7.4 percent used car pools, and 4.5 percent used public transportation; the remaining 7.7 percent walked, biked, or worked at home.
- Electricity and home heating fuel each account for approximately 20 percent of the residential portion of the carbon footprint.
- Acton households had the third lowest vehicle miles traveled among the nine adjoining towns, averaging 76.0 miles per day for all trip purposes. Nonetheless, driving is the single largest component of Acton's total carbon footprint.
- Trips for shopping, entertainment, socializing, medical appointments, and other purposes outweigh commuting trips by more than four to one. This is significant because even those residents who use modes other than driving alone to commute are likely to drive to most other destinations.
- Energy saving modes such as public transportation and shuttle bus, walking, and bicycling are highly dependent on favorable land use patterns that provide enough density to make public transportation feasible and destinations close enough together to make walking and bicycling reasonable alternatives.

## **Relationship to Planning Goals**

### *Goal: Ensure Environmental Sustainability*

The sustainability goal reads "As Acton residents, we recognize that our health and well-being depend on protecting the web of life of which we are a part. Therefore, it is vital that we live and work here in a manner that supports that web and the well-being of people everywhere, including future Actonians."

Although this goal has important implications – described below - for how the other goals are addressed in the Plan through public policies and actions, ensuring environmental sustainability also addresses the way we live and do business: by promoting public awareness and encouraging Actonians

- to do their part to preserve the groundwater resource in the way they use water and dispose of wastewater;
- to reduce waste and the accumulation of toxins in the environment; and
- to conserve energy in their homes and modes of transportation.
- It also includes public action to move toward patterns of land use and land protection that support biodiversity, soil preservation, and healthy local agriculture.

*Goal: Preserve and Enhance Town Character*

Preserving local agriculture is both a way of maintaining ties to Acton's history and a tangible benefit for Actonians that use community gardens and locally produced food.

*Goal: Provide Places for Gathering*

Energy efficient building practices can help make any indoor gathering places less expensive to operate. Local agriculture can provide an important place for community gathering and shared activities related to gardening and farming.

*Goal: Improve Connections*

Transportation both within town and for commuting to places outside Acton has an important connection to energy use and the resulting emission of carbon dioxide to our atmosphere. Any transition from car use to bicycles or walking reduces fossil fuel use and reduces carbon emissions.

*Goal: Maintain and Enhance Town Assets*

The groundwater under our feet is a public asset that provides most of Acton's drinking water and is a part of the water cycle that includes wastewater disposal. The use of energy in Acton's schools and other buildings results in emissions of carbon dioxide to our atmosphere. The town's facilities for recycling, and the use and disposal of material goods by the schools and town government have a direct connection to one of the sustainability objectives: To reduce waste. Acton's public open space has an important role in maintaining biodiversity within our borders.

*Goal: Maintain and Improve the Financial Well-being of the Town*

Through action to conserve energy in public buildings, preserve water resources, and reduce the volume of solid waste that the Town must pay to have removed, there can be a substantial benefit to Acton's near term and long term budget.

## **Introduction**

Sustainability examines the relationship between the way we use resources today and their availability for future generations. The U.S. Environmental Protection Agency's (EPA) web page on sustainability states: "The traditional definition of sustainability calls for policies and strategies that meet society's present needs without compromising the ability of future generations to meet their own needs." A similar definition is provided in the book *Ecology of Commerce* by Paul Hawken: "Sustainability is an economic state where the demands placed upon the environment by people and commerce can be met without reducing the capacity of the environment to provide for future generations."

## **Preserving Water Quality**

Water quality is addressed in Chapter 3, Natural Resources, and Chapter 7, Facilities and Services. The focus of those chapters is on public policies to encourage and require water conservation and proper on-site disposal of wastewater, and the management of the public water and wastewater treatment systems and the stormwater management system.

Although Acton's water cycle is not a closed system, most of the water used in residences and businesses comes from the groundwater in the shallow aquifer underlying much of the town.

Preserving water quality and quantity includes measures to ensure that well-fields are protected from development that would lead to contamination or depletion; ensuring that on-site wastewater disposal (which is used by approximately 90 percent of properties in Acton) is properly managed and regulated; and managing storm water to maintain the quality supply of both surface water and groundwater. All of these functions are being performed by the Town and the Acton Water District. The discussion in Chapter 7 indicates that water, wastewater, and storm water are being well managed, but that there is a need for ongoing vigilance to protect water quality and supply.

One factor to note is that one of the more likely outcomes of climate change will be an intensification of storms in New England, with intense precipitation occurring more frequently than in the past. This means that design standards for stormwater structures will need to accommodate larger volumes. MADEP can be expected to adjust standards as necessary, but the Town may want to ensure that any new stormwater facilities are designed to accept runoff from more frequent and more intense storm events.

## **Preserving and Promoting Local Agriculture**

As noted in Chapter 3, Natural Resources, farmland, which was once the predominant land use in Acton (including most areas that are now forested), has become scarce with the replacement of farms with houses and business areas.

Acton Assessors classify 167 acres in agricultural use (97 acres in the Chapter 61 program and 70 acres of other farmland). Chapter 61 is a program that reduces the property taxes for land in agricultural use as an incentive to sustain farming and preserve agricultural soils. The program gives the Town a limited option to buy the land if it is removed from agricultural use and sold. In addition to the land assessed as agricultural, the state-owned agricultural land at the Route 2 gateway includes another 75 acres of agriculture, and other small agricultural fields total about 94 acres, for a total of 336 acres of agricultural land in the Town (2.6% of the total area). A list of horse farms in Acton is included in the appendix to Chapter 5, Open Space and Recreation.

Besides producing crops annually, this agricultural land is an important resource for a diversity of wildlife such as field-dwelling songbirds, hawks and owls; mammals such as deer, voles, rabbits, woodchucks, and coyotes; and snakes.

Local agriculture has importance to human ecology as well as serving as habitat. Active farms illustrate our connection to the land and recall Acton's history as a farming community. Thus, it has importance in maintaining the character of Town, which many people in Acton strongly identify with. Local farming also serves the sustainability goal by connecting us to the source of our food, which in modern American society has become a matter of long-distance transport from major agricultural areas across the continent and around the world. Having a local source of food conserves the energy and greenhouse gas emissions that otherwise would be used to transport it to Acton, and local agriculture is also symbolically important in maintaining the connection of our households to the land that provides at least some of our food. In the worst case of future

## Sustainability

climate change, crop failures in agricultural regions that export food to Massachusetts could make local sources of produce and other foods more important to Acton.

Table 9.1: Active Farms in Acton

Name	Address	Type	Website
Idylwilde Farm Inc	366 Central St, Acton	store/ fresh produce	www.idylwildefarm.com
Stonefield Farm	91 Martin St, Acton	flowers/produce	www.stonefieldfarm.net
Butterbrook Farm	982 Main St, Acton	organic produce	www.butterbrookfarm.com
Cucurbit Farm	32 Parker St, Acton	produce, corn	www.cucurbitfarm.com
MCI Northeastern Correctional Facility farm fields	Route 2 gateway area	produce, corn	N/A

### Community-Supported Agriculture

Many communities have encouraged local farming through community-supported agriculture (CSA). These farms are operated by subscription of members who pay in advance of the growing season for weekly pickups or shares of produce (and sometimes meat, cheese, or eggs). Some of these farms also sell produce at roadside stands. CSAs have skilled manager-farmers as well as volunteer work by members. Examples near Acton are First Root Farm and Kenney Farm in Concord and Springdell Farm in Littleton. The benefits of CSAs include the preserving of agricultural land in active farming, providing a real and symbolic local connection to the land, a source of farm-fresh produce for family diets, and an educational opportunity for children. All of these benefits support the sustainability goal, and CSAs often become gathering places for members and other residents.

### Community Gardening

Community gardens are another way of connecting people to the land, furnishing fresh produce to families, providing a healthy and creative use of leisure time that can involve people of all ages, and educating children regarding where our food comes from. The North Acton Community Gardens serve approximately 24 families who have garden plots on a portion of the 5.1 acres of land. The community gardens on the recently acquired 35 acre Morrison Farm consist of 36 active garden plots on about 2 acres. There is demand for more plots.

The new Acton-Boxborough Farmers Market provides Acton residents with fresh produce (and specialty goods like handmade soap) from local farms, and it is also a place for community gathering. It is held on Sundays from July through October on Pearl Street in West Acton Village.

### Preserving Biodiversity

As described in Chapter 3, Natural Resources, Acton contains major wildlife resources including five “hotspots” for biodiversity identified in the state’s BioMap 2 Project:

- NARA/Wills Hole/Kennedy/Marshall Land/Nashoba Sportsman Club (partially town-owned and Zone II Wellhead Protection Area),
- Grassy Pond (partially town-owned),
- Assabet River in southeastern corner of town, including portion of Zone II Wellhead Protection Area,

- Heath Hen Meadow, a wetland area and wetlands along the town boundary with Stow and Maynard, including a portion of a Zone II Wellhead Protection Area for public wells in Maynard (which Acton has not chosen to regulate based on current data), and
- Reformatory Fields/Wetherbee Conservation Land, including portion of a Zone II Wellhead Protection Area.

In addition, Acton has approximately 7,000 acres of forest land (more than 50% of its total area), much of which is on residential lots and unprotected land, as well as the forested land in Acton's protected conservation areas. The habitat resources include 23 certified vernal pools and 142 potential vernal pools – important habitat for wood frogs, salamanders, etc. Many of these are located on unprotected land. Finally, Acton includes habitats for 9 state-listed rare plant or animal species. These habitats are concentrated along the major brooks.

Protection of biodiversity within Acton is primarily a matter of protecting land from development and ensuring that land which is developed is developed in ways that preserve natural habitat, e.g., through use of the zoning bylaw's Open Space Development or Planned Conservation Residential Community (PCRC) provisions. Some plant and animal biodiversity in Acton is threatened by the growth of large monocultural stands of invasive plants, such as Phragmites, Garlic Mustard, purple loosestrife, and many others. Volunteers working with the town's natural resources department have started executing a long-range plan to reduce the impact of some of these species. As discussed in Chapter 5, Open Space and Recreation, Acton has a relatively large share of its land in public open space, two-thirds of which is permanently protected. The Town's major conservation areas are well managed and serve the purpose of preserving biodiversity.

## **Reducing Waste and the Accumulation of Toxins in Our Environment**

Acton, like most American communities with relatively affluent populations, enjoys a high material standard of living. This translates into a high level of material goods ranging from automobiles to iPods. The material economy depends on the accumulation and replacement of material goods, which embody the raw materials and energy that went into their manufacturing. These goods eventually wear out or become obsolete as technology advances and consumer preferences change. Most of these goods, and the packaging they came in, end up in the solid waste stream.

The Town of Acton does not provide curbside trash pickup, but a substantial proportion of households pay for private pickup of their solid waste. The rest bring their solid waste to the Town Transfer Station and Recycling Center (TSRC) on Forest Road, off westbound Route 2<sup>2</sup>; it is pooled there and trucked away to the NESWC incinerator in North Andover, where it is burned. The burning creates energy along with air pollutants. The remaining toxic ash, which is 30% of the waste, is trucked to various regional landfill disposal sites.

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<sup>2</sup> This has positive and negative aspects: individual automobile trips to the TSRC add to Acton's carbon footprint; at the same time, the TSRC also serves as an important gathering place for Actonians.

There were approximately 4,200 stickers sold for use of the Transfer Station in 2010; Town staff estimates that 200 of these are extra stickers for households that use more than one vehicle to bring their trash to the Transfer Station, so the number of households using the Transfer Station is approximately 4,000, (roughly half of all households). The other half of Acton's households are served by private solid waste disposal firms; many of these households are in condominiums or rental units where the association or management arranges for pickup of all solid waste.

## **Recycling**

Depending on individual initiative, a portion of each household's solid waste is recycled.

Some, but not all, of the private solid waste disposal companies provide recycling, in some instances at no additional cost. At least one company serving Acton (Waste Management, Inc.) offers single-stream recycling without additional charge. This means that paper, cardboard, plastics, glass and metal containers can be mixed in a single bin for pickup. Single stream recycling is easier for consumers than separating various types of recyclables, and it thus promotes recycling.

Materials for recycling at the Transfer Station must be divided by type and deposited in bins at the Recycling Center:

- paper/cardboard (all paper and boxes, no plastic);
- glass bottle, can and plastic container bin (clear, green and brown glass, deposit and non-deposit cans, foil and plastic containers with recycling labels 1 to 7);
- yard waste disposal bin (grass, leaves, plants, woodchips, twigs and Christmas trees);
- ash disposal area;
- waste oil area;
- scrap metal pile and white goods area (which requires a verification with the attendant and possible fees for metal appliances).

There is also a donation area where bottles and cans with deposits can be left as a donation to the Acton Community Supper and where clothing can be donated to the Salvation Army.

Certain items are accepted at the TSRC only with a coupon. These are generally appliances, furniture and other household fixtures that would normally not be recyclable or accepted as household waste. The website for the TSRC gives examples including tires, bed frames, doors, stoves, sinks, dishwashers, refrigerators, air conditioners, etc.

There are other materials that are considered unacceptable except on specified Hazardous Waste Days (held twice a year). These materials include solvents, asbestos, batteries, cement/concrete, computer monitors, fluorescent bulbs/fixtures, gasoline, medical waste, oil paints, chemicals, propane tanks, pesticides, lumber, stones, computer monitors, and televisions.

Recycling has been an environmental success story in the United States, with most households recycling at least some of their solid waste. Many people consider recycling

an affirmation of their commitment to the environment and a lower impact life style. Children tend to be particularly enthusiastic about recycling.

Massachusetts Department of Environmental Protection (MADEP) compiles reported recycling rates from all Massachusetts communities. Table 9.2 shows reported recycling rates for calendar year 2008 for Acton and its adjoining communities.

Table 9.2 Reported Recycling Rates in Calendar Year 2008

Community	Percent
Acton	22%
Boxborough	43%
Carlisle	41%
Concord	47%
Littleton	23%
Maynard	48%
Stow	n/a%
Sudbury	45%
Westford	34%

Source: MADEP

In calendar year 2008, the last for which there is published MADEP data, Acton reported a recycling rate of 22 percent of its solid waste. This is similar to Littleton but substantially less than the other adjoining towns.

Education and public information can increase participation in recycling, but the best results are obtained where there is an incentive for recycling and/or a disincentive for not recycling. Mixed, single stream recycling at the TSRC is a possibility that could be explored.

Acton collects a user fee from each household by selling annual stickers that cost \$185 for the first sticker and allow use of the TSRC without further charge; without the sticker, the charge is \$30 per trip to the center.

Some communities have increased recycling by requiring the use of official trash bags (or a sticker for each bag) for non-recyclables but making recyclables free, thus providing a disincentive for mixing recyclables and non-recyclable solid waste. This option (formerly known as “Pay As You Throw”) was rejected by Acton voters at a 2008 Special Town Meeting, but a revised version of a system of this sort may have an important role in Acton's future, as disposal costs rise.

From the Town's point of view, there is a substantial cost in having the solid waste trucked away. Recyclables have market value that can reduce cost and in some circumstances actually provide a net positive return that reduces overall costs. However, the market for recyclables is relatively volatile, and separation of materials such as aluminum and steel cans, paper, and plastics, has the potential to improve the overall return. Mixing recyclables of several types typically increases recycling but generally also increases the cost (or reduces the return) for recycling. Nonetheless, it may be worthwhile to consider a solid waste contractor with single stream recycling; in such a

system Acton households would receive recycling bins that can be used for a mixture of paper, cardboard, cans, glass bottles, and plastic, and these items could be deposited in a single receptacle at the TSRC.

From the point of view of reducing toxins in the environment, it is important to provide a means for accepting hazardous wastes, including expired prescription medication, as described above, and to encourage households to keep these materials out of the general waste stream.

Finally, many people who are committed to environmental sustainability attempt to go beyond the manner in which their solid waste is disposed to actually reducing the amount of material that they utilize. Methods for doing this include repairing or swapping goods to keep them out of the waste stream, and reducing the amount of material goods they purchase in the first place. This extends beyond what is usually addressed in a comprehensive plan, but there are some ways that this aspect of sustainability can be addressed by the town.

Beginning in 2010 Acton held a Drop/Swap Day on which households can leave usable goods at the Conant School or find used goods that they need. This was organized by Green Acton [www.greenacton.org](http://www.greenacton.org) and is planned to be repeated annually. There is also an Acton Freecycle group that participates in the national Freecycle Network <http://www.freecycle.org>. Freecycle members can post and claim unwanted articles free through the Acton Freecycle group at Yahoo.com. The Acton Freecycle list is very active and Green Acton estimates that hundreds of items are saved from disposal each month.

Finally, there are programs such as Green Living teams in which small groups of people get together to discuss all aspects of sustainable living, including the way they use and dispose of material goods, and encourage each other to live more sustainably.

## **Use of Energy and Carbon Footprint**

An increasingly urgent aspect of environmental sustainability today on a worldwide scale is the contribution of human activities to the global warming that causes climate change. Global warming is a direct physical result of increasing concentrations of carbon dioxide, methane, and other greenhouse gases (GHG) to the atmosphere; climate change is the result of warmer atmospheric and ocean temperatures. The primary cause of global warming and climate change is the use of energy from fossil fuels (petroleum, coal, and natural gas) as well as agricultural practices and deforestation that occurs on a large scale throughout the world<sup>3</sup>. The carbon intensity of fossil fuels varies with the type of fuel that is used: coal has the highest carbon dioxide emissions per unit of energy (generally expressed in “British Thermal Units” (BTU)); petroleum has lower emissions, and natural gas is the “cleanest” fossil fuel but still contributes major amounts of carbon dioxide when it is burned. (In addition, the extraction and mining practices of fossil fuels are themselves environmentally damaging, with impacts ranging from the devastation of

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<sup>3</sup> The scientific evidence for global warming caused by human activity is unequivocal: while some individual scientists may differ, every synthesis of the published scientific research has strongly supported this conclusion. Nonetheless, many individuals in the United States dispute this conclusion, and their viewpoint must be acknowledged as part of the political dialog.

mining sites, oil spills during offshore drilling, to the injection of toxic chemicals during natural gas extraction from shale deposits.) Electricity is produced by a variety of means, so the New England power grid uses a mixture of sources with all of these fuels represented, as well as nuclear, hydro, and some wind-generated energy.

Since this is a worldwide problem, Acton's contribution of carbon dioxide from energy use is clearly a small part of the total. However, mitigating the problem by reducing carbon emissions requires that all energy users be part of the solution. The bottom line is that reducing our carbon footprint is the right thing to do. Part of the solution to this global problem is a change in how we use energy at the local community level. Civic action to help mitigate the problem in a coordinated way can be more effective and inspiring than individual initiative.

### **Acton's Commitment's to Sustainability**

Acton is already engaged. The Town has taken the step of becoming a member of ICLEI – Local Governments for Sustainability, an association of over 1200 local government members who are committed to sustainable development. The Board of Selectmen adopted the ICLEI Declaration of Sustainability in December 2009. This entails a pledge "to reduce both greenhouse gas and air pollution emissions throughout the community."

Specifically, the ICLEI pledge commits Acton to:

- conduct a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions in the jurisdiction;
- establish a greenhouse gas emissions reduction target;
- develop an action plan with both existing and future actions which when implemented will meet the local greenhouse gas reduction target;
- implement the action plan; and
- monitor to review progress.

In addition, Acton has been awarded Green Community status under the Massachusetts Green Communities Act. This designation required the following commitments to be made:

1. As-of-right siting for renewable or alternative energy generating, manufacturing or R&D facilities in designated locations;
2. Expedited permitting process for approving such facilities within one year of the filing of an application;
3. Preparation of an energy use baseline and a program to reduce energy use by 20% within 5 years (This applies just to municipal and school operations, while the ICLEI pledge applies to the town as a whole. The Town is using the Massachusetts Energy Insight software to track energy use in public buildings);
4. A policy to purchase fuel-efficient vehicles; and
5. A policy to minimize lifecycle energy and water costs for all new commercial, industrial and large-residential construction (the 'Stretch Energy Code').

These sustainability commitments are the foundation of an ongoing program to carry out the Green Community commitments and the ICLEI milestones.

In addition, Green Acton [www.greenacton.org](http://www.greenacton.org) is a non-government volunteer organization that provides civic education, advocacy, and a broad range of initiatives that promote sustainability.

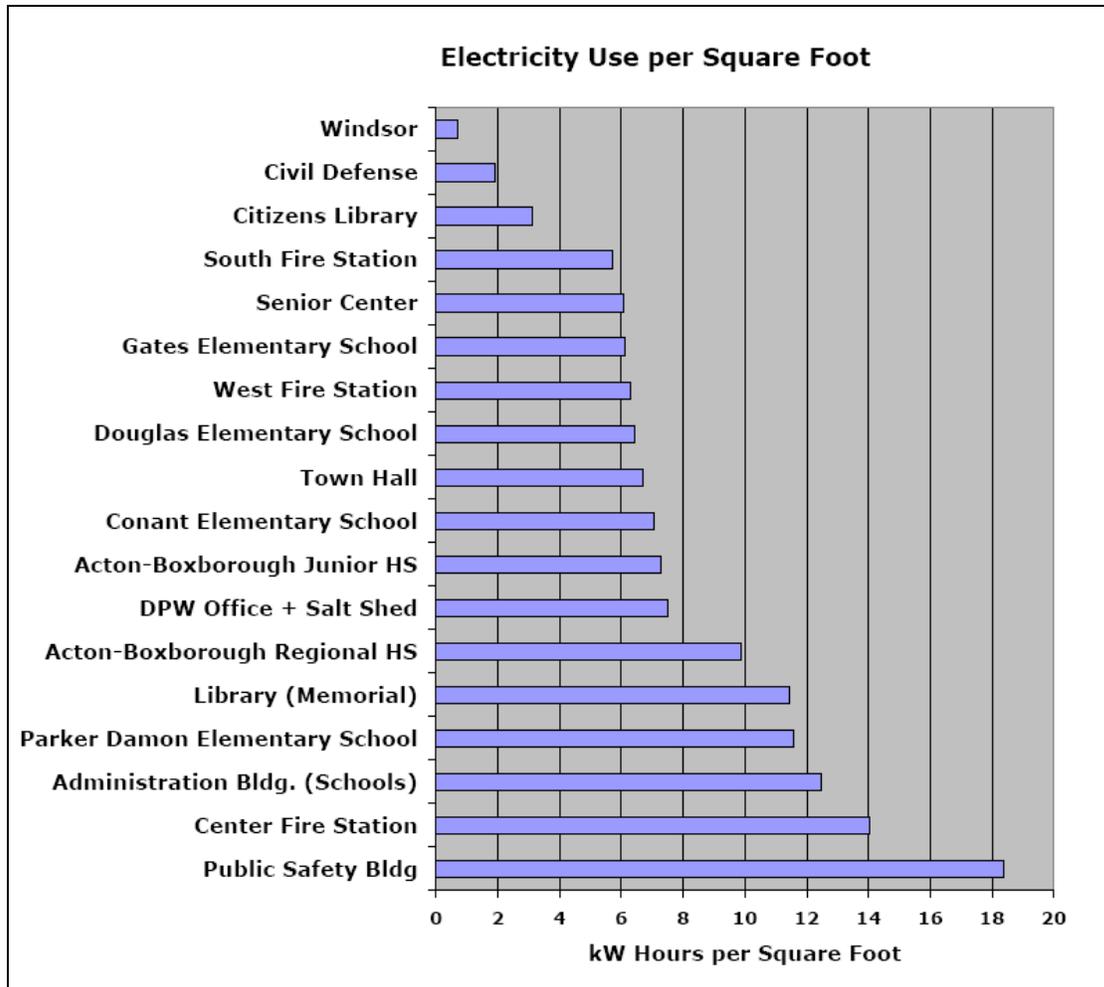
**Energy Use in Public Facilities**

As a result of its Green Community status, Acton was able to receive a \$150,000 grant for capital improvements and education programs to reduce municipal building energy use. As noted in Chapter 7, Facilities and Services, the Municipal Properties Department and the School Department have accomplished a number of projects to make heating/ventilation/air conditioning systems more energy efficient and to reduce energy loss in public buildings by making them more weather tight. Further projects of this type are planned, some of them using the Green Communities grant money; an example is replacement of water heaters with efficient tankless models.

The Acton Green Advisory Board collected data on the use of electricity and natural gas in all of Acton’s public buildings for FY2009.

*Figures 9.1 and 9.2 show the electricity use from that baseline per square foot floor area of each building, giving a picture of energy intensity.*

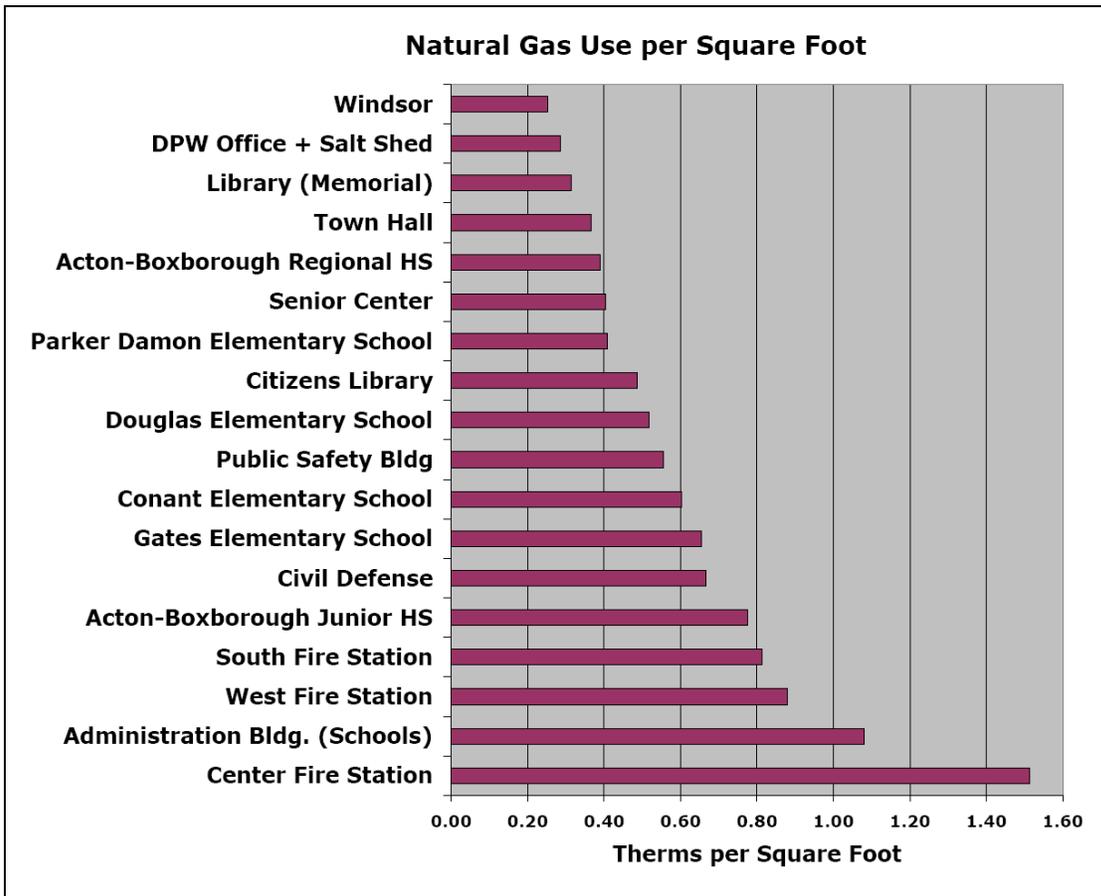
Figure 9.1 Acton Public Building Annual Electricity Use per Square Foot



Source: Green Communities benchmark data for FY2009 and Town facilities floor areas

The electricity used per square foot varies widely among Acton’s public buildings. Electricity use is clearly higher in buildings that are used around the clock (fire stations and public safety building), and those with extended hours of operation like Memorial Library. However, the usage at some of the schools may indicate that lights are left on in classrooms after the end of the school day.

Figure 9.2 Acton Public Building Annual Natural Gas Use per Square Foot,



Source: Green Communities benchmark data for FY2009 and Town facilities floor areas

Acton’s public buildings also vary considerably in natural gas use per square foot. Natural gas use per square foot is an indicator of building energy efficiency. In general, buildings that are newer or that have recently been improved to conserve energy have much lower heating and cooling energy use per square foot than older buildings, particularly fire stations which may lose heat through their large overhead doors.

A staff coordinator was hired to assist the schools in encouraging energy saving practices by faculty and staff. These practices are often as simple as turning off lights at the end of the day, which has been proven in other school systems to substantially reduce electricity use.

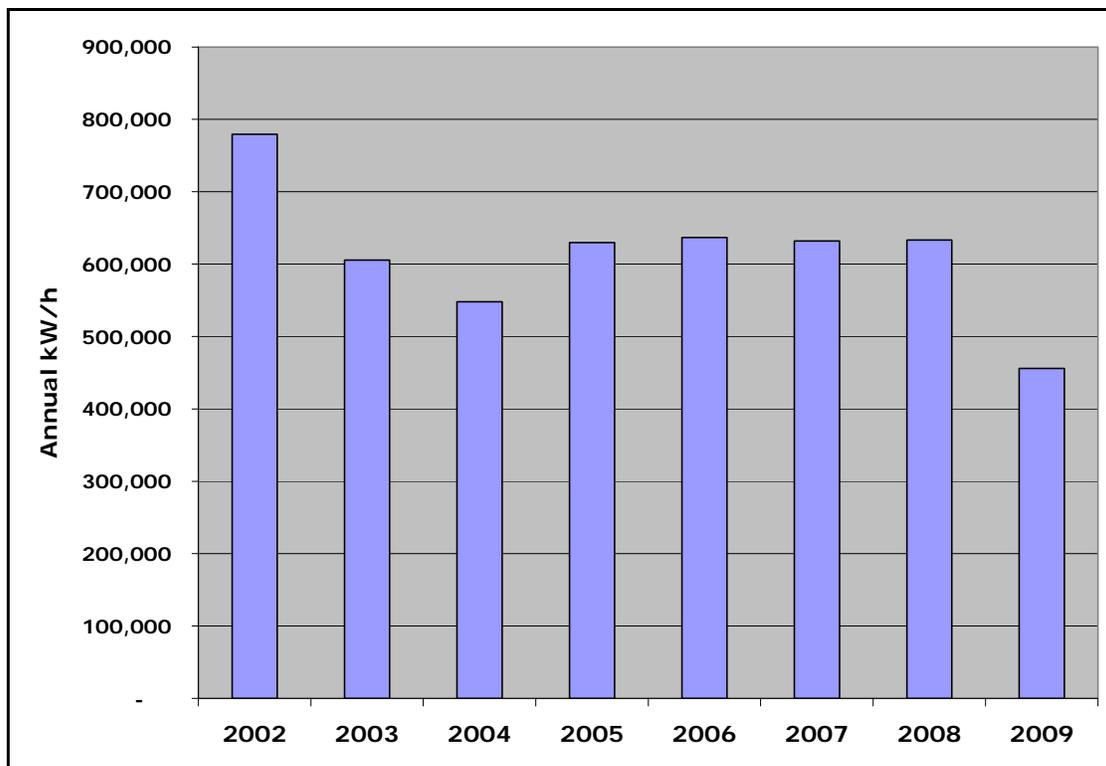
Street lighting is also a significant use of electricity. Acton recently converted all of its street lights to energy conserving metal halide luminaires. These are more energy

## Sustainability

efficient than the mercury vapor lights they replaced; the new lights are also designed to shield houses and other adjacent properties from glare and to reduce light pollution of the night sky by directing the light down to the ground where it is needed.

Figure 9.3 shows the electricity used in Acton's street lights. The drop in 2009 electricity use is due to the replacement of the old lights.

Figure 9.3: Electricity Use for Acton Street Lighting by Calendar Year



Source: NStar

Total annual energy use in public buildings is approximately 10.375 million kilowatt hours (kWh) and 522,000 therms of natural gas. Converting these units to millions of BTU<sup>4</sup>s (mmBTU) gives a total use in public buildings of 87,590 mmBTU. This number is significant primarily as a benchmark for comparison with future energy use.

### Community-wide Carbon Footprint

Acton's total "carbon footprint," i.e., its total energy use, converted to annual tons of carbon dioxide, is composed of six major parts:

- Home, business, and public electricity use for lighting, cooking, water heating and some space heating;
- Home, business, and public natural gas use for space and water heating and cooking;
- Home, business, and public heating oil use for space heating;
- Fuel use for private and public transportation;
- Energy embodied in the production, use and disposal of objects;
- Energy associated with solid waste.

<sup>4</sup> 1 mmBTU = 10 therms; 1 mmBTU = 293.1 kW hours.

The first four items in this list comprise the “primary” footprint, i.e., energy directly used by households, businesses, and town government; the last two items are the “secondary” footprint, which comprises energy used to produce the material goods used in Acton. The energy use in the secondary footprint may occur anywhere in the world, including overseas where many consumer goods are produced; it is as relevant to climate change as the energy actually used within the Town.

The available data on residential energy use are not entirely consistent, so the estimates that go into the overall carbon footprint will remain somewhat uncertain, at least until the detailed information from the 2010 U.S. Census becomes available in 2012. Data on the fuel used for home heating comes from the 2000 Census and the 2009 Census Bureau American Community Survey, as well as data provided by National Grid for natural gas.

Table 9.3: U.S. Census Data on Heating Fuel Used in Acton Housing Units, 2000

Type of Heating Fuel	2000		2009	
	Number of Households	Pct of Total	Number of Households	Pct of Total
Natural Gas from Utility	3,109	41.5%	3,266	44.2%
Fuel oil, kerosene, etc.	2,994	39.9%	2,657	36.0%
Electricity	1,176	15.7%	1,058	14.3%
Bottled, tank, or LP gas	163	2.2%	335	4.5%
Wood	35	0.5%	49	0.7%
Solar energy	6	0.1%	0	0.0%
Coal or coke	0	0.0%	0	0.0%
Other Fuel			23	0.3%
Total Housing Units	7,495	100%	7,388	100%

Source U.S. Census 2000, U.S. Census Bureau American Community Survey, 2009

Note: The 2009 figures are an estimate based on a small sample of Acton households; it underestimates the number of households (8,415), but the percentage breakdown is probably representative of all households.

It is noteworthy that while approximately 81 percent of households used natural gas or heating oil in 2000, nearly 16 percent used electric heating, which is substantially more costly. The American Community Survey estimates for 2009 are based on a small sample which is probably not sufficient for comparison for the small numbers such as bottled gas, solar, or wood; but the estimates seem to indicate some shift away from heating oil and electric heat and toward natural gas from National Grid, the utility that provides gas to Acton residences. (However, National Grid data indicates a greater shift than estimated by the Census Bureau for 2009.)

The use of electric heating by roughly one-sixth of the households in Acton increases average use of electricity, as discussed below, compared to the majority of households that use natural gas, oil, or other sources of heat.

## Natural Gas

National Grid provided information on the amount of natural gas they supplied in 2009 and 2010. This data is shown in Table 9.4.

Table 9.4 Natural Gas Use by Residential and Non-Residential Customers, 2009-2010

Rate Group	2009		2010		Consumption per Account		
	Number of Accounts	Total Gas Consumption (therms)	Number of Accounts	Total Gas Consumption (therms)	2009	2010	Percent Change
Residential Heat	3,963	4,315,667	4,192	4,114,452	1,089	982	-4.7%
Residential Non-Heat	105	24,016	104	20,481	229	197	-14.7%
Commercial/Industrial/Public	646	4,455,738	660	4,101,121	6,897	6,214	-8.0%
Total		8,795,421		8,236,054			-6.4%
Heating Degree Days					10,224	9,402	-8.0%

Sources: National Grid; degree days from [www.degreedays.net](http://www.degreedays.net) at Acton Great Hill weather station.

The table shows that non-residential use of natural gas for heating (which includes public buildings as well as private business and industry) is roughly the same magnitude as all residential customers. Residential use of natural gas per account decreased from 2009 to 2010; however, the number of heating degree-days was smaller in 2010 by a larger margin, indicating that the use of energy for heating would have increased slightly if the weather had been the same in both years.

Using the data from Table 9.3, approximately 44 percent of Acton households used natural gas for heating in 2009; applying this percentage to the estimated 8,415 households yields 3,720 households heating with gas. However, the data from National Grid is probably more reliable than the American Community Survey estimate; 4,192 household accounts is equivalent to 49.8 percent of Acton's 8,415 households. It is likely that there are some National Grid accounts for large multifamily buildings in which there is not a separate gas meter for each unit, and this would further increase the estimated number of households using natural gas heat.

There are 410 households in Acton living in buildings with 50 or more units and 708 living in buildings with 20 to 49 units. If only the largest buildings (50 or more units per building) had a single gas meter, there would be an additional 409 households with gas heating, raising the total to 4,601 households (55% of all Acton households) using natural gas for heating. If half of the buildings with 25 to 49 units also have a common gas meter for all units, this would raise the total to 4954 households with gas heat (59% of Acton households). These estimates are substantially higher than the 44% from the 2009

American Community Survey, indicating smaller percentages of homes that use heating oil or electricity for heat.

Dividing total residential gas consumption in 2010 by 4,601 gives a per-unit average of 894 therms per household. This is higher than the statewide average of 850 therms reported by NStar, the other major natural gas utility. Dividing by the higher estimate of 4,954 households gives a per-unit estimate of 830 therms per household.

More data is needed to observe any trends in energy use that result from efforts to encourage conservation by residents and businesses. However, the above data provides a rough estimate that can be refined when 2010 Census data becomes available and a baseline against which future energy consumption can be evaluated.

Therms are converted to pounds of CO2 at the rate of 11 pounds per therm in the footprint summary Table 9.7 below.

### Heating Oil and Electric Heat

As noted above in the calculation of natural gas use, 55% to 59% of Acton households use gas for heating, leaving 41% to 45% that use heating oil, electricity, or other fuels such as wood or bottled gas. Based on the calculation and Census data and estimate in Table 9.3, it is likely that heating oil customers account for approximately 65% of the non-gas households (27-29% of all households), and users of electric heat account for approximately 30% of non-gas households (10-11% of all households).

Table 9.5 provides a rough proportion of heating fuel shares, based on the National Grid data and Census estimates.

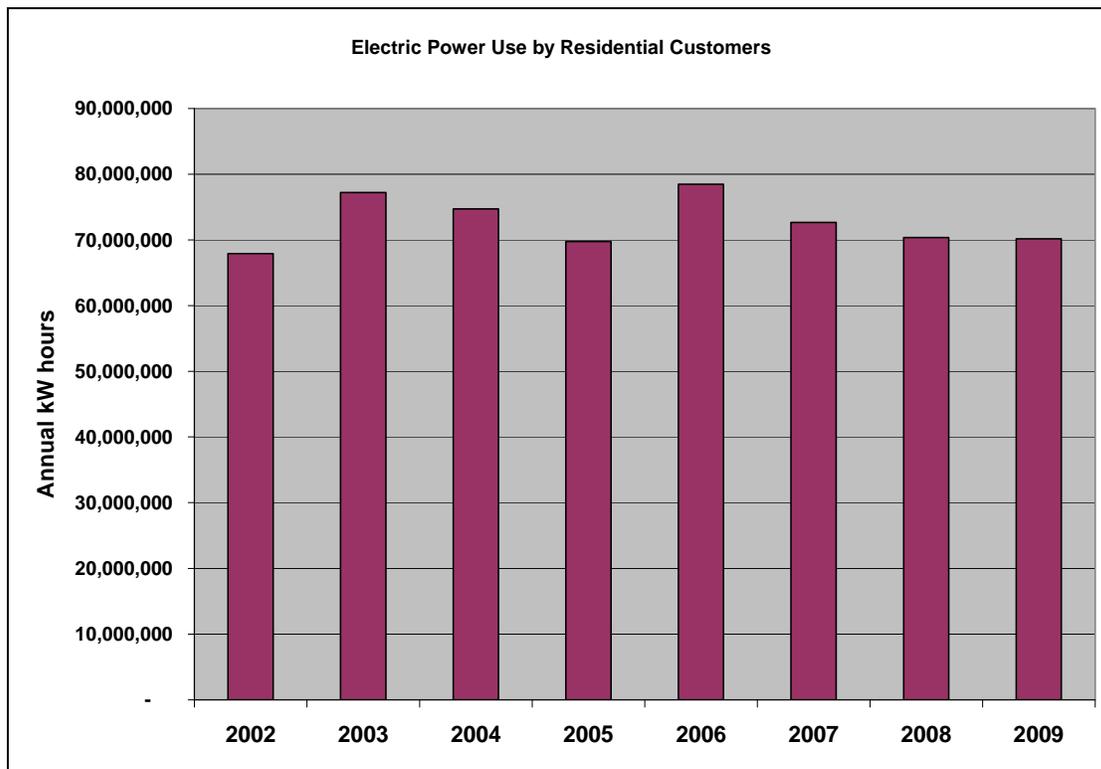
Table 9.5 Assumed Shares of Residential Heating Fuels

Number of Households	Number of Households	Percent of Households
Natural Gas from National Grid	4,600 – 4,950	55% - 59%
Heating Oil	2,250 – 2,475	27% - 29%
Electricity	870 – 960	10% - 11%
Other Fuels	300 – 380	4% - 5%
All Households	8,415	100%

The electricity used for home heating is already included in the total residential electricity use. The amount of heating oil used by Acton households can be roughly estimated by using a typical figure of 800 gallons of heating oil per year; this translates into approximately 41,000,000 gallons per year for all households using heating oil. This figure is converted to pounds of CO2 in the footprint summary Table 9.7 below, using a conversion value of 22 lbs CO2 per gallon of heating oil.

## Electricity

Figure 9.4 shows residential electricity use, based on data provided by NStar



Source: NStar

The data does not show a significant trend until 2006; since then residential electric use has declined by 10.6 percent, which may reflect consumer awareness of the need to conserve and particularly the replacement of incandescent lighting with compact fluorescent lamps. Stated another way, the residential electricity use in 2008 and 2009 was approximately 3.2% to 3.4% less than the average for 2002 through 2009.

For non-residential customers (including public buildings), the electricity use in 2009 was approximately 5.7% less than the average of 102 million kWh for 2002 through 2009.

Based on the 2009 total of approximately 70,000,000 kWh, the 8415 households in Acton had an average electricity use of approximately 8,300 kWh. According to NStar's carbon calculator website, the average residential customer uses 6,000 kWh per year, indicating that Acton households use substantially more than the average. This may be due in part to the proportion of households that have electric heat.

The CO<sub>2</sub> emissions per kilowatt hour of electricity depend on the efficiency of each electricity generation plant that contributes to the electrical grid and the type of fuel used by each generator. This can vary widely from place to place and over time from over 2 lbs CO<sub>2</sub> per kWh where coal is the energy source to zero for hydro and nuclear. The conversion factor used in this inventory report is 1.4 lbs per kWh, which is the value currently used by NStar in their on-line carbon calculator.

## Transportation

The third major use of energy by residents of Acton is for transportation. Nationally, 28 percent of energy<sup>5</sup> is used in transportation of all kinds, and the predominant mode is automobile transportation. A major part of the sustainability problem is that, while automobiles can achieve higher fuel economy through engineering and use of technologies like hybrid power trains, these gains are wiped out by rising trends in vehicle miles traveled (VMT). Therefore, reducing VMT is a major part of achieving sustainability.

The data in Chapter 6 on modes of transportation in commuting to work indicate that 80.8 percent of Acton residents commuted to work in 2000 by driving alone; another 7.4 percent used car pools, and 4.5 percent used public transportation; the remaining 7.7 percent walked, biked, or worked at home. National data indicates that commuting accounts for slightly less than two trips per day per household, despite the fact that households with two wage earners may have four commute trips per day; however, many households have retirees who do not commute at all. On the other hand, the total number of trips per household is typically between eight and nine, including the commuting trips. This means that trips for shopping, entertainment, socializing, medical appointments, and other purposes outweigh commuting trips by more than four to one. This is significant because even those residents who use modes other than driving alone to commute are likely to drive to most other destinations.

Chapter 6 discusses transportation and the potential for energy saving modes such as public transportation and shuttle bus, walking, and bicycling. All of these modes are highly dependent on favorable land use patterns that provide enough density to make public transportation feasible and destinations close enough together to make walking and bicycling reasonable alternatives. For people who live in a village like West Acton, there are more non-automobile dependent options for some of the trips they take each day, and it may be feasible to serve other trips such as to Town hall and Memorial Library or to the large supermarkets by shuttle van. More use of shuttles, walking, and bicycling are ways to reduce household energy use for transportation.

### **Motor Fuel Use**

Transportation energy use depends on both the efficiency of the automobiles used for the trips and the total number of miles driven for all purposes. However, an order-of-magnitude estimate is possible. Metropolitan Area Planning Council (the regional planning agency for 101 cities and towns around Boston), working with MIT Department of Urban Studies and Planning, estimated that the average vehicle miles traveled (VMT) by an Acton household is 76.0 miles per day or approximately 28,000 miles per year. (This data is derived from Registry of Motor Vehicle inspection records and thus includes trips for all purposes, not just commuting.) Acton ranks 212 among the 351 Massachusetts cities and towns in VMT.

Table 9.4 shows the average vehicle miles traveled per day by households in Acton and the adjoining communities.

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<sup>5</sup> This figure is based on all energy use, including in its base the use of energy in the production and transportation of goods and provision of government and private sector services.

Table 9.6 Vehicles Miles Traveled and Vehicles per Household, Acton and Adjoining Towns

	Average Daily Vehicle Miles Traveled (VMT) per Household	VMT per Household Rank in Massachusetts <sup>1</sup>	Passenger Vehicles per Household
Acton	76.0	213	2.1
Boxborough	82.3	262	2.1
Carlisle	86.5	290	2.5
Concord	64.4	123	2.0
Littleton	84.2	276	2.2
Maynard	58.4	174	1.8
Stow	85.7	285	2.4
Sudbury	79.2	242	2.3
Westford	88.1	298	2.4
average	78.3		2.2

Source: MAPC; data collected 2005-2007 from Massachusetts Registry of Motor Vehicles

<sup>1</sup> Higher rank indicates higher vehicle miles traveled.

*Acton households had the third lowest vehicle miles traveled among the nine adjoining towns, averaging 76.0 miles per day for all purposes.* Total vehicle miles traveled is influenced by the availability of an automobile for each driver, by the use of an automobile instead of public transportation, biking, or walking, and by the distances to work, shopping, and other destinations. For comparison, Cambridge and Brookline households averaged 23 and 24 vehicle miles per day and owned an average of 0.9 and 1.0 passenger vehicles; these low numbers are made possible by their urban density and availability of public transportation.

**Carbon Footprint from Passenger Vehicles:** Assuming 20 miles per gallon and 76.0 vehicle miles traveled per day, the average Acton household uses nearly 1,400 gallons of fuel per year, which results in 13.5 tons of CO<sub>2</sub> emissions per year. For Acton's 8,415 households, the total vehicle miles traveled burn approximately 12 million gallons of fuel, resulting in 117 tons of CO<sub>2</sub> entering the atmosphere<sup>6</sup>.

## Overall Summary

Acton has made a serious commitment to sustainability in its membership in ICLEI and its certification under the Massachusetts Green Communities Act. The Town has completed a benchmark survey of its energy use in schools and other public buildings and is working to improve the energy efficiency of these buildings and to encourage behavior that reduces energy use.

<sup>6</sup> The U.S. Environmental Protection Agency uses the conversion factor 19.4 pounds of CO<sub>2</sub> per gallon of gasoline.

Table 9.7 Estimated Acton Carbon Footprint

Greenhouse Gas Emissions Sources	Lbs of CO2 equiv	Tons of CO2 equiv	Percent
Residential / Electric	98,000,000	49,000	15.1%
Residential / Natural Gas	45,484,263	22,742	7.0%
Residential / Oil	41,000,000	20,500	6.4%
Residential / Gasoline for Vehicles	279,445,381	139,723	43.0%
Commercial+Industrial / Electric	120,135,400	60,068	18.5%
Commercial+Industrial / Natural Gas	39,370,331	19,685	6.1%
Town+School / Electric	14,525,000	7,263	2.2%
Town+School / Natural Gas	5,742,000	2,871	0.9%
<b>Total</b>	<b>643,702,375</b>	<b>321,851</b>	<b>100.0%</b>
Residential Only:	463,929,644	231,965	72%
Per capita (population 21, 924 per US 2010 Census)	21,161	10.6	
Per Household (8415 per Acton Town Clerk)	55,131	27.6	

Source: Calculations in Appendix

Note: This table excludes the energy associated with solid waste.

More refinement of the data is needed, particularly with respect to the amount of oil heat used by Acton residents (see discussion above). Additional work is also needed to estimate the energy and resultant carbon emissions associated with Acton's solid waste. This involves both the rate of recycling and the destination of the solid waste: incineration at a waste-to-energy plant whose electrical power is sold to the electrical grid actually reduces regional carbon emissions compared to coal-fired electrical generation.

However, some observations can be made.

Gasoline for personal transportation is the largest single category of energy use and carbon emissions; it amounts to 43 percent of the Town's carbon footprint and 59 percent of the residential total, while electricity and heating fuels each account for approximately 20 percent.

Acton's per capita energy use for home heating, electricity, and personal transportation is in line with the national average primary footprint, about 10.4 tons of CO2 per capita, excluding air travel<sup>7</sup>. The footprint calculation leaves out the carbon associated with personal air travel, which might be estimated through a survey. For many American households, the carbon emissions from air travel may be of the order of magnitude of 10 tons of CO2 equivalent per household.

The tools are in place to advance the other objectives related to sustainability: management of water, wastewater, and stormwater, preservation of agricultural land, and reduction of solid waste and toxic materials that enter the environment. More can be done in all these areas. The following list of opportunities and challenges related to environmental sustainability.

<sup>7</sup> U.S.EPA Household Emissions Calculator  
[http://www.epa.gov/climatechange/emissions/ind\\_calculator.html](http://www.epa.gov/climatechange/emissions/ind_calculator.html)

## **Opportunities and Challenges Posed by the Existing Conditions**

- Preserving water quality involves the opportunities and challenges described in Chapter 7, Facilities and Services, including measures to implement the Comprehensive Water Resources management Plan.
- Acton's public open space including conservation land and Morrison Farm provide opportunities to preserve biodiversity and to promote local agriculture.
- There may be opportunities to provide pick-up points for Community Supported Agriculture in locations like the farmer's market in West Acton village.
- Water supply for irrigation may be a challenge in expanding community gardening.
- Since farmland is generally well-drained and easily developable, development pressure on private agricultural land is a challenge to sustaining its use. Community Supported Agriculture is a potential opportunity for promoting local agriculture.
- The fact that Acton does not have public curbside trash pickup is a challenge to increasing the rate of recycling of solid waste; however, there is an opportunity to facilitate recycling at the TCRP by exploring single stream recycling, and some aspects of keeping material goods out of the waste stream can be served at the TSRC, for example setting up swaps of usable goods from one household to another.
- Providing financial incentives such as free disposal of recyclables while charging on a per-bag basis for non-recyclables would be an opportunity to improve the recycling rate.
- Acton's baseline/benchmark data can be the basis of ongoing efforts to encourage progress in saving energy, both in public buildings and in Acton's households and businesses.
- Acton households' use of substantially more electricity than average NStar customers will be a challenge to reducing energy use.
- Energy prices worldwide are expected to trend upward over the next decade. This is an opportunity to encourage energy conservation by households and businesses. Currently low interest rates increase this opportunity by shortening the payback period on investments such as household energy improvements. This is therefore an opportune time for Town programs to encourage home and business energy improvements.
- Acton's low density land use pattern makes encouraging less driving a challenge; however, there are opportunities to strengthen (and emulate) existing villages which are more amenable to reducing vehicle miles traveled.

In conclusion, Acton is on the path to environmental sustainability, but continued effort is needed to reach the goal. In the area of reducing energy use (and therefore carbon emissions) there is much more to do, but the Town has made a strong start with its Green Community Status and commitment to the ICLEI milestones.

# APPENDIX 6:

## Reference Material



Today. Tomorrow. Together.



## Appendix 6. Reference Material

- Fiscal Impact Analysis: Methods, Cases, and Intellectual Debate (excerpt), by Zenia Kotval and John Mullin, September 2006
- An Introduction to Fiscal Impact Analysis, by Thane Harrison and Charlie French, UNH Department of Resource Economics
- The New Digital American Family: Understanding Family Dynamics, Media and Purchasing Behavior Trends, by Doug Anderson, Senior Vice President, The Nielsen Company.
- Acton 2020 Best Practices Precedents



## ***An Introduction to Fiscal Impact Analysis***

By Thane Harrison and Charlie French, UNH Department of Resource Economics



“Is growth good or bad for the property tax base in my town?” asks a member of the Planning Board? “Why yes,” answers the town assessor, “yes it can be good, and it can be bad.” All depends on the type of growth and the town’s capacity to absorb that growth. Short of that, there is really no easy answer to the question of whether growth is good or bad for a city or town’s purse strings.

### ***Estimating the Fiscal Impact of New Development***

Whenever land is developed in a given municipality – no matter if it is for residential, industrial, or commercial use – a host of new costs are incurred by the municipal government in order to provide additional services and infrastructures to that development. Such services include the expansion of fire protection, policing, and emergency services, just to name a few. A variety of infrastructure costs are also incurred, such as the provision of water, sewer and roads. Therefore, it is important that municipalities determine whether or not the flow of new property tax revenues from a new development will balance out the incurred costs. After all, it is municipal government’s responsibility to its property taxpayers to project the demand that new development places on municipal services and on the budget. The following merely introduces one of many possible methods that municipalities can use to estimate the cost of new development. This method is called Fiscal Impact Analysis (FIA).

### ***What is Fiscal Impact Analysis?***

Fiscal impact analysis is “[a] projection of the direct, current and public costs and revenues associated with residential or non-residential growth to the local jurisdiction(s) in which the growth is taking place” (Burchell, 1978).

The terms ‘direct,’ ‘current,’ and ‘public’ in the preceding definition are critical to understanding the concept of fiscal impact analysis (FIA). With regard to direct costs, FIA is constrained to examining the *immediate* costs and revenues of the development being examined. For example, if one were analyzing a proposal to build a new baseball stadium, the new tax revenue from the building and property – as well as the costs for providing additional public security and emergency services (police, fire, ambulance, etc.) – would factor into the analysis. However, the effect of the stadium on neighboring property values or the impact on business at local restaurants would *not* be accounted for. Those latter effects are considered to be indirect effects of the new development.

The current effects aspect of FIA means that the analysis provides a means of estimating the financial impact of a development as if the project were in existence and in use today. This entails an implicit assumption that changes in prices over time affect both revenues and costs on a parallel basis over time, so that the projection made in the ‘current’ period will stay consistent over the near-term.

The final key to understanding fiscal impact analysis is that it only deals with public, or governmental, costs and revenues. Logic would dictate that any development will also have a fiscal impact on the private sector. Hence, it is important to note that FIA only seeks to quantify the cumulative effect on the government’s revenues and expenses and not the effect on private interests that are affected by a development.

### ***How is a Fiscal Impact Analysis Performed?***

The types of fiscal impact analysis outlined in this article are based on the work of Robert W. Burchell and other scholars from the *Rutgers University Center for Urban Policy Research*. It is not uncommon to hear the term ‘Fiscal Impact Analysis’ used to include other methods, including Cost of Community Services studies, Input-Output Models, and Fiscal Impact Models. While it would be unfair to exclude those other techniques from being referred to as FIA, it is important that municipal leaders understand the foundations of FIA.

There are essentially 6 methods outlined in the “Fiscal Impact Handbook” that can be used to estimate the cost of development (Burchell, 1978). These methods are the Per Capita Multiplier, Case Study, Service Standard, Comparable City, Proportional Valuation, and Employment Anticipation. In most cases, revenues are calculated by multiplying the current tax rates by expected changes in the tax base. In municipalities with few forms of taxation, this is relatively simple. In areas where there are a multitude of taxes, this process can be more difficult. In any case, the following are six methods for estimating the cost of development that are summarized from Burchell’s “Fiscal Impact Handbook”:

### 1) Per Capita Multiplier Method

This technique – primarily used for residential development FIA – uses average government cost per person and school costs per pupil multiplied by a projection of the expected number of new people and students to estimate the costs of a new development. The recommended multipliers for population and enrollment changes can be derived using US Census data.

### 2) Case Study Method

The case study method can be used for residential and non-residential FIA. This method involves interviewing local officials and experts (i.e., school administrators, people involved in local budget process, etc.) to get an estimate of how different government bodies will be affected by a given development. The expert estimates are then combined, to account for the impacts in different areas to create an overall estimate of the fiscal impact of a development.

### 3) Service Standard Method

The Service Standard method uses U.S. Census of Governments data to calculate the average manpower per 1000 people and capital-to-operating expenditure ratios for 8 municipal functions. The fiscal expenses are then calculated based on expected population changes, service manpower requirements, local salaries, statutory obligations and expenses per employee.

### 4) Comparable City Method

As the name indicates, this method is based on finding a municipality that has a similar population and growth rate as the city in question is projected to have. The underlying assumption of this method is that cities of comparable size and growth rates spend similar amounts on municipal and educational expenditures.

### 5) Proportional Evaluation Method

This method is used for non-residential development FIA, whereby the development is assigned a portion of the municipality's costs based on the proportion of local property it comprises. However, because municipal expenditures for a single development are not always linear with regard to the development's size, this method can overstate the cost of large developments and understate the cost of small developments.

### 6) Employment Anticipation Method

Another method for estimating the fiscal impact of non-residential developments is the employment anticipation method. This method hinges on an estimate of the number of employees a development would add to the municipality. In effect, estimates of the additional cost for each new employee across various municipal sectors are multiplied by the anticipated increase in employees in order to create the total cost estimate for the city.

## ***Pluses and Minuses of FIA***

Compared to simpler methods of examining the fiscal impacts of development, such as Cost of Community Services studies, the FIA provides a much more refined estimate, since it is calculated using a more stratified level of analysis. Likewise, it enables one to examine the marginal impacts of development as opposed to the total and average impacts. The advantage of using FIA to look at the marginal effects on a development by development basis is that it provides officials a more detailed forecast of what to expect from a particular development.

In spite of FIA's increased specificity over other fiscal impact methods, one drawback is that it requires more data in order to get refined estimates. This often proves to be an obstacle for those unfamiliar with economic models who attempt to use FIA methods. As new software modules are developed to incorporate increasingly complex variables, users may find themselves lost in the technical aspects of the process. If users lack an understanding of the process, then they may also be unfamiliar with the limitations of the analysis. One particular limitation is that most simple forms of FIA fail to incorporate variation in the costs of providing services over space. For example, residential development in an urban setting that is close to existing roadways is likely to cost less in terms of government services than a new development several miles away from the nearest existing residential area. This may not be reflected in the analysis. In spite of its limitations and its complexities, FIA can certainly provide municipalities with a wealth of data that they can incorporate into the land use decision making process.

## ***What do FIA's Generally Find?***

Based on studies done by Burchell (1992) and others, there appear to be certain types of development that *generally* pose a positive fiscal impact on municipalities and school districts, including research parks, general office parks, industrial development, high-rise garden apartments, age-restricted housing, and 1-2 bedroom condominiums. Not only do these forms of development typically generate enough property tax revenue to pay for new municipal infrastructures and services, but they also have a positive fiscal impact on the school district.

Other types of development may actually have a negative fiscal impact on municipalities and a positive impact on the school district. These include retail facilities, 1-2 bedroom townhouses, and expensive 3-4 bedroom homes. In fact, some studies indicate that certain types of housing developments can cost municipalities more in infrastructure and services than they generate in new property tax revenues over the short term. Even so, it is important to note that while small townhouses and expensive 3-4 bedroom homes may cost municipalities with

regard to infrastructure and services, they may actually generate enough tax revenue to have a positive fiscal impact on the school district (Burchell 1992).

Lastly, and perhaps most controversial, are research findings indicating that certain types of development have a negative fiscal impact on both the municipality and on the school district. These include 3-4 bedroom townhouses, inexpensive 3-4 bedroom homes, 3+ bedroom garden apartments, and mobile homes. These types of development often do not bring in enough tax revenues to cover the added infrastructure and service costs, and they may also negatively impact the school budget (Burchell 1992).

### ***Can FIA Answer all of your Municipality's Questions?***

While FIA can answer some specific questions regarding the impacts of various types of development on a municipality's budget, one must remember that FIA is entirely dependent on the assumptions that the analyst makes – assumptions about the number of school-aged kids per household and assumptions about the costs of providing infrastructure and services in a varied landscape. Furthermore, no two developments are alike. Therefore, the actual fiscal impacts of a given development on the municipal budget are influenced by factors such as the location of existing infrastructures and the current capacity of the school system.

There are also a lot of important considerations that are fall outside of the realm of municipal budgets. For example, fiscal impacts of development on abutters, local businesses and natural resources are not accounted for in most Fiscal Impact models. Perhaps more important, FIA does not consider the issue of equity and social responsibility. For instance, while it may be easy to identify the fiscal downsides of low-income housing on municipal and school budgets, municipalities also bear some level of responsibility for ensuring access to affordable housing, as is dictated by the Fair Housing Act. Last off, communities maintain certain values that cannot be assigned a price tag, such as the intrinsic value of nature, cultural heritage, and aesthetics. In fact, according to a recent UNH study conducted by Drs. Mark Ducey, Richard England, and Andrew Smith, 29 communities across the state considered bond issues to finance land conservation projects in 2002. The bond issues passed in most of these communities, with nearly half of them over \$1 million dollars. Many argue that open space doesn't cost communities much in the way of services or infrastructure, and therefore should have a positive fiscal impact on the municipality, as well as the school district. Others disagree with this notion, citing that open space precludes other land uses that may have a stronger positive fiscal impact on both the municipality and the school district.

To conclude, while Fiscal Impact Analysis may not provide *all* of the answers for a municipality to base land use decisions upon, it is one of many useful tools that decision-makers can utilize in their decision-making process.

## **Resources for More Information of FIA**

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Fiscal Impact Analysis:  
Methods, Cases, and Intellectual Debate

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## **Introduction**

Property investments—whether a new mall, industrial plant, or residential development—inevitably have planning and economic consequences for the local community. Fiscal impact analysis, a tool introduced in the 1970s, seeks to connect planning and local economics by estimating the public costs and revenues that result from property investments. The fiscal impact of development is the effect of new investment, new construction, new employment, new population, new school enrollment and other changes on a government's budget. When new businesses start, new houses are built, and new people move into a community, local governments receive additional revenue. The business owners and homeowners pay new property taxes. New residents pay new local income taxes and motor vehicle taxes. New people and businesses pay more charges, fines and fees. However, these new people and businesses also create new costs. New businesses and housing developments may require new roads, sewers, police and fire protection. New residents may demand new parks. Greater traffic congestion may require more roads, traffic lights and police patrols. More children in schools may require more teachers and even new school buildings. Thus fiscal impact analysis enables the comparison of new revenues to new costs. If new revenues exceed new costs, the fiscal impact is said to be positive. The local government can more than meet new demands for services, and (perhaps) provide a tax reduction for existing taxpayers. If new revenues fall short of new costs, however, the fiscal impact is negative. The local government must raise taxes to meet new service demands, and (perhaps) reduce the quantity or quality of existing services.

Fiscal impact analysis can be used on two levels:

- *At the macro level*, to analyze growth as it affects an entire jurisdiction, such as a county or city. This jurisdiction-wide model allows examination of alternative development scenarios by focusing upon land use patterns, growth rates, service costs, and capital facility spending.
- *At the micro level*, to determine the effects of specific projects on the overall community. For example, a community can analyze the pricing and absorption rates of a project to determine its marginal costs before granting a building permit, variance, or zoning change.

## **Benefits**

The benefits of fiscal impact analysis are impressive. At the most basic level, these analyses bring a realistic sense of the costs of growth into the planning discussion. Indeed, they can provide an objective screen so that all parties in the development process have a clearer understanding of the likely results. Moreover, the analysis helps decision-makers link planning to the local annual budget. For example, community leaders would know if the completed project would make more tax money available for municipal needs or if the town could cut property taxes.

In an abstract sense, fiscal impact analysis tends to remove myths and helps to minimize the emotionalism that can accompany public debate. On one side, an analysis may show that not all growth in the community is positive at its present rate. On the other, it may show that a project such as market-rate housing would not overburden existing schools.

Fiscal impact analysis thus provides a knowing public the information required to make a fair decision. Through the data collected as part of a fiscal impact analysis, the community is better prepared to examine its long-term needs. The results help immensely in creating a capital improvements plan and making a community's ability to pay transparent. Moreover, the knowledge created through fiscal impact analysis is fundamental for preparing a bond rating and submission package.

Finally, fiscal impact analysis helps communities better understand their values. For example, a small rural community might want to reduce the property tax burden by rezoning some property to allow highway business. After looking at the construction and land costs, however, the community realized that such a development would overwhelm its rural character and decided to 'embrace the inconvenience' of a heavy residential tax base.

### **Limitations**

At the same time, several factors limit the application of fiscal impact analysis, including:

1. Need for some training to apply a particular technique and interpret the results. Many smaller communities, most often without professional planning expertise, do not have citizen planners who have this experience.
2. Useful only when there are clear cost implications for the municipality. Typically, the cost of a newly constructed small store along Main Street or a new single-family home, by themselves, will have minimal fiscal impacts on the community.
3. Presence of political factors. For example, when promoting a Wal-Mart in his/her home town, a mayor will argue that retail prices will be lower, shopping more convenient, jobs will be added to the employment base, and tax revenues will increase. Against this backdrop, it is often difficult to convince a political leader that Wal-Mart pay rates may not provide a living wage, that the downtown might lose businesses, that new investments in a police cruiser may be required, and that, at the end of the day, the new store may be a tax liability.
4. Lack of consideration for social and environmental factors. Some analysts argue that one should not simply look just at the fiscal implications of development, but also impacts associated with environment, traffic, and community character. These assessments can be costly and time-consuming.

To address these limitations, several researchers prefer to look at environmental impact statements, cost of services studies and more integrated econometric models. Alternative to fiscal impact analyses will be discussed later in this report.

### **Methods for Estimating Fiscal Impacts**

Since Listokin and Burchell's (1978) seminal volume outlining 6 methods for fiscal impact analysis, these models have been applied and refined and will be outlined, with critiques of the benefits and limitations of each model below. (Burchell et. al, 1994; Burchell et.al,1985). To begin however, it is necessary to provide a general understanding of how to measure the revenues a development project generates against the costs the community incurs in servicing the project.

A community has three basic revenue sources—property taxes, state aid, and miscellaneous taxes and fees such as those paid for town government services. With the recent cutbacks in state aid, property tax revenues now account for the large majority of municipal revenues. On the cost side, the three basic categories are schools, services (such as road maintenance, government, police, fire protection, sewer, water, recreation, waste removal), and debt service.

**Calculating Revenues**

Revenues to be considered are (a) property taxes generated by the new development, (b) miscellaneous revenues based on current patterns and proportions, and (c) state aid (mainly for education), also based on current patterns and proportions.

The following example illustrated the revenue calculations for one single family home in a typical suburban community.

**REVENUE FROM NEW RESIDENTIAL DEVELOPMENT**

**Revenue from Property Tax on Development**

Market Value of Development	\$350,000.00
multiplied by	
Assessment Ratio	100.00%
Actual Assessed Value	\$350,000.00
multiplied by	
Residential Tax Rate /\$1,000	\$16.01
<b>Estimated Property Tax Revenue</b>	<b>\$5,603.50</b>

**Miscellaneous Revenue**

Miscellaneous Revenue	\$10,609,073.00
multiplied by	
Residential Proportion of All Property	75.00%
Miscellaneous Revenue from Residential Use	\$7,956,804.75
divided by	
Number of Residential Units	7,610
Miscellaneous Revenue per Housing Unit	\$1,045.57
Number of New Homes	1.00
<b>Estimated Additional Miscellaneous Revenue</b>	<b>\$1,045.57</b>

**Additional State School Aid**

State School Aid	\$12,430,645.00
divided by	
Number of School Children	4,904.00
School Aid per Student	\$2,534.80

multiplied by

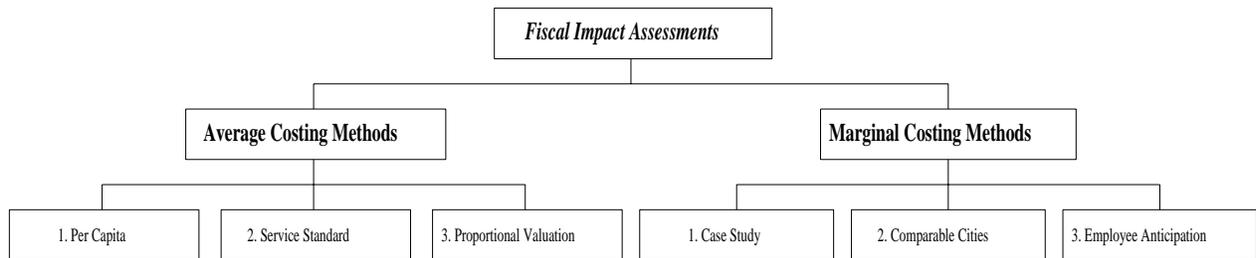
Number of Students in New Development 0.89

**Estimated Additional School Aid \$2,255.97**

**Total Estimated Revenue \$8,905.04**

### Calculating Costs

The two cost estimation approaches that practitioners most often use in fiscal impact analysis are average costing and marginal costing. Each of these approaches includes three specific estimation techniques.



### Average Costing Methods

Average cost is most often used in fiscal impact analysis because it is easy to apply and appears more equitable to public officials and citizens. Costs assigned to new development are based on the average cost of providing the service per unit (i.e., per household, student, or employee) times the number of new service units. This method works best when the project represents an incremental demand for services within the current capacity of local infrastructure. The three techniques that fall within this method are:

**1. Per capita multiplier technique.** The most common cost estimation technique, the per capita multiplier was first used in the 1950s to determine whether certain types of development “pay their own way.” It was also the first large-scale statistical study to predict public expenditures (Mace 1961). Early analyses used per pupil multipliers to estimate education costs. In the 1960s and 1970s, the technique evolved to include demographic profiles of residents and children associated with different housing types, linking this information with average municipal operating costs per person and school district operating costs per pupil to estimate the local costs of population change.

The per capita technique is applied on a jurisdiction-by-jurisdiction basis for all of an area’s major service providers, including municipalities, school districts, and county government. Growth-induced public service costs are determined by multiplying the per capita cost by the total number of people, employees, and pupils introduced by development.

#### Assumptions

- Over the long run, current average operating costs per capita and per student are the best estimates of future operating costs occasioned by growth.
- Current local service levels are the most accurate indicators of future service levels, which will continue on the same scale.

- The current composition of the population contributes to costs, and the future population will contribute to costs in a similar manner.
- The distribution of expenditures among the various municipal services will remain constant in the short run and serve as a guide to allocation of future expenditures.

***Outputs of Analysis***

- Current public service costs on a per unit basis (per pupil for the school district, and per capita/per employee for the municipality).

***Applicability***

- Ideal for evaluating fiscal impacts of residential development proposals, land use alternatives within a proposed growth strategy, and annexation or rezoning proposals, as well as fiscal segments of suburban environmental impact statements (Burchell and Listokin 1978).
- Appropriate for communities where future demand for services is on par with the scale and scope of existing services.

***Benefits***

- Straightforward, relatively easy to accomplish, and usually provides a quick understanding of development impacts.
- Data are easy to gather.
- Most widely accepted fiscal impact method available, particularly for private planning consultants.

***Limitations***

- Lack of richness of detail, with estimates only to the level of municipal and school district services.
- May be the least accurate cost estimation method, given that it does not account for the current service capacity, which new development may maximize (decreasing per capita costs) or exceed (increasing per capita costs), or the possibility that a new development might call for major new capital construction.
- Results may be inaccurate if based on outdated decennial census information. (The later in the decade that this information is used, the less accurate it will be.)

***Example***

Of the three types of costs associated with residential development, the most significant is for schools. These costs are calculated by applying the current cost per student to the estimated number of new students. The second cost element relates to service costs, which is calculated based on existing service costs applied in a proportionate manner to new development. The third cost element comes into effect if development triggers some sort of capital expenditure. Again, the capital costs are applied in a proportional manner.

**COSTS DUE TO NEW RESIDENTIAL DEVELOPMENT**

**School Costs Due to Development**

Current School Cost per Student	\$6,039.04
Number of Students in New Development	0.89
<b>Total School Cost per Year</b>	<b>\$5,374.75</b>

**Service Costs Due to Development (Library, health, recreation, etc.)**

Town Expenditures Excluding Schools	\$28,921,822.00
multiplied by	
Residential Portion of All Property	75.00%
Service Costs Due to Residential Development	\$21,691,366.50
divided by	
Number of Residential Units	7,610.00
Service Cost per Unit	\$2,850.38
Number of Homes in New Development	1.00
<b>Town Service Costs for Residential Units</b>	<b>\$2,850.38</b>

<b>Total Costs Due to Development</b>	<b>\$8,225.13</b>
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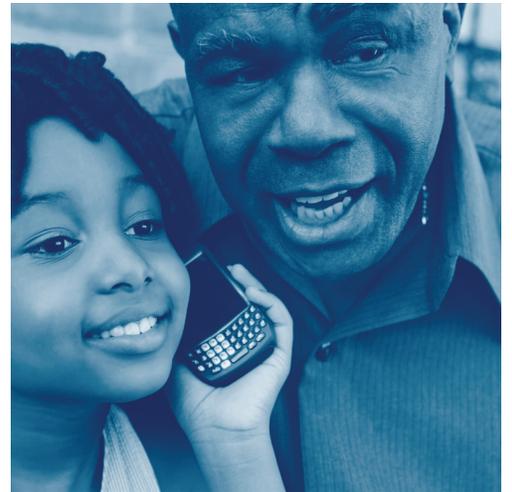
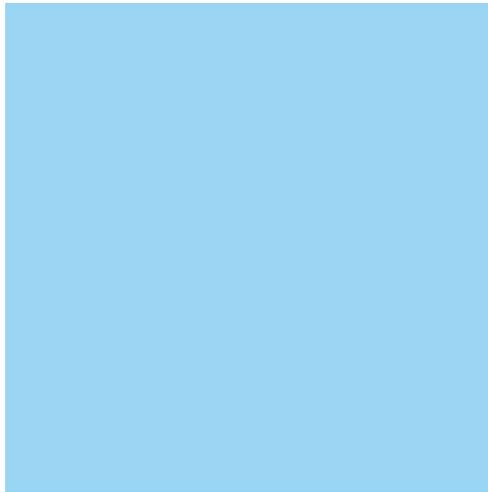
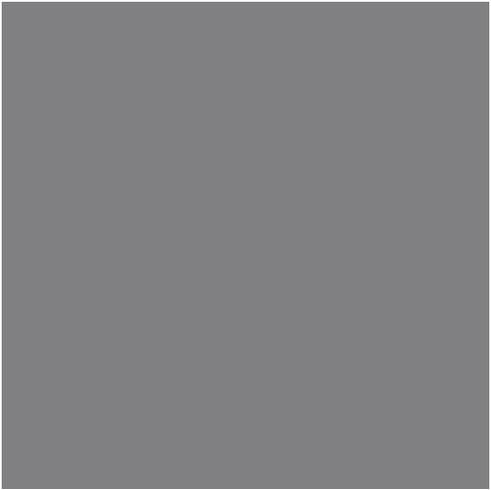
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## The New Digital American Family:

Understanding family dynamics, media and purchasing behavior trends

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## Overview

The New Digital American Family is getting older, smaller, growing more slowly and becoming more ethnically diverse than at any point in history. Diversity in all its dimensions defines the emerging American Family archetype, with no single cultural, social, demographic, economic or political point of view dominating the landscape.

## The Takeaways

- Ward and June Cleaver have left the building. The white, two-parent, “Leave It to Beaver” family unit of the 1950s has evolved into a multi-layered, multi-cultural construct dominated by older, childless households. Marketing budgets need to recalibrate to reflect the very different composition of the New Digital American Family.
- Slow organic growth in the number of households with children (38 million) will force categories and brands to steal share from competitors or pursue category-expanding new product innovation.
- Advertisers need to have a multi-channel strategy for reaching different types of families, one that accommodates differences in media preferences, device usage and time-shifting behavior.
- Hispanics represent a huge and growing market with a distinctive culture, one that requires an equally distinctive marketing approach and rejects the two myths of Hispanic consumers:
  - Myth: I can reach Hispanics through my general market campaigns
  - Myth: Hispanics are late technology adopters, so I don’t need to use online and mobile in my campaigns
- The New Digital American Family has arrived at a demographic inflection point that demands marketers adapt and adopt new technologies for communicating with the consumer. One example is the smartphone which has emerged as an equalizing agent across households of all income levels.

### Family Portrait: Ethnicity

- Households with children under age 18 will be predominantly multi-cultural by 2020 (Hispanic, African-American and Asian-American); 40 percent already are multi-cultural today due in large part to immigration.
- Recent immigrants to the U.S. accounted for 90 percent of population growth from 2000-2010 over-indexing for the Hispanic and Asian communities.
- Hispanics represent the fastest-growing segment of the multi-cultural nation, growing 40 percent in the past 10 years and numbering 50 million people.
- A socio/demographic schism splits families along education and income lines, with higher income, more educated, less ethnic households

reporting lower divorce rates and more time spent with children.

- Marriage is so 20th century! In 1960, 72 percent of the adult population was married. By 2008, that number plummeted to 52 percent. The college-educated have the highest marriage rates; those with a high school education or less, the lowest rates.
- Moms rock, but are hard to reach, with mothering activities diminishing media time.

### Family Portrait: Finance

- High income families view less TV but spend more time viewing with kids, using time-shifted media four times more often than low income households.

- High income families represent the heaviest Internet users, logging on to conduct research, check the news, access travel info and visit social networks.
- Programming preferences vary with income, but programming genres like sports unify the nation.
- Low income households download more ring tones while upscale families rely on smartphones for mobile commerce and to download apps.
- While only 11 percent of Hispanic households bank online, 30 percent conduct banking transactions on their mobile phones.

## Households with Children: A Shrinking Slice of the American Pie

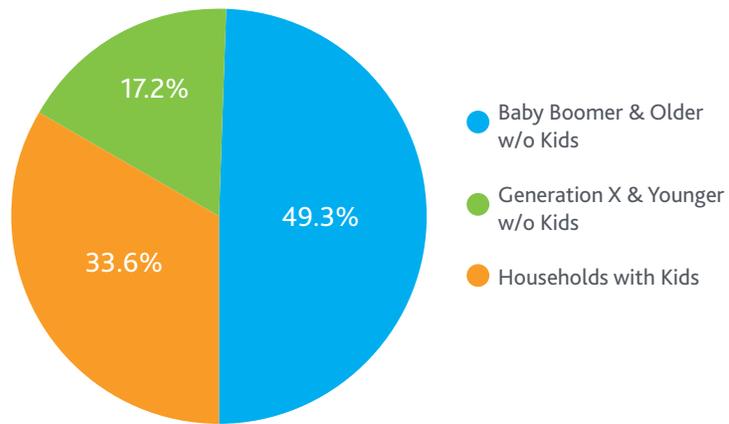
Nowhere are the seismic changes in the American family more concentrated than among young people and households with children. Once the sweet spot for marketers, households with young children now represent a shrinking percentage of the family marketplace (just 33.6%), as well as a less homogeneous, less educated and less affluent target audience. By the mid-2030s, the share of households with children is expected to decline further to between 25-30 percent, depending on the economic outlook. When times get tough, parents often delay having children.

Over the next decade, families with children will grow, albeit at a slower rate (4%) than the projected total household rate of 7.8 percent. While the overall growth rate is relatively slow, the change impact is profound, with ferocious growth projected for multi-cultural households leading and lower/middle income families.

Nielsen projections suggest that the majority of families with children will be multi-cultural before the end of this decade. Fewer than half will be native-born, non-Hispanic white. Families with children already register more than 40

percent multi-cultural. The proportion is even higher at 47 percent among those families with a head of household age 33 or younger and soars to 61 percent for the lowest income families.

Figure 1: Sizing the Current Family Marketplace

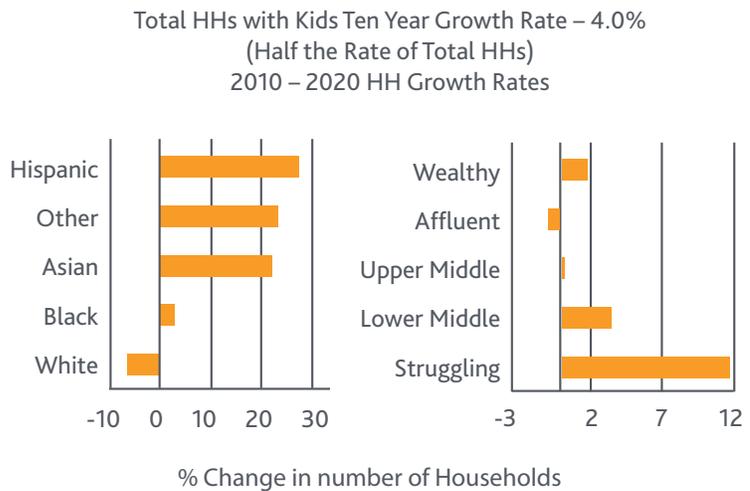


Source: The Nielsen Company

## Growing Multi-Cultural Roots

Immigration accounted for 90 percent of population growth over the last decade, bringing with it a surge of people in their 20s who have higher fertility rates and the optimism to start families. American society continues to blend cultural influences and present challenges to marketers attempting to reach distinct ethnic segments, especially Hispanics. More developed global regions such as the United States, Canada, Australia and Western Europe will see growth rates decline until 2035 when these countries will lose population.

Figure 2: Very Slow Growth Rate But a Lot of Flux



Source: The Nielsen Company

## Generational Differences

From a generational perspective, Baby Boomers (born 1946-1964) started a trend by having children later than any generation before them, though not nearly as late as the generations that followed. Many Boomers still have children under 18 at home and account for more than 30 percent of all households with children. Generation X parents (born 1965-1976) represent the majority (43.9%) of households with children. Slightly more so-called "Brady" Boomers (born between 1956-1964) head up households with children (23.3%) than do Millennials born after 1977 (22.9%).

Race and ethnicity within households with children varies strongly by generation. The "Brady" Boomers are the least diverse group with nearly two-thirds of families with children headed by a native born, non-Hispanic white. Younger Millennials stand as the most ethnically diverse group, with nearly half of families with children described as multi-cultural. Many of the native white households in the older age groups are empty nesters, while multi-generational, multi-cultural families still have children under 18 at home.

## The Post-Digital Generation

Along with youth comes a high comfort level with technology, one tantamount to a digital birthright. For members of the Post-Digital Generation, there has always been an Internet. Time-shifted viewing has become the norm. Three-screen lifestyles (TV, Internet and mobile) predominate. Social media usage continues to soar. From travel to health, mere search has evolved into thorough online research on every topic under the sun.

The Internet is more than a way to study the world; it is a mechanism for forming community. Whereas prior generations turned to Mom for advice on child-rearing, Post-Digital Moms turn to a host of Mommy bloggers and other online Moms for trusted advice, a shoulder to lean on,

and someone to connect with during wee hour feeding times.

A single device has successfully bridged the digital and generational divides. The smartphone has emerged as the great leveler, providing low cost, easy access Web connectivity to households of all income levels and ethnicities. Two out of three U.S. mobile subscribers use text messaging. The age of anytime, anywhere, affordable access has arrived, a game-changer for marketers who now must learn to leverage the unique attributes of mobile into their campaign strategies.

## Marriage on the Wane

Two trends impact the outlook for marriage, and as a result, the fate of families with children: age at first marriage and opting out of marriage altogether. The proposed factors delaying marriage are many: an extended period of adolescence, an economy with few available jobs, and the highly publicized, single lifestyle modeled by celebrities, but co-habitation before marriage appears to be the dominant, driving force.

In 1980, a mere 16 percent of adults lived together before marriage. By 2000, that number rose to 41 percent and it is

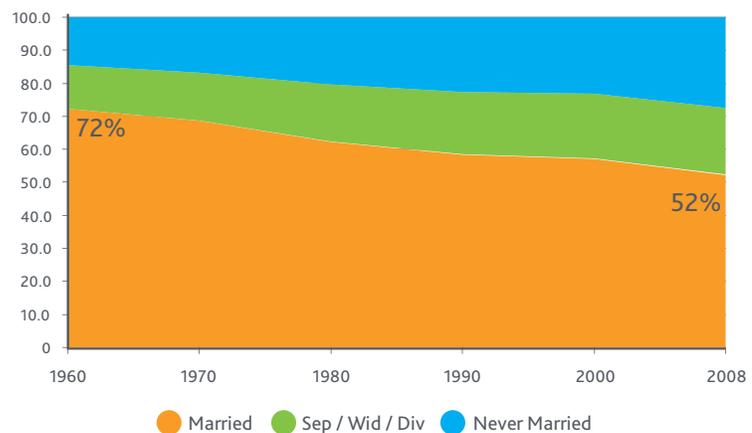
expected that the newest census numbers will show co-habitation as the norm at more than 50 percent. Median age at first marriage for men rose by six years since the middle of the Baby Boomer years.

The second trend, especially pronounced among more downscale and less educated persons, is to never marry. Almost three-fourths of Americans over age 18 were married in 1960, but only 52 percent are today. Young Americans are delaying marriage and the rates are plummeting among all ethnic groups. To further confound the situation, sociologists are proposing a new way of thinking about marriage, summarized by the phrase "alone together." This reflects more independent spouses who live separate lives with fewer shared activities than their married predecessors.

Interestingly, marriage rates correlate with education with the biggest drops among high school only and the highest rates among the college-educated.

Delaying marriage often, but not necessarily, means delaying childbirth. In turn, marketers must learn to address the needs of older, savvier parents who exhibit more knowledge about shopping and who have access to a wider array of research, price comparison and transaction tools thanks to the Internet and mobile apps.

Figure 3: Marriage Has Become Less Prevalent (Marital Status of Population 18+)



Source: U.S. Census Bureau

## Family Fault Lines

A demarcation separates American families, a line defined by education and affluence. On one side of the Family Schism sits the married, educated, more affluent, less ethnic households with lower divorce rates who spend significant time with their children. On the other side sits the unwed family units with fewer kids and higher divorce rates, struggling to find time to spend with children, financially strapped and more ethnic in composition.

## Class, Age and Media Preferences

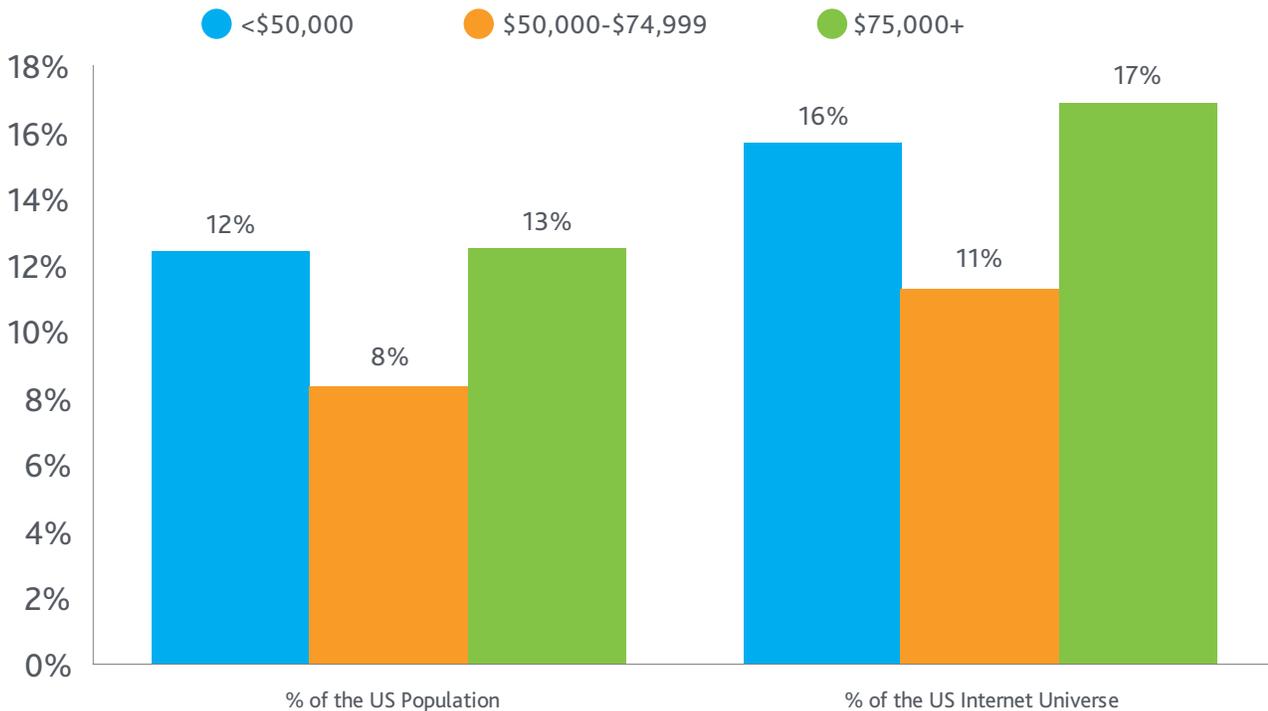
Socioeconomic class and age serve as key indicators of media preferences and shopping habits. Upscale families watch less TV than the average household, but spend significant time with media and entertainment options, both alone and with families.

High income households are huge devotees of time-shifting, which allows them to watch more with their children. High income households use digital video recorders (DVRs) four times more often, purchase more video games and more DVDs than the average household. They also buy fewer cell phones than the

average, most likely because low income audiences are more likely to bypass a landline in exchange for a cell phone.

Web preferences differ across income and ethnic lines as well. High income families spend less time on Facebook and YouTube but more time on the Apple website than the average family, presumably downloading music or servicing their Macs. Educational options head the list of the Top 10 indexing websites by income, with high income families accessing Pearson Prentice Hall, Edline.net, Teacherweb.com, ClassZone.com, Houghton Mifflin and Pbteen.

Figure 5: High Income Households are the Heaviest Internet Users



Source: Nielsen National People Meter/Homescan Fusion November 2010 – Index Households with Kids <18

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## Multi-Cultural, Multi Media

Increasingly multi-cultural, three ethnic groups dominate the American family landscape: Hispanics, African-Americans and Asian-Americans. Hispanics tend to visit Latin-influenced sites like Univision and MSN Latino while African-Americans gravitate to music sites and Asians prefer technology sites.

African-American media habits are TV- and mobile-centric. They own four or more sets per household and spend almost 40 percent more time watching TV, especially premium cable channels, than the U.S. average. African-Americans also run up more mobile voice minutes per month—1,261—than any other group.

Asian-Americans exhibit a huge appetite for online media, logging 80 hours in PC time and viewing 3,600 web pages, 1,000 pages more than any other ethnic group. Asian-Americans watch YouTube more than any other demographic segment while white Americans spend time with Facebook more than multi-cultural users. Although Asian-Americans watch less TV than other ethnic segments, they stream double the amount of online video as the overall average.

Hispanics remain the single fastest-growing ethnic group in the United States, the anchor for an increasingly multi-cultural society. Some 50 million Hispanics call the U.S. home, and their cohort is increasing 10 times faster than the non-white population.

Mobile serves as a key source of connectivity within the Hispanic community. They are more likely than the average household to have cell phones with Internet (55%) and video (40%) capabilities and text more than any other race or ethnicity, sending 943 texts per month. With smartphone penetration of 45 percent, Hispanic cell phone ownership matches that of Asians. The ubiquitous nature of mobile phones explains why Hispanics are three times more likely to use their mobile phones for banking than online alternatives.

While 77 percent of all U.S. homes boast Internet access, only 62 percent of Hispanic homes are connected. When Internet access is available, Hispanic households log just as much time online (26 hours vs. 25.5 hours) compared with the total U.S.

## Moms Matter and the Rise of the Mommy Bloggers

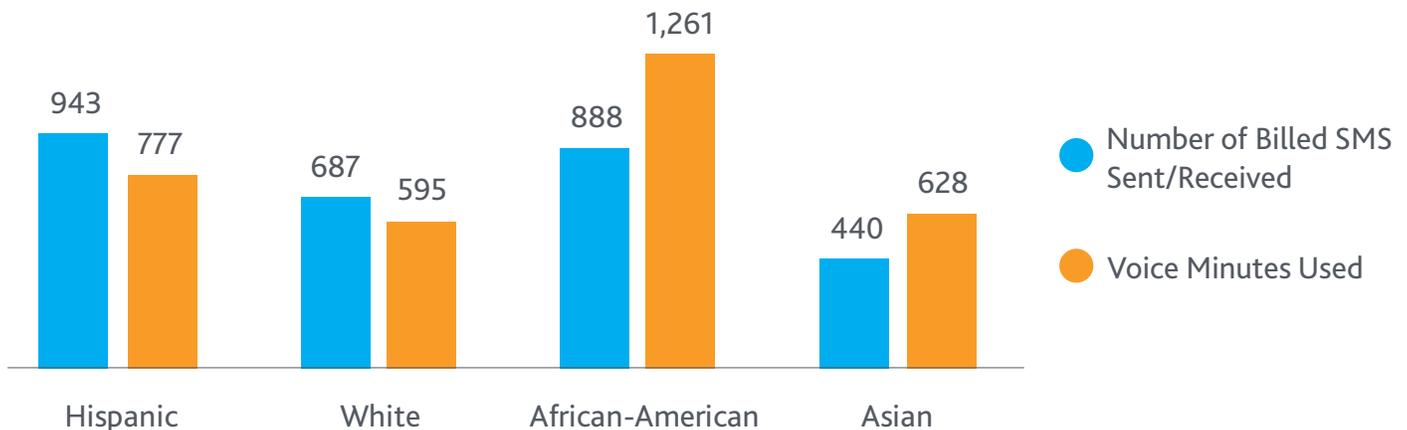
Moms 21-49 who visit blogs exhibit distinctive TV viewing preferences.

- They spend less total time in front of the TV watching live or other programming, but more time on DVR playback.
- Among the Top 10 network program picks for blog-viewing Moms are *Grey's Anatomy*, *Private Practice*, *Biggest Loser 8*, *House*, *The Office*, *Modern Family*, *NBC Sunday Night Football*, *So You Think You Can Dance*, *Brothers & Sisters* and *CSI*.

Moms who aren't visiting blogs watch many of the same programs, but prefer *Desperate Housewives*, *Fox NFL Sunday*, *Survivor: Samoa* and *The Mentalist*.

Source: The Nielsen Company, Nielsen MRI Data Fusion, November 2010

Figure 6: Mobile Phone Trends: Look Who's Talking... and Texting



Source: Nielsen Telecom Q4 2010

Sources:

The data and insights in this report represent the intellectual property of The Nielsen Company. Kindly source all data in this report using the appropriate citations.

U.S. Census Bureau

The Pew Research Center - The Decline of Marriage and Rise of New Families

Alone Together: How Marriage in America is Changing - Paul Amato et al

The Nielsen Company, Nielsen MRI Data Fusion November 2010

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The Nielsen Company, Nielsen National People Meter, Persons 18-49, November 2010, Broadcast and cable ranked on Live AA%, Syndication rankings based on Live GAA% excluding programs < 10 minutes

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The Nielsen Company, Nielsen Mobile Survey June 2010

The Nielsen Company, Nielsen Mobile Media view December 2010

The Nielsen Company , Nielsen Mobile Insight Quarter 4 2010

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## BEST PRACTICES PRECEDENTS

*The purpose of these “precedent pages” is to illustrate, with examples, some of the concepts discussed in the comprehensive plan. These are not intended to be comprehensive and photographs are provided to exemplify and inspire rather than to prescribe.*

### Issue: “Village” Center

**Concept:** Reinforcing and strengthening the existing land use and socio-economic patterns of Acton’s villages as the organizing structure and main setting for the town’s social, economic and public life.

#### What do we mean when we use the word village?

The community has expressed an interest in continuing to pursue the goal of having a series of village centers as places to gather, shop, eat, and even live. What most people seem to desire is small-scale development with unique shops, coffee shops and restaurants and other places to gather. They would like these to be walkable and bicycle-friendly places located within walking distance of residential neighborhoods (see Acton Voices below for more detailed description of residents’ thoughts). Actonians are also concerned about the compatibility of new development with the town’s character.

**How do we make existing and potentially new village centers more vibrant centers of town life?** Adding housing units above shops and in in-fill development in and around village centers results in a larger market for shops. Recruiting more and more diverse shops will result in more places to go. Ensuring that walking and biking is safe and pleasant and planning events in and around the streets makes for a livelier street life. Village centers need to become more of a destination with a distinct sense of place.

#### But focusing on village centers did not result in much after the last master plan...

According to the previous master plan: “Village-based planning was not supported mainly due to discrepancies between what wished for and what market has brought forward.”<sup>1</sup> As a reaction to the fact that the previous master planning efforts did not bring about the desired results in terms of the degree of village-type development, this master plan is proposing more aggressive regulatory measures and stronger incentives.

#### Should we choose one or more village centers to work on first?

There seems to be a significant degree of consensus regarding the desire for a town center in addition to appreciation for the potential for a set of village centers in different parts of Acton. Many residents have pointed to Kelley’s Corner as the most feasible and desirable location to create a “town center”. The fact Kelley’s Corner is centrally located, with good access from many parts in town, within walking distance from the school campus, as well as the fact that there are relatively few landowners makes it a prime candidate for the first phase of implementation.

#### What are some examples of village centers we can look to as models?

Concord, MA; Lexington, MA; Arlington, MA

#### Acton Voices: “What is an ideal village center and how can we enhance ours?”<sup>2</sup>

- *Walkability*
- *Events*
- *Unique and fun window shopping*
- *Locally-owned shops, “buy local” campaign*
- *Anchor with pulling power*
- *“quaint but not cute” – each village with its own distinct character*
- *Slow traffic, plant flowers and trees, move towards mixed use*
- *Invite ethnic community to contribute vitality through celebration and food*
- *Activities including parks, outdoor areas to congregate, grocery store.*
- *Family restaurant, benches, variety of businesses, parking in back of buildings, place to go at night, pleasant lighting.*

<sup>1</sup> Master Plan Update, Town of Acton, MA, Dec. 1998

<sup>2</sup> Responses by Acton residents in variety of forums held during Phase I of the planning process.



## PRECEDENTS: Village Center

### Concord Center, Concord, MA

<b>Desirable Features:</b> <i>(physical, programmatic)</i>	<ul style="list-style-type: none"> <li>Feels like a destination</li> <li>Signage is interesting, attractive, and “blade type,” oriented to pedestrians</li> <li>Shops are one of a kind, small-scale</li> <li>Some housing over shops</li> <li>Diversity of shops and restaurants</li> <li>Plenty of accessible parking but tucked away in back</li> </ul>
<b>Contributing Context:</b>	<p>surrounding residential community can walk to center, tourists brought by bus provide additional market, historical evolution, provision of adequate car and pedestrian infrastructure</p>
<b>Strategies to Accomplish:</b>	<p>strong design guidelines and design review, strong sign by-law which promotes creativity, village overlay district, Concord Business Partnership</p>



Interesting, creative, and attractive signage oriented to the pedestrian contributes to the visual vitality of Concord Center

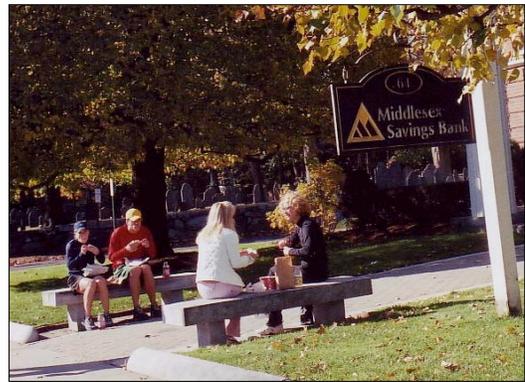




Mixed Use: Housing above retail



Rear Entrances: the back side of buildings are welcoming



Pedestrian amenities



Connectivity: pleasant and accessible connection between parking and shops



Aesthetically pleasing, accessible parking tucked away behind buildings



## PRECEDENTS: Village Center

### Lexington Center, Lexington, MA

<b>Desirable Features:</b>	<ul style="list-style-type: none"> <li>Mixed use, compact development</li> <li>Interesting and aesthetically pleasing design with public walkways</li> <li>Outdoor gathering spaces</li> <li>Easily accessible by bike (located along bike path)</li> <li>Parking located behind retail establishments</li> </ul>
<b>Contributing Context:</b>	<ul style="list-style-type: none"> <li>Significant numbers of housing units within walking distance from center</li> <li>Some housing above retail (more recent development)</li> <li>Variety of shops and restaurants</li> <li>High school within short walking distance of center</li> </ul>
<b>Strategies to Accomplish:</b>	<ul style="list-style-type: none"> <li>Passed beer and wine liquor by-law allowing smaller restaurants without full liquor license</li> <li>Economic Development Officer hired with much focus on center activities</li> <li>Some parking shared with area institutions (e.g. churches)</li> <li>Changed zoning to allow housing above retail</li> </ul>



Sidewalks with pedestrian amenities for resting, meeting and greeting





## Lexington Center, Lexington, MA Continued



Mixed Use: Housing over retail



Depot Square: open space near bus stop with benches and grassy areas for gathering; concerts are held here in warm months



# PRECEDENTS: Mixed Use Development

The following are some examples of mixed-use development and multi-family housing located near village centers.

## The Village Commons, South Hadley, MA

<b>Desirable Features:</b>	<ul style="list-style-type: none"> <li>• Mixed use, compact development</li> <li>• Interesting and aesthetically pleasing design with public walkways</li> <li>• Outdoor gathering spaces</li> <li>• Parking located behind retail establishments</li> </ul>
<b>Contributing Context:</b>	Main corner opposite town green and Mt. Holyoke College
<b>Strategies to Accomplish:</b>	Redevelopment of college-owned parcel



Aerial View



Building along the street edge, parking in rear



Informal gathering place



## The Village Commons, South Hadley MA Continued



Directory of businesses and tenants



An entrance through an outdoor seating area



# PRECEDENTS: Mixed Use Development

## Mashpee Commons, Mashpee, MA

**DEVELOPER:** Cornish Associates Limited Partnership



2007 master plan indicating approved street and block locations for the Jobs and Whittings residential neighborhoods

Typical view of pedestrian street at the corner of the Commons.



Traditional urban configuration of apartments and offices above shops





# PRECEDENTS: Mixed Use Development

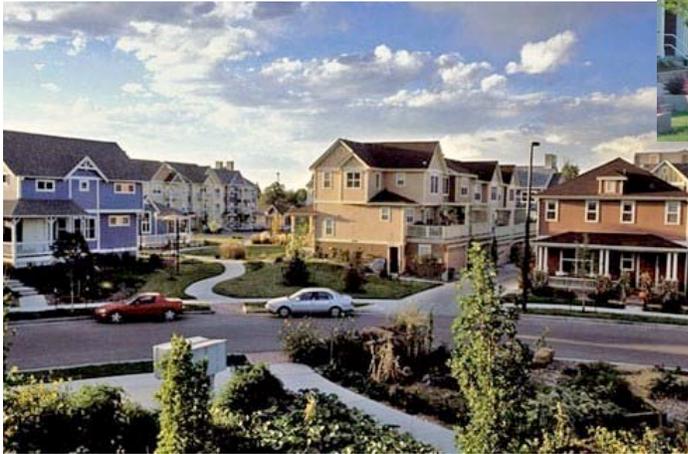
## Highlands Garden Village, Denver, CO

<b>ACREAGE and DENSITY:</b>	27 acre site, 291 homes, as well as 200,000 square feet of commercial and live/work space, 140,000 square feet of open space. Average housing density for the project is 13 dwelling units/acre.
<b>DEVELOPER:</b>	Perry/Affordable Housing Development Company



Plan view

The Elitch Theater which occupied the site in its former use as an amusement park was preserved as an arts and performance space.



Ground views



## PRECEDENTS: Mixed Use Development

### Photo Gallery Illustrating Village-Type Developments



Duplex Housing, Arlington, MA



An Alley Converted to a Pedestrian Court, Adams, MA



Discount Shopping Mini-Mall in Manchester Center, VT



Gift Shop with Flower Garden in Woodstock, VT



Outdoor Concert in Village Center, Stratton, VT



Outdoor Seating Area/Cafe in Arlington Center, MA



## PRECEDENTS: Multi-family Housing

### Concord Commons, Concord, MA

<b>ACREAGE and DENSITY:</b>	56 unit condominium development in 2 buildings 2.3 acres, 24 dwelling units per acre
<b>LOCATION:</b>	On the western edge of West Concord Village, located on Conant Street just north of, and adjacent to, the MBTA commuter rail line
<b>BUILT:</b>	2006
<b>DEVELOPER:</b>	The Boynton Company/The Tambone Investment Group
<b>APARTMENT UNIT PRICES:</b>	\$315,000 - \$550,000 (current prices; a block of 25 units was sold at discounted prices at auction in 2008)
<b>ASSESSED VALUE (2011):</b>	\$24,220,000 (Average per unit = \$432,500)
<b>ESTIMATED PROPERTY TAXES:</b>	\$319,460 (Average per unit = \$5,700)
	<ul style="list-style-type: none"> <li>• The 56 units consist of 1, 2 and 3 bedroom luxury condominiums in four story buildings with elevators.</li> <li>• Units range in size from 1,269 to 1,814 sq. ft. in floor area.</li> <li>• There is very little open space on the site of Concord Commons. Some of it is occupied by open parking. There is additional covered parking under the buildings.</li> </ul>



Concord Commons Aerial View



Ground Views of Concord Commons





## PRECEDENTS: Multi-family Housing

### Concord Greene, Concord, MA

<b>ACREAGE and DENSITY:</b>	220 unit condominium development in 31 buildings 25 acres, 8.8 dwelling units per acre
<b>LOCATION:</b>	On the eastern edge of West Concord Village, between Route 62 (Main Street), Route 2, Baker Avenue and the MBTA Commuter Rail Line
<b>BUILT:</b>	1976 - 1978
<b>DEVELOPER:</b>	Comeau Development Company
<b>APARTMENT UNIT PRICES:</b>	\$284,000 - \$422,000
<b>ASSESSED VALUE (2011):</b>	\$77,600,000 (Average per unit = \$352,700)
<b>ESTIMATED PROPERTY TAXES:</b>	\$1,023,500 (Average per unit = \$4,650)
	<ul style="list-style-type: none"> <li>The 220 condominiums consist of 1- and 2-bedroom apartment-type units and 3-story townhouses, ranging in size from 1,070 to 1,593 sq. ft. in floor area.</li> <li>In addition to the buildings, Concord Greene has three small ponds made from damming a stream that meanders from the Assabet River, under Route 2, through a marsh and Concord Greene, under Baker Avenue, and back into the river. There is also a small apple orchard, a rock grotto, and a plot of community gardens with a mixture of vegetables and flowers. There are also two tennis courts, a club house with an exercise room and a swimming pool.</li> </ul>



Concord Greene Aerial View



Concord Greene Units





# PRECEDENTS: Multi-family Housing

## Russell Place, Arlington, MA

<b>ACREAGE and DENSITY:</b>	a 40 unit, 11 building condominium 4.5 acres, 9 dwelling units per acre
<b>LOCATION:</b>	On the edge of Arlington Center, between the Minuteman Bikepath and town- and church-owned recreational playfields
<b>BUILT:</b>	2002 - 2004
<b>DEVELOPER:</b>	Collins Development
<b>APARTMENT UNIT PRICES:</b>	\$350,000 to \$600,000
<b>ASSESSED VALUE (2011):</b>	\$15,824,800 (average per unit = \$395,620)
<b>ESTIMATED PROPERTY TAXES:</b>	\$196,386 (average per unit = \$4,910)
	<ul style="list-style-type: none"> <li>• There are a variety of floorplans available in units at Russell Place with optional features and finishes. Features available in some units include fireplaces, skylights, cathedral ceilings, and decks or porches. Features available in some units include fireplaces, skylights, cathedral ceilings, and decks or porches.</li> <li>• Large three-level townhouses have garage bays underneath with additional driveway spaces, some units are primarily on one level with loft-style rooms above, other flats have finished lower level space.</li> <li>• The units have central air conditioning and varying levels of finishes in the kitchens.</li> <li>• Garage parking and that there is additional driveway parking.</li> </ul>



Aerial View



Ground Level View

#	Style	sq.ft.	Rm	Br	Ba	Pkg	Ask \$	Sold \$	Orig. \$	Date
44	2Lvl	1226	4	1	2.5	1	425,000	420,000	349,900	06/05
28	2Lvl	1236	4	2	2.5	1	449,900	449,900	359,675	07/05
2	TH	2285	6	3	2.5	2G+	649,000	637,500	601,850	10/05
14	TH	2092	6	3	2.5	2G+	639,900	610,000	600,250	03/06
10	Flat	987*	6	2	2	2	479,000	475,000	422,500	03/06
29	Flat	987	5	2	2	1	429,000	415,000	392,725	10/06
5	Flat	1198**	3	1	2.5	2	409,900	391,000	368,615	11/06
13	Flat	1267**	4	1	2.5	1	359,000	350,000	369,900	11/06
23	TH	2077	6	3	2.5	2	539,000	513,800	428,525	04/08
35	TH	1921	5	2	2.5	2	519,000	530,000	404,175	06/08

\* Not including finished lower level      \*\* Includes finished lower level



## PRECEDENTS: Multi-family Housing

### The Legacy Apartments, Arlington, MA

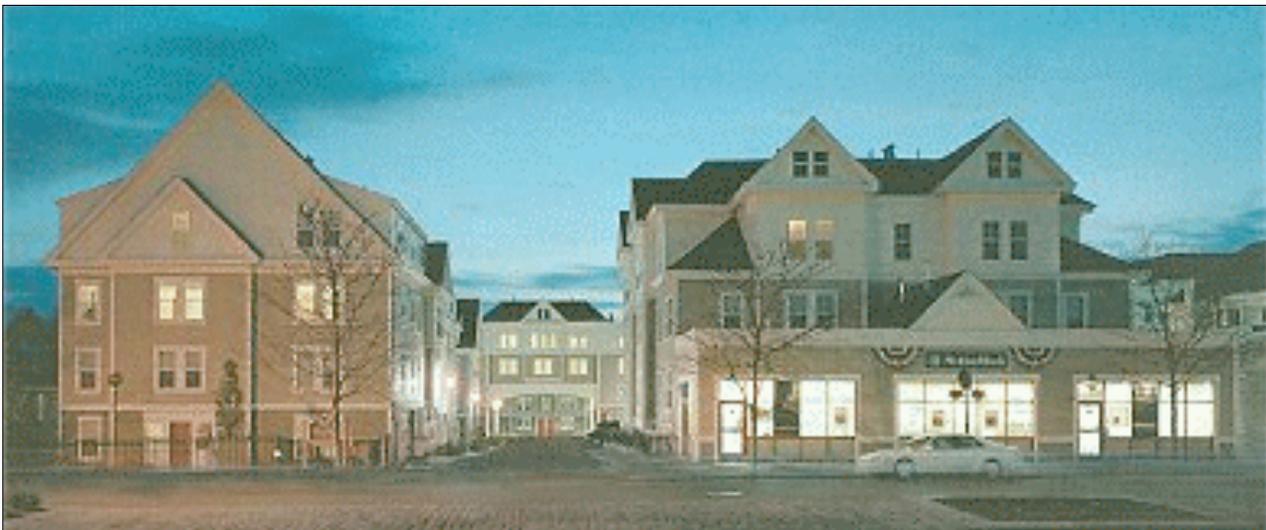
<b>ACREAGE and DENSITY:</b>	134 rental unit project in 4 buildings 2.75 acres, 49 dwelling units per acre
<b>LOCATION:</b>	Directly in Arlington Center, between the Minuteman Bikepath and Massachusetts Avenue.
<b>BUILT:</b>	2000
<b>DEVELOPER:</b>	Diversified Funding Inc./Mirak Management Co.
<b>OWNER:</b>	Mirak-Bendetson Development , LLC
<b>APARTMENT UNIT PRICES:</b>	From \$1,500/mo. for a 1 bedroom unit (773 to 939 sq. ft.) From \$1,850/mo. for a 2 bedroom unit (1,061 to 1,744 Sq. ft.)
<b>ASSESSED VALUE (2011):</b>	\$23,237,200
<b>ESTIMATED PROPERTY TAXES:</b>	\$288,400



Legacy Apartments Aerial View



Legacy Apartments Ground Rear View



Legacy Apartments Ground Front View