

OPPORTUNITIES & CHALLENGES

Master Plan Vision & Goals

Harvard's master plan update is guided by a vision statement and goals that the Master Plan Steering Committee wrote after the town finished its "Phase I" public participation process (Spring 2001). The vision and goals relate logically to concerns that Harvard people have about their town today, the quality of life they value, and the kind of community they want Harvard to be in the future. The community vision and goals appear below, followed by an analysis of opportunities and challenges for achieving them in light of the development trends and issues described in Chapter 2.



Harvard's open space.

Harvard's Community Vision

In twenty years, Harvard will be a town with:

A Sense of Community

- Active participation of citizens in the town's civic life combined with small town celebrations and traditions will forge a strong sense of community.
- Harvard will be home to all ages and a broad range of household sizes and incomes.
- The cooperation of highly motivated staff, caring Town personnel and actively involved parents will contribute to schools that provide both a nurturing environment and high quality education.

A Sense of Place

- The Town Center will serve as the social, governmental and cultural heart of the community, with other thriving village centers further strengthening Harvard's economic and community base.
- Harvard will support working orchards and farms and preserve its landscape of woodlands and fields, rural roadways and scenic vistas, and will connect these features and the Town and village centers with walking trails.
- The town will have clean air and an ample supply of clean water.

A Sustainable Future

- Diverse commercial and residential bases will enable the town to realize its vision and provide the flexibility to adjust to changes in the economy.

Master Plan Goals

Town Character Preservation

- Maintain a balanced mix of village centers; agricultural, forested and open space lands; and small neighborhoods.
- Maintain the rural characteristics of the Town by:
 - Insuring no net loss of trees or stone walls and no net gain of asphalt width on existing scenic roadways.
 - Preserving and/or enhancing view sheds.
 - Preserving historic structures and landscapes.
- Ensure a vibrant town center by maintaining a balance of residential, commercial, municipal and institutional uses.

Provide for a balance of non-vehicular and vehicular use on public roadways.

Housing

- Increase housing options, particularly the number and types of moderately priced senior and handicapped-accessible units.
- Provide an environment to increase significantly the retention of young and senior citizens.

Agriculture

- Increase the options for economic viability of agricultural enterprises.
- Identify and protect significant Chapter 61 lands.

Economic Strategies

- Broaden the sources of Town revenue.
- Balance the costs and delivery of services with the available sources of revenue.

Natural Resources & the Environment

- Protect groundwater, recharge areas and wetlands to ensure a safe and adequate water supply.
- Identify and protect wildlife habitats and other natural assets, such as Bare Hill Pond.
- Preserve air quality and control noise, light and other environmental pollution.

Implementation

- Integrate the Master Plan into the operations of the town, Town Meeting and the Municipal boards and offices.
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Land Use

Harvard's present land use pattern is a physical representation of many factors: its natural features and built assets, local history, regional setting, zoning and other public policies, and the multiplicity of interests that have a stake in Harvard land. For example, natural features such as soils, topography and water resources have dictated both the location and arrangement of roads and the intensity of land use. In addition, local, state and federal policies have determined the types of development that exist in Harvard today. Many of the orchards, farms and large tracts of open space that define Harvard's rural character benefit from property tax laws that encourage forestry, agriculture and outdoor recreation. Similarly, the low-density character and broad distribution of single-family homes throughout Harvard reflect local zoning and the town's limited infrastructure. State and federal transportation policies caused the town to be spliced by two major highways. Finally, the closure, disposition and reuse of Fort Devens, including 2,700 acres of land inside Harvard, represent choices made at all levels of government, though the three small towns that stand to gain or lose the most have had little direct say in what happens to their land.

Communities rely on zoning to control land use by regulating the amount and location of development. In effect, zoning is a tool for managing conflict: it is intended to balance private property rights with the public's interest in an orderly process of growth and change. As the primary agent of land use policy in cities and towns today, zoning is a critical part of master plan implementation. To understand how zoning may aid or frustrate the achievement of community goals, alone and in conjunction with other forces, master plans typically begin with a land use analysis: a description and critique of a town's current land use scheme, development trends, and the visual, operational and economic ingredients of its "character." A land use analysis also considers how a community's development pattern might change in the future, given historic trends and existing conditions, natural barriers to development, and zoning.

The land use inventory and trends analysis in Chapter 2 suggest several ways that growth in Harvard differs from or is incompatible with the goals of the master plan. The following section explores aspects of the Harvard Zoning Bylaw that contribute to these inconsistencies.¹

Zoning in Harvard

Coming to terms with the land use outcomes that are programmed by zoning is very important. A zoning bylaw that promotes changes which conflict with master plan goals may be based on a different vision of the community. Sometimes, it is based on no particular vision at all, or it contains provisions that aim for a particular result, yet have caused or will cause unwanted consequences. Harvard's present zoning bylaw appears to have evolved as a tool for *quantitative* more than *qualitative* development control. Though the master plan goals do not anticipate major changes in the town's historic desire to limit new growth, they express qualitative desires that the zoning bylaw is poorly suited to fulfill.

Agricultural-Residential District

Since the Agricultural-Residential (AR) District contains most of Harvard's land area, it is the town's principal device to regulate land use. When paired with the dimensional requirements of the Zoning Bylaw, the AR District is not designed to produce outcomes consistent with the community vision or goals. For example, the regulations that govern development in Harvard's AR District act as a barrier

1. See also, Appendix A: Terry S. Szold for Harvard Master Plan Steering Committee, 17 October 2001.

to open space protection because they do not encourage cluster development. In addition, the regulations do not offer realistic incentives to achieve a greater diversity of homes in Harvard. Cluster and open space-subdivision design are obvious ways to accomplish that end, but accessory apartments and the conversion of single-family to multiple-residence buildings supply other avenues to develop small housing units without detracting from the single-family character of a community's housing stock. Harvard allows multiple residence conversions on a limited basis, but the land area requirements are unusually high and unlikely to be realized.

By placing 97% of its land in the AR District, Harvard set a development policy that treats all sections of town as though they are uniform. The widespread application of the AR District may reflect Harvard's long-standing disdain for differentiating neighborhoods, but it clearly reflects a preference for single-family development on large lots – and judging from the Zoning Bylaw's complex dimensional regulations, house lots that exceed the minimum 1.5-acre requirement are encouraged. The AR District works to limit overall growth and undoubtedly, that was Harvard's intent when town meeting adopted the bylaw many years ago. However, Harvard has varied landscapes, special natural and built features and significant views, none of which are recognized by regulations that apply to development the AR District. Its historic land use pattern was hardly homogenous, as evidenced by distinct differences in the developed form and architectural styles of Harvard's three villages, the prior existence of shops and saw mills scattered about town, the broad distribution of farms and orchards, and the enduring presence of many institutional uses. Today's land use pattern is more regimented, but nearly half of Harvard's housing units have been built since the town adopted zoning. The variety that does exist in more recently established neighborhoods is less an expression of the Zoning Bylaw than of Title V regulations.

If Harvard wants to achieve and maintain a balanced distribution of land uses, residents will need to reconsider the merits of a zoning policy that promotes one type of development. The solution is not to abandon the AR District because it serves a very important purpose in Harvard. Rather, adopting more flexible regulations for the AR District and applying overlay districts to special places and sensitive areas will help Harvard limit growth and also meet its goals for preservation, diversity and sustainability.

Village development

Another way that Harvard's zoning deviates from the goals of the master plan is its omission of incentives for village preservation and development. The town's three villages – the Town Center, Still River Village, and the Shaker Village – are special places in the minds of Harvard residents, yet each one pre-dates zoning and could not be replicated under present land use regulations. The lack of regulatory flexibility in Harvard raises particular concerns for the Still River area, where a considerable amount of vacant, developable land still exists. Moreover, the bylaw promotes very low-density, strip commercial development on Ayer Road north of Route 2, an outcome that is wholly antithetical to the town's master plan goals. If any section of Harvard reveals the negative (though unintended) impacts of ambiguous, overly complex and prescriptive zoning requirements, it is the Commercial (C) District.

To develop a town with a balanced distribution of land uses, attractive and walkable villages, and an economic base that generates tax revenue, Harvard must be open to zoning that encourages quality design and compact form. Issues ranging from dimensional controls to site plan regulations and design review will be essential to meeting the village development goals of the master plan. Advancements in wastewater technology will reduce some of the development barriers that have historically existed in Harvard. However, existing Title V regulations permit wastewater solutions that are denied by the Zoning Bylaw's prohibition against shared septic systems. In its present condition, the C District is a missed opportunity in Harvard. It needs both superior zoning regulations and a coordinated approach to Title V if Harvard expects to revitalize what already exists, attract new investment on Ayer Road and foster a village service area that benefits everyone in Harvard, particularly the surrounding neighborhoods.

Preservation of rural character

Harvard's community vision statement foresees a place that retains its rural character. The master plan goals shed light on what "rural character" means in Harvard: tree-lined roads, stone walls, farms and open space, villages, small neighborhoods and clean natural resources. These quality-of-life outcomes are not served by zoning policies that emphasize amount of development over form, aesthetics and safety. Performance standards, site plan approval and design review are basic features of zoning bylaws that inspire creative development, and they cannot be applied on a "one-size-fits-all" basis. Regulations that preserve and enhance the vitality of Harvard Center will not work to direct investments in mixed-use development along Ayer Road. Similarly, zoning that encourages village form and rewards open space protection in the Still River area is unlikely to be effective at arresting the homogenous pattern of large-lot development along Harvard's other rural byways. Zoning that limits the disposition choice for farms to dividing the land into large single-family house lots cannot possibly aid in the preservation of agriculture. Unless Harvard takes responsibility for its own auto-dependent growth policies, residents will continue to protest traffic that stems as much (if not more) from spread-out residential development as from non-local commuters.

Historic buildings – whether officially recognized or not yet catalogued – play a major role in defining Harvard's rural character. While many of the town's historically significant homes are quite large, Harvard retains a limited inventory of small, older single-family homes and two-family homes from the turn of the century. It also has a number of significant properties with more than one residence, e.g., a main house with a guest cottage, a carriage house or servants' quarters. The establishment of local historic districts has helped to protect the appearance of noteworthy buildings in Harvard Center and the Shaker Village, but historic buildings exist throughout town. Such techniques as demolition delay, controls to prevent "mansionization," and incentives to make historic preservation economically feasible are noticeably absent from Harvard's Zoning Bylaw.

Protection of natural resources

Harvard appears to have done quite well at protecting the purity, abundance and diversity of its natural resources. Zoning has played a role in this endeavor, but a less effective role than it could play. For example, the Zoning Bylaw helps to protect water quality by imposing a fairly generous minimum lot size on land throughout Harvard.² It also addresses water quality and scenic views through special overlay districts: the Watershed Protection and Floodplain District (W), Watershed Protection and Flood Hazard District (WFH), and the Watershed Greenspace Buffer District.³ Unfortunately, the W and WFH Districts are not clearly delineated on the Zoning Map. The lack of an accurate wetlands inventory and maps puts town boards, landowners, developers and homebuilders at a disadvantage. Applicants should always justify their proposals with wetland delineations made in the field, but protecting wetlands on a site-by-site basis is *not* planning.

In addition, the Zoning Bylaw does not offer incentives to protect wildlife habitat. A workable cluster bylaw and possibly Harvard's "mini-subdivision" regulations, though modified, could help to shelter wildlife corridors from direct and indirect development impacts. Large-lot zoning may give the illusion of open space, but it is not at all effective for protecting native plant and animal

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2. The same large-lot zoning may also result in a high volume of water consumption per capita, as is the case in most communities, but since Harvard has no public water system it is impossible to measure the relationship between development types and water use.
 3. Currently limited to a 300-foot buffer zone along the Nashua River.

communities, let alone species listed as rare, endangered or threatened. In Harvard, natural resource protection has been aided mainly by non-zoning techniques: open space acquisition, administration and enforcement of wetlands protection laws and septic system regulations, and the widespread use of differential tax assessments to preserve large tracts of forest and farmland.

Housing affordability

The development blueprint cast by Harvard's Zoning Bylaw makes no room for affordable housing, elderly housing, or housing for persons with disabilities. The lack of Multiple-Residence Districts on the Zoning Map, the endurance of rigid and unworkable rules for two- or multi-family conversions, and records assembled for the housing element of the *Harvard Town Plan* (1988) all suggest that residents have found it very difficult to address both the diversity and cost of housing in Harvard. But for two "friendly" comprehensive permits during the 1990s and the Harvard Conservation Trust's decision to rehabilitate nine apartments and make them affordable to lower-income tenants, Harvard would have no Chapter 40B housing units today.

Harvard needs to take a more assertive approach to affordable housing development and the comprehensive permit is a readily available tool for that purpose. However, the town could also adopt zoning regulations to build low-income, middle-income and elderly housing – all of which are conspicuously missing from Harvard's housing inventory. The master plan goals call for homes attractive and affordable to young adults and elders, and the community vision statement anticipates a place that is home to a broad range of incomes. Without a major overhaul of the Zoning Bylaw, Harvard cannot reach its housing goals or become the kind of community that is implied by the vision statement. The supply of affordable housing may increase as a result of future Chapter 40B developments, but if Harvard relies solely on Chapter 40B to provide affordable housing, the town's income mix will hardly be "broad." Rather, it will be restricted to two groups: lower-income households in Chapter 40B units, and affluent households in high-end market units.

Future Development Potential

An important task for any master plan is to illuminate a community's future under build-out conditions, i.e., development under the blueprint of local zoning. It is equally important, however, to anticipate *probable* build-out conditions: what a community is apt to be like in the future, given its unique history, growth trends, land and economic characteristics. Although zoning is the chief tool that cities and towns use to influence development within their borders, it is not the only factor that determines the rate, location, timing or outcomes of new growth. Moreover, a community's established areas change. When the market renders old buildings obsolete or the cost of a diminishing land supply makes redevelopment economically attractive, what exists today may serve other purposes tomorrow. Nowhere in Harvard is the uncertainty of pre-existing conditions more obvious than at Devens.

Nearly three years ago, the Montachusett Regional Planning Commission (MRPC) prepared a build-out study of Harvard for the Executive Office of Environmental Affairs (EOEA). The study was part of a statewide initiative that culminated in build-out projections for all cities and towns in the Commonwealth. MRPC drew the following conclusions about Harvard's future development potential:

- Harvard has enough developable land to support 3,203 additional housing units.
- At build-out, Harvard will be home to an additional 9,300 people, including 2,300 school students.
- The C District on Ayer Road has room for 11.8 million square feet of new commercial development.

Regional planning agencies throughout the state used the same methodology to produce build-out studies for EOE. In general, “developable land area” means the sum of vacant, unrestricted land, whether publicly or privately owned, plus excess land on “underdeveloped” parcels, i.e., the portion of a developed parcel that exceeds minimum zoning requirements, minus natural constraints such as wetlands, open water, and excessively steep slopes. MRPC used Geographic Information System (GIS) technology to identify vacant and underdeveloped land based on data derived from aerial photographs and recent development activity in Harvard. Developable land as defined by the state’s methodology was assigned to zoning districts so that the amount of new residential and business development could be estimated. The total of all developable land in each district was reduced by a factor for site development, e.g., roads, and the remainder – or net developable land – was divided by the district’s minimum lot size. In Harvard’s case, the build-out forecast assumes that all net developable land in the A-R District could be parcelized into 1.5-acre lots.

Without access to digitized assessor’s maps, it is difficult to test assumptions about the development potential of excess land on improved parcels. The master plan build-out analysis had access to both digitized assessor’s maps (ENSR, 2001) and all of the data from the state’s build-out study. As a result, the master plan estimate of Harvard’s future development potential differs from the state’s estimate because MRPC did not have a GIS data set of Harvard’s parcel maps. The outcomes include a somewhat lower residential projection and a significantly lower commercial build-out projection. Table 3-1 summarizes the master plan build-out analysis.

Comparison of master plan and MRPC build-out estimates

- Unlike MRPC’s build-out analysis, the master plan’s assumes no multi-family unit production in Harvard. Although the current zoning bylaw regulates multi-family land use, Harvard’s zoning map does not delineate the boundaries of a multi-family residential district. As a result, no land can be assigned to the MR district and development under its regulations cannot be tested. The bylaw does provide for conversion of existing buildings, but the lot area requirement is so large that for a given property, it is more economic to divide the land into single-family house lots than to restrict the number of attainable units under Harvard’s conversion rules. The master plan build-out estimate of 2,564 lots and 2,564 new units assumes that all new dwelling units will be single-family residences.⁵
- The new population estimate — that is, the population generated by future development — is lower than MRPC’s, in part because the projected housing unit count is lower. In addition, the master plan uses Harvard’s current (Census 2000) average household size of 2.86 as a population multiplier while MRPC applied the most readily available estimate from the Census Bureau (1998), or 2.93 persons/household, to both single- and multi-family units. Both estimates carry the same risk that Charles Eliot acknowledged when he included a build-out population estimate of 28,000 in Harvard’s first master plan: today’s household characteristics may not be useful indicators of tomorrow’s households.

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4. See Appendix E for description of state and master plan build-out methodologies.
 5. The number of units may increase under scenarios that include accessory apartments. However, Harvard allows accessory apartments by special permit, not as of right. It is not possible for a build-out study to forecast development outcomes that are subject to local discretion. Trends studies *can* support such forecasting, but in Harvard, a trends study would also adopt single-family home assumptions. The only new multi-family development that has occurred recently in Harvard came by way of comprehensive permits.

Table 3-1: Harvard's Estimated Future Development Potential

	Potential New Development	Existing Development	Build-Out
Developable Land Area (sq. ft.)	278,131,911		
Residential	266,021,711	133,169,170	399,190,881
Commercial	12,110,200	3,275,152	15,385,352
Developable Land Area (acres)	6,385	3,132	9,517
Total Residential Lots	2,564	1,730	4,294
Total Residential Dwelling Units	2,564	1,911	4,475
Residents	7,333	5,230	12,563
Population <18	1,769	1,588	3,357
Comm./Ind. Buildable Floor Area (sq. ft.)	1,295,791	253,449	1,646,233
Comm./Ind. Water Use (GPD)	97,184	19,009	123,467
Residential Water Use (GPD)	549,983	392,250	942,233
Municipal Solid Waste (tons)	3,762	2,683	6,445
Non-Recycled Solid Waste (tons)	2,675	1,908	4,583
Roads (miles)	58.27	64.82	123.09

Considerations

- The under-18 population multiplier of .69 is derived from local and Census 2000 data and should be interpreted as a working average, not a constant. It is important to emphasize that “under-18 population” is *not* a forecast of K-12 enrollments. First, it includes pre-school children and second, some of Harvard’s school-age children will attend private school or receive their education in an out-of-district placement, as they do today. However, the *estimated* school impact is 78.5-80% of the total under-18 population generated by new development, or about 1,390 students in grades K-12.
- These projections apply only to Residential Harvard; they do *not* include development at Devens.
- Harvard’s commercial development potential, located mainly in the C District, is significantly lower in the master plan study than in MRPC’s, but very similar to projections made by Connery Associates in 1988. The 11.8 million square feet of commercial space estimated by MRPC appears to stem from a formula error.

- Consistent with EOE's build-out methodology, the master plan assumes water consumption at 75 gallons per day (GPD) per person for residential land uses, and 75 gallons per day per 1,000 square feet of commercial space. However, the master plan analysis has adjusted commercial water consumption to reflect the revised estimate of development capacity in the C District.⁶

Map 3-A identifies areas of Harvard where underutilized and vacant, developable land appear capable of supporting future development.

Fiscal Implications of New Development in Harvard

Land use has environmental, economic, community character and fiscal implications for every city and town. Since local governments depend on the property tax as their principal source of revenue, an important task for any master plan is to evaluate the costs and revenue associated with development under current land use policies. By calling for a broader commercial tax base to achieve a sustainable future, Harvard's community vision statement explicitly recognizes the connection between zoning and municipal finance. A Cost of Community Services (COCS) study conducted for the Master Plan Update shows that in Harvard today:⁷

- Residential land uses cost slightly more for municipal and school services than they generate in revenue: \$1.06 for each \$1 in revenue. Like all communities, Harvard relies on other sources of revenue to pay for resident services, e.g., state aid and local receipts. Considering property taxes *alone*, residential land uses cost about \$1.71 per dollar of revenue. A high cost-revenue gap is not uncommon among demographically similar towns that also have no tax base diversity.
- Commercial development is a low cost generator. It is also a low *revenue* generator because Harvard's non-residential base is small and the use intensity of its commercial and industrial land is very low. For every dollar of revenue that Harvard collects from commercial and industrial development, the town spends about 28 cents on local government services. However, the total amount of non-residential development revenue is only \$402,000 -- enough to cover about 38% of the town's annual public works budget or 47% of its entire public safety budget.
- Open space (mainly Chapter 61, 61-A and 61-B properties) along with other vacant land and large "estate-lot" residences also provides more revenue than it generates in costs. For every revenue dollar collected from properties that the COCS model classifies as open space, Harvard spends about 54 cents on local government services.
- Commercial development and open space land uses provide surplus revenue even when the cost-to-revenue ratio accounts only for property taxes. They do not generate enough tax revenue to offset Harvard's residential gap.

Cost-revenue ratios such as those listed above represent an *estimate* of the fiscal impacts of land use. In Harvard, near-term demand for new or expanded school buildings, soccer fields and public safety services will most likely stress the residential \$1.06 cost-revenue ratio -- that is, the gap between the costs created by residential development and the revenue it generates will increase. State aid will not increase at the rate to which Harvard is accustomed, however, because until last year, the formulas

6. See also ENSR, *Devens Area Regional Plan*, 3-5.

7. Table 3.6 summarizes all results of the COCS analysis.

used to set education aid included the population that lived at Fort Devens when the 1990 federal census was taken. This means that as residential development continues in Harvard, growth in school costs will be absorbed to a greater degree by local taxpayers than has been the case in the past. An analysis of government spending per capita by demographically similar towns shows that while Harvard spends slightly above the median for the group as a whole, its current expenditures for public safety and health and welfare services are substantially below the norm. It spends more for public works, culture, town administration and debt service, and is at the mid-point for education costs per capita.

Composition and structure of Harvard's tax base

To a greater degree than most cities and towns in Massachusetts, Harvard relies on property taxes to finance municipal and school services. Across the Commonwealth, real and personal property taxes constitute an average of 50% of all local government revenue. The remaining 50% comes from a combination of state aid, local receipts (e.g., water charges and motor vehicle excise taxes) and sources such as free (uncommitted) cash. In Harvard, property taxes contribute more than 60% of the town's revenue, as shown in Table 3-2.⁸

Table 3-2: Harvard's Sources of Local Government Revenue (FY 2001)

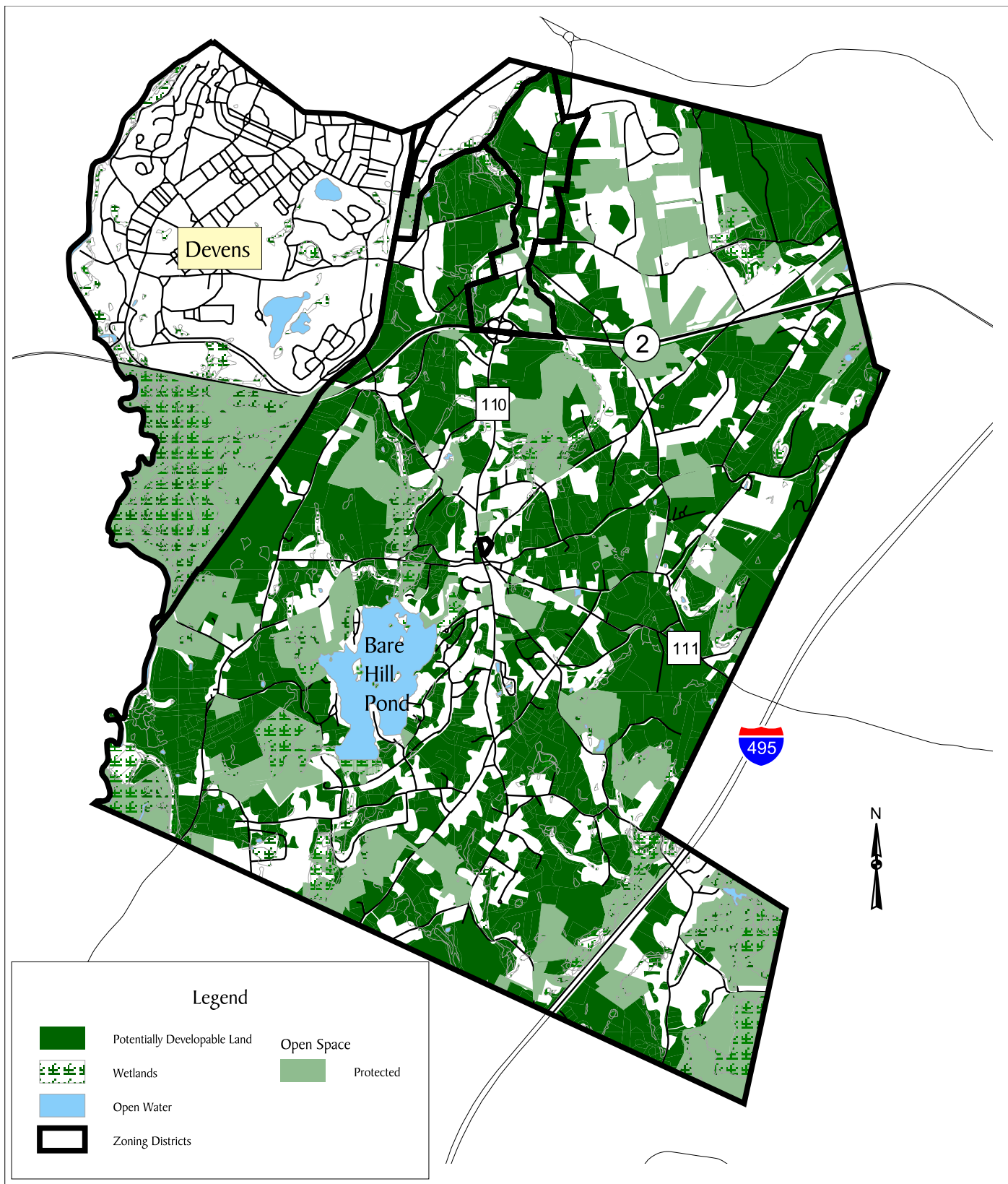
Tax Levy		State Aid		Local Receipts		Other Sources		Total
\$	9,193,388	\$	4,290,806	\$	1,152,000	\$	397,951	\$ 15,034,145
	61.15%		28.54%		7.66%		2.65%	100%

Sources: Mass. Department of Revenue, 2001; Town of Harvard Schedule A Report, FY 2001.

The tax levy as a percentage of Harvard's annual revenue has varied somewhat over time. During the 1990s, the tax levy supplied an average of 59.5% of all annual revenue; in the previous decade, it averaged 48.6%. A reversal occurred in state aid, which declined from a ten-year average of 33.29% in the 1980s to 27.96% in the 1990s. Whether these changes represent a long-term trend is not clear. The noteworthy difference between Harvard and other towns is not what it receives in state aid, however. Rather, it is the low proportion of revenue from local receipts and other non-tax sources, a condition that seems attributable to Harvard's lack of public water and sewer service.

Traditional tax assessment data such as those reported by the Massachusetts Department of Revenue (Table 3-3) describe a community's base of real and personal property in general terms. They reveal little about the structure and characteristics of the base, however: attributes that affect not only the supply and amounts of tax revenue, but also demands for local government services. In addition, assessors categorize land use under a tri-part classification system that recognizes residential, commercial and industrial uses, existing or potential. Thus, "residential property" in Table 3-3 includes all land with existing homes, vacant land zoned for residential use, and all land under Chapter 61, 61A and 61B agreements. "Commercial" and "industrial" property consists of developed and vacant commercial and industrial land. As indicators of Harvard's present and future sources of

8. All data in this section of the master plan are based on Harvard's FY01 experience, including acres of land use. FY01 was selected as the base fiscal year in order to capture the most recent record of actual expenditures and revenue. Data used for comparative purposes, i.e., to explore statewide and regional trends, reflect the most recent information available from the Massachusetts Department of Revenue (DOE) – FY00.



Data Source: MassGIS.



Harvard, Massachusetts

Potentially Developable Land

Map 3-A



Community Opportunities Group, Inc.
Boston, Massachusetts

demand for community services and its means of financing the costs of government, the data in Table 3-3 tell an incomplete story.

Table 3-3: Distribution of Assessed Values in Harvard (FY 2001)

Assessed Value Component	Assessment	% of Total	Real Property Assessments Only (FY01)	% of Total
Residential Property	582,793,400	94.8	582,793,400	96.1
Commercial Property	21,130,200	3.4	21,130,200	3.5
Industrial Property	2,685,400	0.4	2,685,400	0.4
Personal Property	7,922,300	1.3		
Total	614,531,300		606,609,000	

Source: Mass. Department of Revenue (2001).

Identifying more explicit relationships between cost and revenue generation is important for town planning, although land use choices should *never* be made solely on the basis of fiscal predictions. While fiscal impact studies explore the cost-and-revenue dimensions of land use, a community's political culture has a direct bearing on costs just as population demographics and the structure of the local economy have a direct bearing on revenues. Land use provides a consistent basis for measuring costs, but government does not serve housing units or commercial facilities. Rather, it serves *people*.

To fiscal policy analysts, the issue is not limited to how many people a community may be asked to serve in the future, but more importantly, their ages, where they live and work, their household incomes, and what they expect from local government. Each of the land use classes in Table 3.3 tends to generate demands for certain types of service, but within each class the demands vary significantly. For example, residential land uses trigger municipal service costs, but not to the same degree, and they generate different school impacts as well. Housing for the elderly or persons with severe disabilities, and single-room occupancy (SRO) units do not attract school-age children. Among residential land uses, however, housing for the elderly often demands more service from police, fire and ambulance personnel just as single-family homes demand more classrooms and soccer fields. Similar differences exist for commercial land uses: compared to a professional office complex, retail development usually costs more for public safety, namely police. The town finance-land use connection is an intricate one, and it differs across municipalities. As a result, the conclusions of a fiscal impact analysis in one town may have little validity elsewhere.

Cost of Community Services in Harvard

Whether measured in tax assessment or community planning terms, Harvard's land use pattern is not diverse, but distinctions that exist within it are important for what they suggest about sources of demand for town and school services, now and in the future. From a fiscal impact perspective, i.e., the relationship between the amount of local government revenue generated by various land uses and their associated community service costs, the salient point about Harvard is not aggregate assessed

value of residential property. Rather, it is the relative weight that *residential* (principally single-family), *open space* and *non-residential* land uses have in the overall composition of the tax base. Table 3-4 summarizes Harvard's tax base using a property classification method developed by the American Farmlands Trust.⁹

Table 3-4: Indicators of Land Use Cost-Revenue Relationships in Harvard

Class of Land Use	Acres	Assessed Value
Residential	4,814.36	532,551,200
Open Space	4,893.63	59,376,400
Commercial/Industrial	<u>145.86</u>	<u>16,397,000</u>
Total	9,853.85	608,324,600

Source: Harvard Assessor's Office (October 2001).

The American Farmland Trust model, known as Cost of Community Services, (COCS), is one of several methods that policy analysts use to predict the fiscal consequences of future growth. The COCS method requires a detailed analysis of real property assessment data in order to separate qualifying parcels of taxable open space from other land uses and to measure each use category's share of a town's total assessed value (Table 3-4). Like other fiscal impact models, COCS assumes that the proportional value of a land use is a reasonable indicator of community service costs. Accordingly, the COCS method uses a "fall-back ratio," or the proportion of residential, commercial, industrial and open space assessments in a community, to assign community service costs and certain revenues to each class of land use when more precise data are unavailable. Harvard's fall-back ratios are shown in Table 3-5 and a summary of the COCS study for Harvard, in Table 3-6.

Table 3-5: Cost of Community Services "Fall-Back" Ratios in Harvard

Fall-Back Ratio #1	Assessed Value	Proportional Share
Land Use		
Residential	532,551,200	87.54%
Open Space	59,376,400	2.70%
Commercial/Industrial	<u>16,397,000</u>	<u>9.76%</u>
Total	608,324,600	100.00%
<u>Fall-Back Ratio #2</u>	<u>Assessed Value</u>	<u>Proportional Share</u>
Land Use		
Residential	588,062,300	96.67%
Commercial-Industrial	<u>20,262,300</u>	<u>3.33%</u>
Total	608,324,600	100.00%

Source: Harvard Assessor's Office (October 2001).

9. See Southern New England Forest Consortium and Commonwealth Research Group, Inc., *Cost of Community Services in Southern New England* (September 1995). The definitions used by AFT to classify land as residential, commercial-industrial and open space appear in Appendix F.

Table 3-6: Cost of Community Services Analysis, Harvard

Fall-Back Ratio 1		87.54%	2.70%	9.76%
Fall-Back Ratio 2		96.67%	3.33%	
	FY 2001	Residential	Commercial-Industrial	Open Space
<u>Expenditure Category</u>				
General Government*	816,346	714,662	22,004	79,681
Public Safety	992,806	869,141	26,760	96,904
Public Works	1,181,551	1,034,376	31,848	115,327
Health & Human Services	68,160	59,670	1,837	6,653
Culture & Recreation	401,149	386,708	-	14,441
Schools	8,793,971	8,477,388	-	316,583
Debt Service		-	-	-
Municipal	482,144	422,088	12,996	47,060
Schools	1,092,710	1,053,372	-	39,338
Insurance & Benefits	<u>571,476</u>	<u>500,293</u>	<u>15,404</u>	<u>55,780</u>
Expenditures (All)	14,400,312	13,517,696	110,849	771,767
Other Expenditures	<u>212,802</u>	<u>205,141</u>	<u>-</u>	<u>7,661</u>
TOTAL EXPENDITURES	14,613,114	13,722,837	110,849	779,428
Total Revenues (Local/Non-Local)	14,902,928	13,046,607	401,699	1,454,622
Cost-Revenue Ratio		1.05	0.28	0.54
Ratio for Tax Levy Alone		1.71	0.45	0.87

Population & Housing

During Phase I of the master plan update, residents identified several concerns about housing and residential development in Harvard. Their concerns, summarized by the following four points, form the basis for several master plan goals:

- Lack of housing choice for elders and lower-income households.
- The impact of single-family development on Harvard's public schools.
- Escalating residential tax bills.
- The consequences of low-density residential development for Harvard's rural character.

Significantly, citizens and planners who worked on the *Comprehensive Plan* (1969) and the *Harvard Town Plan* (1988) expressed many of the same concerns. For Harvard, the barriers to sustainable housing development may be rooted as much in the town's political culture as in natural limitations to residential growth.

Housing Development

Areas suitable for higher-density and mixed-use development

Areas suitable for higher-density housing offer unique opportunities for cities and towns to create diverse housing stock and achieve the density that affordable housing development often requires. They also offer ways to check residential sprawl. Soils with moderate to severe limitations for residential development exist throughout Harvard. In the town's original *Comprehensive Plan* (1969), Charles Eliot offered a careful assessment of soil conditions in Harvard and found, not surprisingly, that most of the town is better suited for farming than for homes. However, he also noted several locations where the soils are relatively free of development constraints: Ayer Road north of Mill Road, the area just north of the Ayer Road-Route 2 interchange, a small area in northeast Harvard, land in the vicinity of Lancaster County Road to Old Mill Road and finally, north of Route 2 opposite Depot Road. Environmental and political factors apparently kept Harvard from adopting policies that would either guide development toward areas with favorable soils or away from severely development-constrained areas.

Twenty years later, citizens who worked with Connery Associates on the *Harvard Town Plan* (1988) lamented the town's failure to follow Eliot's recommendations and urged Harvard to designate locations for higher-density housing. They also promoted increasing the standard 1.5-acre lot size in areas with poorly drained soils and steep slopes, along with adopting a cluster bylaw to protect open space. Development constraints and zoning regulations that induce larger lots, e.g., the permissibility of hammerhead and backland lots at 4.5 rather than 1.5 acres, have accomplished some of the objectives residents agreed to when the last master plan was written. However, most of the objectives of the last master plan were never implemented. The lack of public water and sewer service in Harvard, coupled with zoning, have effectively limited new housing growth yet the same conditions have discouraged efficient use of land. The cluster bylaw that Harvard adopted is seemingly unworkable, for it has not attracted clustered housing or resulted in open space protection. Moreover, the town declined to take a "carrying capacity" approach to growth management, a choice that would have involved not only reducing or prohibiting development on sensitive land but also directing development to locations that can support it. As previously noted, the Zoning Bylaw contains regulations for multi-family development, but the Zoning Map does not identify any multi-family districts.

Harvard has many opportunities to cultivate a greater mix of residential use types, encourage higher-density development and promote cluster housing. The areas identified in Harvard's first master plan remain particularly suited for these purposes, though single-family development has consumed a considerable amount of the land that was available in 1969. Advancements in wastewater technology and Title V flexibility that did not exist in 1969 or 1988 will enable Harvard to facilitate a wide range of housing types if the town provides effective zoning incentives. Harvard needs to decide whether to earmark a limited number of areas for higher-density homes, leaving the balance of town to low-density single-family development, or provide zoning incentives in many areas and allow development to occur wherever it is technically feasible.

Housing & historic built assets

In the long run, Harvard's ability to retain its inventory of older homes hinges on preservation economics. Although many historic properties are concentrated in the town's villages, two of which are local historic districts, neither Harvard's history nor its historic built assets are confined to the Town Center, Shaker Village and Still River. These assets include existing homes, carriage houses

and other residential accessory buildings, and agricultural outbuildings located throughout Harvard. When the only land use choice available to landowners, developers and homebuilders is a single-family home and it becomes uneconomic to preserve or reuse an older building for this purpose, the economics of new construction will prevail over preservation, that is, the older building will be demolished and in most cases, a six-month demolition delay bylaw will not change the outcome.

By offering opportunities to redevelop historically significant properties for a use other than single-family homes, e.g., as multi-family residences or live-and-work studios for artists, Harvard may position itself to accomplish two community preservation goals: historic resource protection and housing affordability. Harvard's desire to keep elderly residents in town and provide suitable housing for persons with disabilities also argues for more regulatory flexibility. The ability to convert a five-bedroom home to two or three small housing units, with no increase in the number of bedrooms, no visible change in the building's appearance and no additional land requirements, would offer elderly residents a meaningful choice between staying in Harvard or moving to another community that provides suitable, lower-cost housing. Subject to reasonable site plan and design review standards, residential use conversions can be accomplished with no adverse impacts on the surrounding neighborhood and no additional wastewater generation.

Historic Harvard was a community of mixed housing types, mixed-use village areas and undeniably, of farms. Cultural change, zoning and market forces have produced an ideology about single-family homes that makes it impossible for most towns to save or replicate traditional patterns of development and ways of living. Harvard needs to decide whether to offer more development choices in order to achieve its affordable housing, preservation and fiscal goals. Recent trends suggest that without greater development flexibility, Harvard will not accomplish its housing goals, its tax burden will increase, and its success at preserving the architectural richness of its past will be curtailed.

Substandard and depressed-value housing

Lower-value buildings, whether small or in poor condition, may provide "market opportunities" to create affordable housing without developing more land. Not surprisingly, Harvard has very few low-value properties because the conditions that discourage investment do not exist here. The image of Harvard homes as large, valuable and well maintained is largely accurate. A majority of Harvard's housing stock was built in the past 30 years, which means that most homes in Harvard are at a very low or no risk of lead paint. Since Harvard homes command top prices in the market and the town's population is generally well-off, the right economic conditions exist to maintain and improve residential properties. If any single factor puts Harvard's housing at risk of diminished value or deterioration, it is Title V.

Some of Harvard's older homes are quite small in comparison to those built since 1970. In addition, some older residences have proven more difficult to maintain. Several years ago, the Harvard Conservation Trust acquired the "Great Elms" property on Stow Road. By making five units at the Great Elms available at below-market rents, the Harvard Conservation Trust effectively created Harvard's first affordable housing. Approximately six years ago, the Trust obtained a grant from the state's HOME Program to remove lead paint from units at the Great Elms and the Town Center's Harvard Inn. The HOME Program requires long-term rent restrictions, annual re-certifications of tenant household income and periodic inspections to ensure that HOME-assisted units continue to meet federal housing quality standards. Recently, the Nashoba Boards of Health cited the Trust for several state housing code violations at the Great Elms. The Trust addressed these deficiencies, but the Great Elms case illustrates how difficult and costly it is to develop and manage safe, sanitary housing at rents affordable to lower-income households. It also points to the possibility that substandard housing in Harvard may be more prevalent than imagined.

The average ratio of building to land value among single-family properties in Harvard is unusually low compared to many communities, .970 – that is, for every dollar of land value, the residential

improvement is worth 97 cents. Clearly, Harvard's low ratio does not indicate a pattern of distressed housing stock. Rather, it is an expression of Harvard's extremely high land values. However, about 45-50 homes in Harvard have very low building to land value ratios and 30 of them also have fair to poor condition ratings, i.e., where a low building value is not driven solely by the small size of the home or a very large tract of land. Most were built 50-60 years ago and they appear to be scattered about the town. It seems appropriate for Harvard to think strategically about the disposition of properties with a low-value building. Left unprotected, homes such as these may be razed and replaced by larger, more expensive residences. Instead, they could be acquired, rehabilitated or possibly enlarged to permit multi-family occupancy, and sold with a long-term affordability covenant to first-time homebuyers or managed as rental housing. If developed properly, they will qualify for inclusion in Harvard's Chapter 40B inventory.

Devens

Devens also provides opportunities for Harvard to provide higher-density housing. The *Devens Reuse Plan* imposes a 282-unit cap on the number of homes that can be built or restored for occupancy at Devens, and 241 of those units are to be located on Harvard soil. The advantages of promoting additional housing at Devens include the construction-readiness of land, the development and financing capacity brought by MassDevelopment, and the sustainability of development that connects places to live and work.

Harvard has not officially determined that it wants to reclaim jurisdiction over Devens land that lies within its corporate limits. If the disposition process for Devens ultimately returns land to Harvard, it makes sense for the town to encourage a variety of housing types there because the infrastructure exists to support flexible or higher-density development. Elderly housing, assisted living facilities, rental, "starter" and family homes, priced to attract a broad range of people, could be desirable for Devens and beneficial to Harvard. However, care must be taken to avoid placing a disproportionate share of Chapter 40B housing at Devens – by MassDevelopment and all of the host communities, but especially Harvard because it lacks direct access to Devens. To include Devens as a possible strategy or solution to Harvard's housing diversity and affordability needs, the town will have to address the physical barriers that exist between these two sections of the community.

Affordable Housing

Though Harvard has taken some steps to provide affordable housing, the town has made very little progress toward meeting the 10% statutory minimum under Chapter 40B. However, the affordable housing challenge for towns like Harvard is more complicated than complying with Chapter 40B. As demonstrated by the housing inventory and trends analysis in Chapter 2, Harvard homes are affordable to neither low-income nor middle-class households. Rather, they are affordable primarily to upper-income households who pay a premium to live in one of the Commonwealth's most prestigious communities. Not everyone who lives in Harvard is affluent, but given the prices that new and older homes command in the market, the town has gradually become less diverse in terms of the types of households it attracts and the relative wealth of its population. Indeed, Harvard's affordable housing needs are complicated. They go beyond what the term "affordable housing" usually connotes, i.e., low-income housing. In fact, "affordable housing" and "low- and moderate-income housing" have different meanings that must be understood in order to discuss Harvard's housing needs coherently.

Chapter 40B provides for comprehensive permits to develop affordable *low- and moderate-income* housing units. For homes to qualify as Chapter 40B units, they must be restricted for occupancy by low-income persons for an extended period of time. Although Chapter 40B units can be developed without a comprehensive permit, in most cases a comprehensive permit is necessary because local zoning makes it uneconomic to create low-cost homes. The usual zoning barrier is density. Under Chapter 40B, affordable housing needs are said to exist when less than 10% of a community's

year-round housing units are low- and moderate-income units. Only 27 communities in Massachusetts meet or exceed the 10% threshold.

A more recent state initiative, Executive Order 418, defines affordable housing as units affordable to homeowners earning up to 150% of median income, and renters earning up to 100% of median income. Unlike Chapter 40B, which addresses housing for low-income people, E.O. 418 focuses on housing for the middle class.¹⁰ Under E.O. 418, affordable housing needs are said to exist when most of a community's new homes cost more than what a household earning 150% of median family income could afford to pay. There is no statutory mechanism like a comprehensive permit to compel the production of middle-class housing, although a Chapter 40B development may include market and below-market housing units. In Harvard, a new home valued at \$375,123 or a new apartment with a monthly rent equal to or less than \$1,855 would qualify as an E.O. 418 housing unit.¹¹

Policy analysts look at housing needs and affordability in terms similar to those used by Chapter 40B and E.O. 418, but measuring housing need is more difficult than state formulas suggest. In economically connected areas, the incidence and distribution of housing cost burden across income, age and type-of-household groups are more important

What is “affordable housing”?

- “Affordable housing” means housing units for which the occupants pay no more than 30% of their monthly gross income for housing costs: principal, interest, insurance and taxes for homeowners, or rent and utilities by tenants. In short, affordable housing is a cost-to-income standard. A household that pays more than 30% of its monthly gross income on housing costs is considered housing cost burdened.
- “Low- and moderate-income housing” means homes affordable to households with incomes at or below 80% of the median family income for the region in which they live. Each year, the federal government sets housing assistance program income limits against the estimated median family income for all metropolitan and non-metro county areas in the country. “Low and moderate” income usually refers to 80%, and “very low income” to 50%, of median family income. According to current federal guidelines, a family of four with an annual income of \$58,300 or less meets today’s definition of a low- or moderate-income household in Harvard and the surrounding region. These income guidelines are adjusted annually.

10. In a review of “external pressures” to increase the supply of affordable housing in Harvard, authors of the *Harvard Town Plan* identified comprehensive permits under Chapter 40B and a now-forgotten executive order, E.O. 215. Signed by former Governor Edward King, E.O. 215 directed state agencies to withhold grants from communities with zoning and other development controls that “unreasonably restrict new housing growth.” Since E.O. 215 had the potential to constrain executive-branch autonomy in the award of state grants, it was among the first housing policies to be abandoned when former Governor William F. Weld took office in 1991. Moreover, Chapter 40B came under fierce attack by the legislature and local officials at the beginning of Weld’s administration. For several years thereafter, state government de-emphasized affordable housing and aggressively promoted economic development. When the state’s affordable housing shortage was finally recognized as a barrier to economic growth, former Governor A. Paul Cellucci, Jr., attributed the problem to zoning and other local regulations. He called on communities to streamline their development rules and created incentives to do so through E.O. 418.
11. DHCD, “Instructions for Completing EO 418 FY2003 Request for Housing Certification,” Attachment B, 15.

considerations than whether a city or town has achieved the 10% standard under Chapter 40B. Another issue that policy analysts consider is the duration of affordability for homes classified as low- and moderate-income or, in the language of some housing programs, “below-market” housing units. A third issue is whether housing suitable for various population groups is available to meet their needs, e.g., units suitable for elderly or disabled persons. The fit between employment base, wages, labor and housing supply within a given market area also raise critically important economic policy questions. Finally, many of the conditions that drive up the cost of housing correlate with non-sustainable development: growth that wastes land, stresses water resources and creates traffic-dependent communities. The Community Preservation Act (CPA) explicitly recognizes these conditions as threats to the environmental quality and social fabric of cities and towns.

Chapter 40B and state housing policy

Ever since the legislature enacted Chapter 40B in 1969, communities have struggled to reconcile local planning goals with state policy to remove barriers to low- and moderate-income housing development. The law has remained controversial throughout its 32-year history. Its two key provisions are designed to expand the supply and geographic availability of low-income housing throughout the Commonwealth. First, Chapter 40B establishes a streamlined permitting procedure (the so-called comprehensive permit) and empowers Zoning Boards of Appeal to waive zoning requirements that impede the feasibility of a low- and moderate-income housing proposal. Second, developers aggrieved by either the denial of a permit or conditions tied to an approved permit may appeal to the state’s Housing Appeals Committee (HAC) if their project involves a community where low- and moderate-income housing constitutes less than 10% of the total housing stock. Since Chapter 40B does not impose a mandate on communities to sponsor or cause the development of low-income units, subsidized housing is essentially market-driven. This helps to explain the state’s uneven distribution of low- and moderate-income housing, for while 27 cities and towns exceed the 10% threshold, 45 communities have no low-income housing at all. Developers decide where to build and naturally, they build where they believe a marketable project is feasible. That Chapter 40B subordinates local zoning to the state’s interest in housing affordability often angers local officials and neighborhood residents.

Chapter 40B creates opportunities to develop both low-income and below-market housing. It also creates opportunities for town boards and developers to negotiate, to make efficient use of land and diversify a community’s housing stock. As long as 25% of the housing units in a comprehensive permit development are affordable to low- and moderate-income households, the remaining units can be priced to house other income groups. In a homeownership project, however, only the low- and moderate-income units count toward a community’s Chapter 40B inventory. Sometimes this feature of the state’s regulations entices communities to seek a higher percentage of low-income units, yet in other cases communities strive to keep the percentage of low-income units at the minimum because they want mixed-income housing. For a rental development that qualifies under Chapter 40B, *all* of the units are added to a community’s inventory, including those priced at market and below-market levels.

Despite Chapter 40B’s advantages, it still acts as a liability more than an asset in many towns. Last year, DHCD adopted new regulations to address some of the problems identified by local officials, e.g., threats from developers who say they will seek a comprehensive permit if town boards deny their proposal to develop land for some other use. Communities also have more protection today from very large development proposals. As long as they make annual progress toward achieving the 10% standard, they may be able to deny additional comprehensive permits. More recent changes to the state’s Chapter 40B regulations allow accessory apartments, low-income units developed with CPA revenue, and group homes for persons with disabilities to be included in a municipality’s Chapter 40B inventory. The expansion of what “counts” as a low-income housing unit has occurred against the backdrop of fierce attacks on Chapter 40B from suburban officials and their legislators.

The importance of local housing policy

The same regulations that expand the definition of a low-income housing unit also encourage cities and towns to use their comprehensive plans or master plans as a vehicle to create affordable housing. Harvard has benefited from local activism to increase the supply of low-income housing, notably through the efforts of its Housing Partnership Committee and the Harvard Conservation Trust (HCT). However, Harvard does not have any agreed-upon strategies to develop affordable housing, in part because it lacks a coherent and sustainable housing policy.

By using federal funds to rehabilitate older housing units, HCT developed nine units of low-income and below-market rental housing in Harvard. Earlier this year, however, the cost of lead paint compliance at the Great Elms reportedly led HCT members to question whether their organization has the capacity to develop and manage affordable rental housing. Harvard also has a local housing authority, which voters established pursuant to the *Harvard Town Plan* (1988). However, the housing authority never developed any low-income units, in part because public housing funds all but disappeared not long after the authority was created. Harvard's experience with comprehensive permits seems to have been positive so far: small developments that are compatible with the character of the town. Despite noble efforts by HCT and the Housing Partnership Committee, Harvard's Chapter 40B inventory includes only 41 units of low-income housing – or 54, if DHCD includes the affordable units built at Harvard Hills under Phase I of the *Devens Reuse Plan*.

Harvard needs an affordable housing strategy, but it also needs to think about housing policy in broader terms. Some communities believe that if less than 10% of their year-round housing stock consists of low-income units, they do not have enough affordable housing. Communities with subsidized housing that exceeds 10% believe they have too much, or more than their fair share. The widespread perception that 10% defines affordable housing need stems from a misreading of Chapter 40B and regrettably, it leads to local housing plans that some towns will never be able to implement. To put the 10% rule in perspective, 9.16% of the Boston metropolitan area's year-round homes are low- and moderate-income housing units. These 124,140 units (including Harvard's 41) constitute 58% of the state's entire Chapter 40B inventory. Despite the size of the region's low-income housing portfolio, 24% of its homeowners and 37% of its renters are housing cost burdened today.

From the perspective of local governments, reaching 10% is important because doing so protects against unfriendly comprehensive permits. However, focusing on the 10% rule implies that housing needs are limited to low- and moderate-income people. It also assumes that if every community achieved 10%, the Commonwealth's housing needs would be met, yet Census 2000 data show that at least 32% of all households in the Boston metropolitan area alone qualified as low- and moderate-income.

Affordability gap

Harvard's need for housing affordable to low-income persons is evident in recent federal census data, which suggest that at least 205 households (11.3%) in town met the definition of low-income under income limits set by HUD for calendar year (CY) 2000. There are other indicators of need, however. First, nearly 20% of the town's population is over 55 and 16.5% of its households have at least one family member over 65, yet the town provides only 24 units of elderly housing and all of it is restricted to low-income persons. Nearly 340 Harvard residents depend in part on Social Security or other retirement sources of income, and of the town's over-65 population (451 people), more than 30 lived below poverty when the census was taken in April 2000. Twenty-three percent of Harvard's elderly population has a disability. The existing elderly housing inventory is not large enough to provide choice to lower-income elderly residents. In addition, by limiting the elderly housing inventory to low-income units, Harvard offers no choice to seniors whose incomes exceed federal guidelines.

Second, despite the significantly greater incidence of wealth in Harvard than in the state as a whole, the percentage of Harvard homeowners paying more than 30% of their income on housing (21.3%) is very close to the statewide average (22.7%) and slightly exceeds that of Worcester County (21%). Harvard's high incomes do not necessarily mean that residents can afford to live in the town. A household with earnings equal to the Census 2000 median household income for Harvard, or \$107,934, could afford to buy a home priced at about \$309,000. However, the median single-family home sale price in CY 2000 was \$410,500.

Harvard's housing stock consists almost exclusively of large, quite expensive single-family homes. It is not surprising that the town attracts affluent households, many with school-age children. Clearly, however, Harvard lacks housing types that attract and are suitable for a mix of households and people. It also lacks housing affordable to people who work in the community: not only employees of the town and school department, but also of local establishments. Its lure to highly educated, wealthy families with children owes directly to the composition, size and price of its housing stock. Harvard gains from having a population that demands and is willing to pay for one of the state's finest public school systems. People move to Harvard expecting more than educational excellence, however. They expect the town's rural ambience to endure, they want privacy, and they want the social advantages of living in small town. It stands to reason that many Harvard residents want to keep their town small. Zoning, naturally occurring development constraints, the market and Harvard's location have spawned a definition of "small" that favors single-family residences on large house lots. By controlling the absolute number of homes built in Harvard, townspeople have hoped to restrict the population as well.

Fiscal Implications

Harvard's residential growth trends raise important questions about the town's fiscal future. The escalating cost to live in Harvard involves two key barriers: housing prices and real estate taxes. It costs the town about \$8,420 per year to provide municipal and school services to its overall base of single-family homes, and considerably less to serve residents living in other types of housing. This applies to not only elderly persons in a development such as Foxglove Apartments, but also the generally smaller households that live in Harvard's sparse inventory of rental units and condominiums. Undeniably, single-family homes with no school-age children and very high-end homes, with or without children, bring surplus revenue to the town. At the same time, many single-family homes cost the town more than \$8,420 per year because they are the prime generators of education costs.

To the extent that single-family housing remains the home of choice for families, Harvard must consider the implications of perpetuating single-family development for near- and long-term demands on local government expenditures. The town may (and should) sponsor or approve more affordable low-income housing units. Its existing Chapter 40B shortfall is approximately 140 units, and the town should aim to provide at least 5% of its housing base for occupancy by elders who need alternatives to single-family homes. However, if Harvard does not address the larger relationship between housing stock and household composition, the annual cost of real estate taxes will further erode the buying power of moderate- and middle-income families. It will also induce single-family home sales by the childless couples, one-person households, empty-nesters and elderly residents who effectively subsidize the cost of government in Harvard. The "housing gap" in Harvard has two dimensions: cost and diversity. Both are tied inextricably to land use, for Harvard's gradual increase in residential land consumption per capita is an indicator of conditions described elsewhere in the master plan, e.g. larger lot sizes and the changing scale and character of Harvard's built environment. Harvard is a beautiful community, but growth consistent with recent trends is not sustainable on resource consumption, social or fiscal grounds.

Harvard's Economy

Economic development refers to the business and industrial base of a city or town: establishments that provide jobs, goods and services in the community. Some municipalities see economic development as an asset that brings local employment and tax revenue, yet others see it as a threat to town character. Harvard residents appear to want more opportunities to shop in town, but they are loath to endorse changes that may “commercialize” the town’s appearance or attract unwanted traffic. Viewed in their entirety, the master plan goals argue for an approach to economic development that focuses on two issues: the role that village development can play to strengthen Harvard’s tax base and preserve rural character, and the retention of agriculture as a component of the local economy.

Ayer Road Commercial District

That Harvard’s employment base is neither large nor composed of high-paying jobs is hardly surprising. The employment profile described in Chapter 2 is consistent with local actions to contain economic growth, for townspeople have historically resisted commercial and industrial development in Harvard. Two years before completion of the *Harvard Town Plan*, town meeting endorsed a citizen petition article to eliminate a 100-acre industrial district along the railroad right-of-way adjacent to Fort Devens.¹² In addition, while preparing the *Town Plan*, Connery Associates found that under then-existing regulations, Harvard could absorb another 3.5 million square feet of non-residential development, mainly in the C District on Ayer Road. The Planning Board quickly sponsored a town meeting article to reduce the zoning bylaw’s floor-to-area ratio (FAR) from .25 to no more than the greater of .10 or 8,000 square feet per lot.¹³

By capping the C District’s development potential, the town effectively limited the value of its commercial land and the diversity and adaptability of its economic base. One consequence of Harvard’s approach to economic development is a low fiscal return from commercial land uses. In FY 2001, the revenue surplus generated by business properties in Harvard was a modest \$247,744. Commercial real estate in Harvard is not under-assessed. Rather, the limited amount of revenue available from commercial land use parallels the limited amount of development allowed by Harvard zoning.

A second, more important consequence is that existing C District regulations essentially freeze the “strip development” character of Ayer Road. Writing down the development potential of land in Harvard’s only commercial zone impedes, and may fully obstruct, the district’s capacity to attract future investment. To the detriment of nearby residential neighborhoods and homes located along Ayer Road, the visual and operational character of Harvard’s C District differs significantly from other parts of town. The very limited complement of businesses located there cannot meet resident needs for goods and services, which means that Harvard not only transfers its own residents’ spending power to nearby communities but also generates considerably greater traffic than necessary or desirable for the kind of community that residents say they want Harvard to be: small, rural, diverse, and sustainable.

The C District could support more business activity in ways that improve traffic flow and public safety while also enhancing the quality of life for those who live on or near Ayer Road. Design standards and development incentives that encourage a village land use pattern – a place that invites people to live, work, shop, walk and invest in their community – seem essential for Harvard’s

12. Special Town Meeting, January 1986.

13. Annual Town Meeting, March 1987 (Article 72).

well-being, yet the strategies required to accomplish these ends may seem counter-intuitive to a town where zoning policy has traditionally been more protective than directive about development.

A third consequence of curtailing development in the C District is that Harvard offers few employment opportunities to its own residents. Except perhaps for self-employed professionals, most residents could not afford to live in Harvard on the wages paid by local establishments. In addition to a housing affordability gap, Harvard apparently has a wage gap. Table 3-7 presents ratios of local to state weekly wages paid last year by private-sector establishments in Harvard. The ratios show that in Harvard, employees in seven industrial sectors earn weekly wages that exceed the state average (meaning wages that exceed 100%), but wages paid to employees in the remaining 29 sectors fall below the state average. Very low ratios in some categories probably reflect a disproportionate amount of part-time employment.

Table 3-7: Ratio of Harvard Wages to Statewide Wages by Type of Employment			
Category of Employment	Wage Ratio	Category of Employment	Wage Ratio
Educational Services	303.70	Wholesale Trade-Nondurable Goods	79.50
Private Households	151.61	Engineering & Management Services	74.70
Business Services	136.76	Museums, Botanical, Zoological Gardens	74.09
General Building Contractors	112.42	Personal Services	71.35
Communications	107.99	Insurance Agents, Brokers, & Service	70.49
Heavy Construction, Ex. Building	105.35	Local And Interurban Passenger Transit	69.70
Miscellaneous Manufacturing Industries	91.09	Agricultural Services	64.62
Miscellaneous Retail	86.21	Special Trade Contractors	56.55
Health Services	85.69	Chemicals And Allied Products	53.12
Auto Repair, Services, And Parking	81.02	Depository Institutions	37.28
Electronic & Other Electric Equipment	79.99	Real Estate	36.07
Amusement & Recreation Services	79.65	Printing And Publishing	30.42
Agricultural Production-Crops	79.50	Security And Commodity Brokers	29.53
Source: Mass. Department of Employment and Training, 2001.			

Agricultural Businesses

Putting Harvard's farms in context

Agriculture is far more prominent in the state's economy than many people realize. In 1998, agricultural cash receipts totaled \$459 million in Massachusetts and the state ranks eighth in the nation for the value of fruit production: more than \$148 million annually. The economic effects of agriculture are impressive when measured by the downstream effects of the products generated on Massachusetts land. Statewide, farmers spend nearly \$212 million on farm "inputs" such as feed, seed, livestock, fertilizer, electricity and fuel. Farming itself employs about 21,583 people in the Commonwealth, only 0.7 percent of the state's total employment, but the state's food processing industry generates about \$2 billion in revenue annually and employs nearly 19,000 workers.¹⁴ Four years ago, agricultural exports from Massachusetts totaled \$300 million and supported 3,600 jobs. In addition, Massachusetts-based agriculture generates \$21 million in income tax revenue, and the entire food industry – farms, food processing, grocery stores, restaurants, and agricultural suppliers – generates \$283 million in income tax revenue. Including farm support services, it is estimated that agriculture generates in excess of \$1 billion annually within the Bay State.

Worcester County farms sold nearly \$58 million worth of agricultural products in 1997, or 13 percent of the state's total. In fact, Worcester County ranks fourth among all counties in the U.S. for the value of direct sales of agricultural products to consumers: nearly \$5 million, or 25 percent of the state's total. For apple production, Worcester County ranks 47th among all U.S. counties. There are 1,825 workers employed on 271 farms in Worcester County, and 676 worked on farms 150 days or more during the year.¹⁵ According to the most recent Agricultural Census (1997), the average Worcester County farmer is 56 years old and has operated a farm for 22 years. The principal operators of 178 farms and 10,278 acres in Worcester County are women.¹⁶ Moreover, the County's farm establishments paid more than \$9 million in wages to workers in 1997. In short, agriculture remains a major economic force in Worcester County.

Over the past 30 years, global and nationwide agricultural competition has caused profound shifts in the revenue base of Massachusetts farms, from wholesale production to a mix that emphasizes local retail sales through farm stands and cooperatives. Massachusetts ranks second nationally in value of average direct market sales per farm, or \$16,000 per farm. Moreover, Massachusetts leads New England for direct sales of farm products to consumers. At \$20 million in direct sales, Massachusetts farmers were responsible for 35 percent of New England's total.¹⁷ Massachusetts ranks seventh nationally in total value of direct sales, following California, Pennsylvania, New York, Michigan, Ohio, and Wisconsin, respectively.

The gradual shift away from wholesale production has led to a renewed emphasis on small, family-owned farms, which often are not large enough to provide a family's sole source of income. More than 80% of Massachusetts farms are family-owned ventures, and over 93% qualify as "small farms" as defined by the U.S. Department of Agriculture (USDA), meaning sales below \$250,000.

14. Holm, et al., *Agriculture's Hold on the Commonwealth* (University of Massachusetts Donahue Institute, 2000), 1.
15. Massachusetts Department of Food & Agriculture, < profile_worcester.htm >.
16. USDA, National Agriculture Statistics Service, 1997 Census of Agriculture, County Data, 153.
17. Massachusetts Department of Food & Agriculture, <<http://www.massdfa.org/funding/apr/savingfarmland.htm>>

Seventy-six percent of the state's farms report sales under \$50,000/year. Many Massachusetts farmers now hold full-time, non-farm jobs while continuing to work their farms on the side. Between 1974-1997, the percentage of farm operators for whom farming is not a primary occupation increased from 39-47%. Massachusetts farms are generally small: 73% have less than 99 acres of land, but they are quite productive. At \$6,450 per acre, Massachusetts ranks fourth in the nation for farmland value. The state also ranks fourth for net farm income per acre at \$327.¹⁸

Agriculture continues to be a significant component of the Commonwealth's overall land area, though it has decreased in the past half-century. In 1945, Massachusetts had more than two million acres of land in agricultural use. Today, however, the state's 6,200 farms occupy a combined total of 600,000 acres of land, which means that Massachusetts has lost an average of 40,000 acres per year since 1945. Across the Commonwealth, farm acreage declined by about 14 percent from 1974-1997. Worcester County lost the most agricultural land during this period.¹⁹ Its present base of 103,400 acres – about 20% of the state's total – is distributed among 984 farms, placing Worcester County ahead of all other counties in Massachusetts for both total amount of farmland and number of active farms. As of 1997, there were 431 orchards in Massachusetts with combined holdings of 6,546 acres. Not surprisingly, Worcester County tops the state: 114 orchards and 2,838 acres.²⁰

Preserving farms

Massachusetts farms and orchards face a number of challenges, and Harvard's are no exception. Keeping farms profitable in a more competitive global market is one issue, but it is not the only factor that affects agriculture in New England. The expansion of urban areas requires land, which in turn creates pressure on local farmers to sell or develop their property. In addition, hardships created by crop failure, a decline in sales from changing trends in food consumption, and higher property tax bills conspire against farms, especially small farms.²¹ These and other forces make it difficult for individual property owners to retain productive agricultural land.

Farms and orchard owners in Harvard report that at times, the town has resisted attempts to diversify farm store operations with bakery or dining services. The need of farmers to make a living by promoting the retail end of their business often runs counter to the public's disdain for "commercial" development. Although the desire to prevent "commercialization" is hardly unique to Harvard, the town's base of farms, the historic importance of farming to the local economy, and the defining impact of agricultural landscapes on Harvard's identity *are* unique. In many communities, the general public sees agriculture as an open space issue, but to the owners of farmland, agriculture is an economic issue. Local government and farms in Harvard face the same challenges as their counterparts throughout the state: a more competitive global marketplace that makes profitability difficult even under the best of circumstances, and an aging population of farmers with few or no successors to take over for them.

If Harvard wants to preserve its agricultural heritage, local officials and residents must be open to strategies that encourage economically viable farms – above and beyond preserving farmland as open

18. USDA, National Agriculture Statistics Service, 1997 Census of Agriculture, State Data, 6.

19. Holm, *Agriculture's Hold on the Commonwealth*, 3.

20. USDA, National Agriculture Statistics Service, 1997 Census of Agriculture, County Data, 153.

21. Massachusetts Department of Revenue, "Preserving Massachusetts Farms," *City & Town* Vol. 10, No. 2 (February 1997), 1.

space. Acquiring development rights, as Harvard has already done with Agricultural Preservation Restrictions (APR's), sponsoring farmer's markets and encouraging local farm stores will be essential ingredients of any plan to save the town's farms and orchards.

Natural and Cultural Resources

Natural and cultural resources contribute indelibly to the meaning of "rural character" in Harvard. Preserving them is intertwined with protective land use policies. Understanding that buildings are not isolated objects but interpreted within their cultural settings, Harvard wants to preserve not only its significant buildings but also their surroundings, or historical context. Contextual settings may include historic landscapes as well as ancillary features such as barns, sheds and stone walls. These historic elements are an important part of the extant fabric of Harvard and warrant protection. In addition, the community recognizes that view sheds, scenic vistas and visual corridors, which may be part of a specific historic or natural setting, are as important as elements of the built environment and also merit protection.

To accomplish its community vision and goals, Harvard needs strategies to address near-term and incipient risks, a commitment of resources to protect irreplaceable assets, and adequate local capacity. Toward these ends, the master plan update focuses on three issues: the Town Center, Bare Hill Pond, and increased protection for Harvard's historically significant properties, notably in Still River Village.

Town Center

The Town Center, an assemblage of historic buildings surrounding two common areas, is the visual heart of Harvard and one of the town's most significant assets. It is also among Harvard's most challenging preservation issues. Harvard wants to "ensure a vibrant town center by maintaining a balance of residential, commercial, municipal and institutional uses," yet local policies seemingly run counter to this important master plan goal. Wastewater disposal, zoning and parking collectively limit the Town Center's flexibility to adapt to growth and change in Harvard.

Harvard Center properties depend on individual septic systems. Many of them are or may be substandard under current Title V (Massachusetts Environmental Code) regulations. Echoing the sentiments of many residents, the Town Center Septic Committee and the Town Center Planning Committee visualize Harvard Center as "a vibrant, active part of community life," and a "living and dynamic" civic center. By recognizing that Harvard Center is "not a frozen, historical remnant," the Town Center Septic Committee has implicitly identified the community's responsibility and desire to balance contemporary (and future) uses with preserving the center's historic character. When buildings outgrow their current uses and need to be reprogrammed, the choices available to private, public and non-profit institutional property owners will be limited in part by the feasibility of bringing existing septic systems into compliance with Title V and local Board of Health requirements.

The lack of a district-wide wastewater plan affects all of the Town Center and is closely tied to the preservation and reuse of significant historic properties, including the Public Library, the Hildreth House and the Unitarian Universalist and Congregational Churches. For example, Harvard wants to relocate the library to Old Bromfield in the next three to four years. The State Board of Library Commissioners has committed \$2.5 million to renovate Old Bromfield and construct an addition. The town and library trustees have pledged to provide \$3.5 million, the estimated amount necessary to complete the project. Disposition and reuse of the existing library must account for its septic system limitations. A new use that generates the same amount of wastewater (or less) than the library may also be one that meets the town's needs and is appropriate for the building. It is equally possible that a use desired by the town will be rendered infeasible by Title V requirements. However, wastewater disposal should not be the factor that determines how this and other properties in the

Town Center are used or reused. Use regulation is the province of zoning, not of Title V or other codes.

Harvard residents speak of their Town Center as a place with generally understood boundaries and recognized landmarks, e.g., the commons, the library, churches and schools. Although thought of and described as a district, the Town Center has not been *planned* as a district. It lacks not only wastewater disposal capacity, which is key to sustaining a mix of land uses, but also relevant zoning. Its existing businesses, housing mix, and many of its single-family homes are non-conforming under current regulations of the Harvard Zoning Bylaw. Both the *Comprehensive Plan* (1969) and the *Harvard Town Plan* (1988) advised Harvard to revisit zoning in the Town Center — and for that matter, in the “B” District — but the town did not implement these recommendations. The *Harvard Town Plan* acknowledged the reluctance of residents to change the status quo, and possibly they are still reluctant today. However, when residents gathered in 2001 for “Phase I” meetings to discuss Harvard’s future, they spoke of Town Center outcomes that the status quo is more likely to impede than support:

- Make the Town Center pedestrian-oriented.
- Serve local needs for shopping and cultural activities.
- Identify alternative septic options for the Center.
- Decide on potential change in use for all buildings in the Center.
- Address the old Post Office²²
- Decide the future use(s) of the Library and its impact on other public buildings.
- Address parking, pedestrian and bicycle access in Town Center
- Maintain the tree canopy and develop a landscape plan for the Town Center
- Create a mixed-use village: provide services, amenities and gathering places.

Harvard’s ability to accomplish these objectives will depend on a unified approach to three district-level challenges: wastewater management, land use, and community services. The latter includes schools, municipal buildings, and notably, parking. Since 1988, the Town Center has seen virtually no increase in on- or off-street parking, but in the same period Harvard has grown by approximately 249 homes. Housing and population growth affect the Town Center regardless of where new development occurs. Most residents use the library and Town Hall, and about 40% of Harvard’s households have children in the Harvard Public Schools. Moreover, as population growth continues, the town’s churches will be pressed to serve larger congregations. For churches in the Town Center, two types of space requirements may become very difficult to address in their present locations: building space, which is constrained by septic systems that are already at or near capacity, and parking. Harvard has begun to explore parking and pedestrian access opportunities associated

22. This property has since been occupied by a dry cleaning shop.

with the expansion of Bromfield School and the library's relocation to Old Bromfield (see Fig. 3-A). A comparable approach to the entire Town Center seems critical.

The Hildreth House, located on a rocky knoll above Town Hall, is part of the "spirit" of the common since the property is not visible from the center today, although it could be. Despite its inclusion in the Harvard Center National Register District, the Hildreth House is not within the boundaries of the local historic district. Historically, the 5.66-acre site was renowned for its landscapes and gardens. Owned by the town and used by the Council on Aging and other municipal groups, the 2-1/2 story, c. 1900 Shingle-style building is fundamentally sound but it needs new heating and electrical systems, general restoration work and landscape preservation. The future use of Hildreth House will depend on the Town's space needs, the condition of the building and grounds, wastewater disposal, and the financial feasibility of restoring/preserving the site. The Finance Committee projects that in FY04, Harvard could appropriate \$150,000 for restoration of the Hildreth House. The town recently received a \$10,000 grant from DEM to develop a Historic Landscape Preservation Master Plan. The Friends of Hildreth House hope to concentrate their near-term efforts on clearing part of the site that obstructs views to the common. Ultimately, the Friends envision the Hildreth House and grounds as an extension of the common with shaded walkways, open vistas and seating areas. The Hildreth House could make an important contribution to the Town Center's visual character and mix of community services. It should be incorporated within a larger plan for the entire area.

The Town Center is critical to Harvard's identity, rural character and sense of community. It is a special place and as such, the Town Center requires special considerations in order to assure its continued vitality. Harvard needs a district plan that integrates land use, architectural and urban design, environmental management and transportation opportunities in the Town Center. Existing policies are not adequate to inspire and sustain a vibrant, mixed-use village. A wastewater collection and disposal system, village center zoning that supports the Town Center's historic development pattern, public realm improvements, and resolution of enduring tensions over future public school sites in Harvard will be necessary elements of a successful plan. Regardless of whether these elements are carried out incrementally, they should be planned comprehensively.

Bare Hill Pond

Water is one of Harvard's most critical growth management issues. The quality and adequacy of groundwater, water consumption, and non-point pollution risks to Harvard's ponds, streams and associated wetlands are inextricably affected by land use decisions. Townspeople worry that Bare Hill Pond is particularly at risk from over-development within the watershed.

Local records suggest that Harvard has worked very hard to protect and maintain the pond. The town has a committed corps of volunteers participating in water quality monitoring and weed control, it has appropriated funds and secured grants to study water quality and identify pollutant sources, and it has adopted zoning bylaws that limit development in critical wetland areas within the watershed. In addition, Harvard's Board of Health and Conservation Commission apply and enforce not only state laws but also local bylaws and regulations. Finally, both the town and the Harvard Conservation Trust have acquired land around Bare Hill Pond. Although Harvard does not have a comprehensive management strategy for Bare Hill Pond, many of the component parts are in place. Harvard's lack of a watershed management plan appears to stem from at least three factors:

- Cost – in terms of data, analysis, planning, and implementation.
- An altogether common problem in very small towns: coordination among various town boards, commissions and other groups that share planning, regulatory and management responsibilities, i.e., there is no single entity with jurisdiction over all activities that affect the pond.
- Weak or conflicting state policies.

Water quality at Bare Hill Pond is affected in part by development that occurs within its 3.5 square mile watershed. Since virtually all of the development is residential or agricultural land use, septic systems, farming and forest management practices need to be examined as collective forces operating across the watershed. The likelihood that existing septic systems are primary sponsors of nutrients reaching the pond seems strong, given available water quality data and the conclusions of past modeling studies (Whitman and Howard, 1987; ENSR, 1998; DEP, 1999). Historical forces have also contributed to making the shallow flats of Bare Hill Pond vulnerable to nuisance aquatic plant growth today. It is important to clarify and prioritize risk conditions so that local policies work compatibly and effectively to reduce phosphorous loading throughout the watershed.

Historic Preservation

Harvard has several historic preservation needs that must be addressed in order to implement the goals of the master plan update. They include protective regulations and policies for Still River Village, maintenance and management of historic resources, and additional district and property nominations to the National Register of Historic Places.

Still River Village/Prospect Hill

Still River Village extends nearly a mile along Still River Road. Surrounded by grassy, open fields, the village has been surveyed but only one building, the Still River Baptist Church (now home of the Harvard Historical Society), is listed on the National Register of Historic Places. At public forums and community meetings held for the master plan update, residents said they want to preserve the historical character of the Still River Village area. Unlike the Town Center, Still River is not protected by a local historic district designation. The lack of protective regulations for Still River Village makes its buildings vulnerable to alterations that may compromise the overall historic integrity of the area. Moreover, Fruitlands will remain vulnerable until permanent protection mechanisms are put in place – by the town, or the town in concert with other organizations.

Public advocacy is critical to preserving the town's architectural and historical character. Possibly, there has been insufficient information or public education about the importance of Harvard's cultural assets. The historic, largely unaltered character of Still River Village is at risk without preservation incentives and a local historic district. Significantly, residents of Still River opposed establishing a local historic district for the village during the 1970s. A concerted effort by Harvard's preservation community to inform and educate residents and officials about the importance of historic resources may avert potential threats to treasures such as Still River Village, and help create safeguards to ensure their protection. At the same time, Harvard's planning community can help to assure that new development respects and enhances the character of the Still River area. A village-center overlay district with appropriate site plan and design controls, a workable provision for residential cluster development, and incentives to preserve historic institutional architecture would help to achieve the town's goals for this unusual section of Harvard.

Harvard has a commendable record of achievement in historic preservation. However, though it may seem unlikely to Harvard residents, the Still River section is highly vulnerable to changes that neither the town nor those living in and around the village would want to occur. It has a considerable amount of vacant land, stunning views, a large number of historically significant properties, and institutional land uses that are not permanently protected.

Shaker Village Historic District

Two resources within the Shaker Village Historic District have been identified as meriting special protection. Recently, the town acquired an herb-drying shed, a stone structure built between 1835-1845, which is located within the main Shaker village on Shaker Road. Largely invisible due to its location, the shed is in extremely poor condition and in danger of collapsing. The Historical Commission plans to hire a consultant to develop a conditions report on the structure when funding

Fig. 3-A: Parking & Pedestrian Plan, New Public Library (Old Bromfield)-School Complex



Courtesy Carol R. Johnson Associates.

is available in 2003. The shed requires temporary stabilization that the Historical Commission may finance with Community Preservation funds. Holy Hill, the historic outdoor worship grounds for the Shakers on South Shaker Road, has also been identified as needing regular maintenance. In addition, the signage marking the Holy Hill site is deteriorated and needs replacement.

National Register Nominations

Harvard's efforts to protect historic resources could be enhanced with additional Survey and Planning Grant funds from the Massachusetts Historical Commission (MHC). Budget constraints have led MHC to limit its Survey and Planning Grant Program to local historical commissions that are designated as a Certified Local Government (CLG). Harvard's Historical Commission, a CLG since 1991, has received three Survey and Planning grants in the past. The grants, which require a local match, may be used to fund building surveys, nominate properties to the National Register, prepare preservation plans and hire administrative staff. In Harvard, Survey and Planning Grants could finance public education about the benefits of protecting vulnerable resources through local historic districts. In addition, several historic areas and individual properties identified in Appendix G have been recommended for listing in the National Register.²³ Survey and Planning grants could fund the nomination process for some or all of these historic assets.

Open Space & Recreation

The centrality of open space is a recurring theme in Harvard's community vision and master plan goals. "Open space" broadly refers to land with natural resource, wildlife or scenic importance: an area of natural landscape essentially undeveloped, such as ridges, streams, natural shorelines, scenic buffer areas, and agricultural lands. It may also include land withdrawn from a community's tax base to reduce the amount of development that occurs within its borders, to prevent over-development of densely settled areas, or to preserve rural imagery in the wake of suburban change. In Harvard, significant wildlife habitat, environmentally sensitive areas, sweeping vistas, and agricultural landscapes endure today almost entirely because of local initiative. However, the town owns relatively little land for municipal and school buildings, parks, playgrounds and playing fields, and other community facilities. Local expenditures on land acquisition have clearly favored conservancy over other public purposes. Residents value open space as an emblem of their town's rural character and the quality of life that attracts people to Harvard.

Harvard faces a number of open space and recreation challenges as the town continues to grow. Its open space and outdoor recreation concerns differ in several ways, yet there are at least two shared problems: local capacity and funding. Although the uncertain fate of Devens complicates Harvard's ability to plan for the future, many of the town's open space and recreation needs have little to do with Devens. However, Harvard ought to be vigilant about the protection of open space at Devens – especially open space that affects the quality and abundance of natural resources.

Conservation & Open Space

Harvard's stellar track record in open space protection belies how hard it is for very small towns to defend their natural and cultural assets. The impressive size of Harvard's conservation land inventory is actually a measure of sustained labor by town volunteers, the dedication of local taxpayers, and sophisticated work by the Harvard Conservation Trust (HCT). Except for activists in a handful of

23. Dempsey, Comprehensive Harvard Historic Survey.

other towns that take open space as seriously as Harvard has since the early 1960s, most outsiders could never appreciate the effort and money that Harvard has invested in protecting farmland, wetlands, wildlife areas and scenic hills.

Despite the value that residents place on open space, Harvard has fared poorly at using non-zoning techniques to protect its vacant land. This is particularly evident in the land use and development trends described in Chapter 2. Even though Harvard has acquired a considerable amount of open space, the town lost more open space *per dwelling unit* to development that occurred between 1971-1991 than between 1951-1971. In addition, though most everyone in Harvard sees open space as a major land use priority, the spirit of conservancy does not always translate into *workers* – that is, people with time, knowledge and resources to strategize, scout for open space projects, build relationships and negotiate with land owners, orchestrate resources, write open space plans and grant applications, network with town officials and residents, and defend acquisition proposals on town meeting floor. To meet the town's natural resource and town character goals, at least three important open space considerations must be addressed:

- Despite Harvard's long-standing commitment to open space protection, it has been difficult for the town to maintain timely updates of its open space and recreation plans. The last plan was written in 1995 and reissued in April 1996. Unless Harvard updates its open space and recreation plans every five years, the town will not qualify for Self-Help Program grants that help to reduce conservation land costs. The problem is not lack of interest. Rather, it is lack of time and personnel to coordinate the planning process, and limited access to mapping expertise.
- Harvard could protect far more open space at no cost to taxpayers by providing effective, reasonable alternatives to standard subdivisions or the more common mode of development, the Approval Not Required (ANR) lot. Harvard may need to offer a modest density incentive to attract open space-cluster development, but the residential growth impacts would be *de minimus* compared to the benefits of permanently protected open space. For example, a density bonus of 10% is fairly common in cluster bylaws that require 50% or more of a site to be preserved as open space. Moreover, by creating incentives to develop small, attached housing units in cluster developments, Harvard may reduce the negative fiscal impacts of new-home construction while gaining more open space. Finally, cluster development regulations can be an invaluable tool for coordinating trail connections between neighboring tracts of conservation land.
- Harvard's adoption of the Community Preservation Act (CPA) reinforces what is evident in the town's land acquisition history and the most recent Open Space & Recreation Plan survey: residents want to save their open space. CPA revenue should be used to supplement, but not to replace, traditional spending on conservation land. It must be remembered that CPA addresses *three* statutory objectives: open space, housing affordability, and historic preservation. If Harvard transfers all or even the majority of its conservation land needs to CPA, the town will either devote fewer resources to open space or devote no resources to affordable housing and historic preservation: areas where serious needs exist and for which Harvard has no other local revenue sources.

Outdoor Recreation

Places to participate in or observe a variety of leisure and competitive sports are important to people of all ages. Given the number of households with children, the town's large land area and its broadly distributed development pattern, Harvard has a fairly limited supply of active recreation areas. The recreation needs that exist in Harvard today will be exacerbated by new development unless the town has a workable plan to address them. Activity and participation statistics presented in Chapter 2 show that residents value all that Harvard has to offer, yet inadequacies in the location, type, size and

features of Harvard's recreation inventory were evident to residents who participated in the Phase I master plan process.

Adequate facilities

Table 3-8 summarizes a set of industry guidelines for parks and outdoor recreation facilities. The guidelines identify the number and types of facilities that should be available in a given service area, measured by population, geography or both. Though the guidelines are advisory and some pertain more to urban communities than small towns, they provide a starting point for evaluating Harvard's recreation facilities.

Table 3-8: National Recreation and Park Association Park Land Standards

Facility	Recommended Area	Units per Population	Service Area
Basketball Court	7,280 sq ft	1 per 5,000	1/4 - 1/2 mi
Tennis Court	7,200 sq ft (1crt)	1 per 2,000	1/4 - 1/2 mi
Volleyball	4,000 sq ft	1 per 5,000	1/4 - 1/2 mi
Baseball (Youth)	1.2 acres min.	1 per 5,000	1/4 - 1/2 mi
Softball	1.5-2 acres	1 per 5,000	1/4 - 1/2 mi
Multi-Use Court	9,840 sq ft	1 per 10,000	1/4 - 1/2 mi
Trails	1 trail system per region		
Play Lot	.1-.3 acres	1 per 500-2,500	1/4 mi
Neighborhood playground	5-10 acres per facility; 2 acres per 10,000 population	1 per 1,000-5,000	2 mi
Neighborhood park	6-8 acres per facility; 2 acres per 1,000 population	1 per 1,000-25,000	2 mi
Community playfield	15-25 acres per facility; 1 acre per 1,000 population	1 per 10,000	Biking distance
Major community park	25-35 acres; 5 acres per 1,000 population	1 per 10,000	1-4 mi
Community green space	Varies; 1 acre per 1,000 population	Not established	Not established

Source: National Recreation and Park Association. Since most NRPA standards apply to communities with populations >6,000, they must be applied cautiously in towns of Harvard's size.

Harvard clearly meets several NRPA standards when measured by population served. However, Map 3-B shows that geographic service area guidelines are not met in several parts of Harvard today. Five issues seem particularly compelling:

- Harvard does not have any play lots equipped for pre-school children. Parents of pre-school children must travel to facilities in neighboring towns, e.g., Ayer and Acton.
- The number of public tennis courts in Harvard surpasses NRPA population standards, but the courts are in very poor condition.

- Harvard's established recreation areas are not accessible to persons with disabilities, but the new McCurdy Field on Lancaster County Road has been designed as a barrier-free facility.
- The southeastern and northeastern sections of Harvard have no neighborhood-level parks or play areas.
- Although the Town Commons clearly qualifies as community green space that supports a variety of activities, parking in the Town Center is severely limited. Opportunities to develop additional parking exist, but parking in the Town Center must be planned carefully so that it does not intrude on the historic, open character of the village.

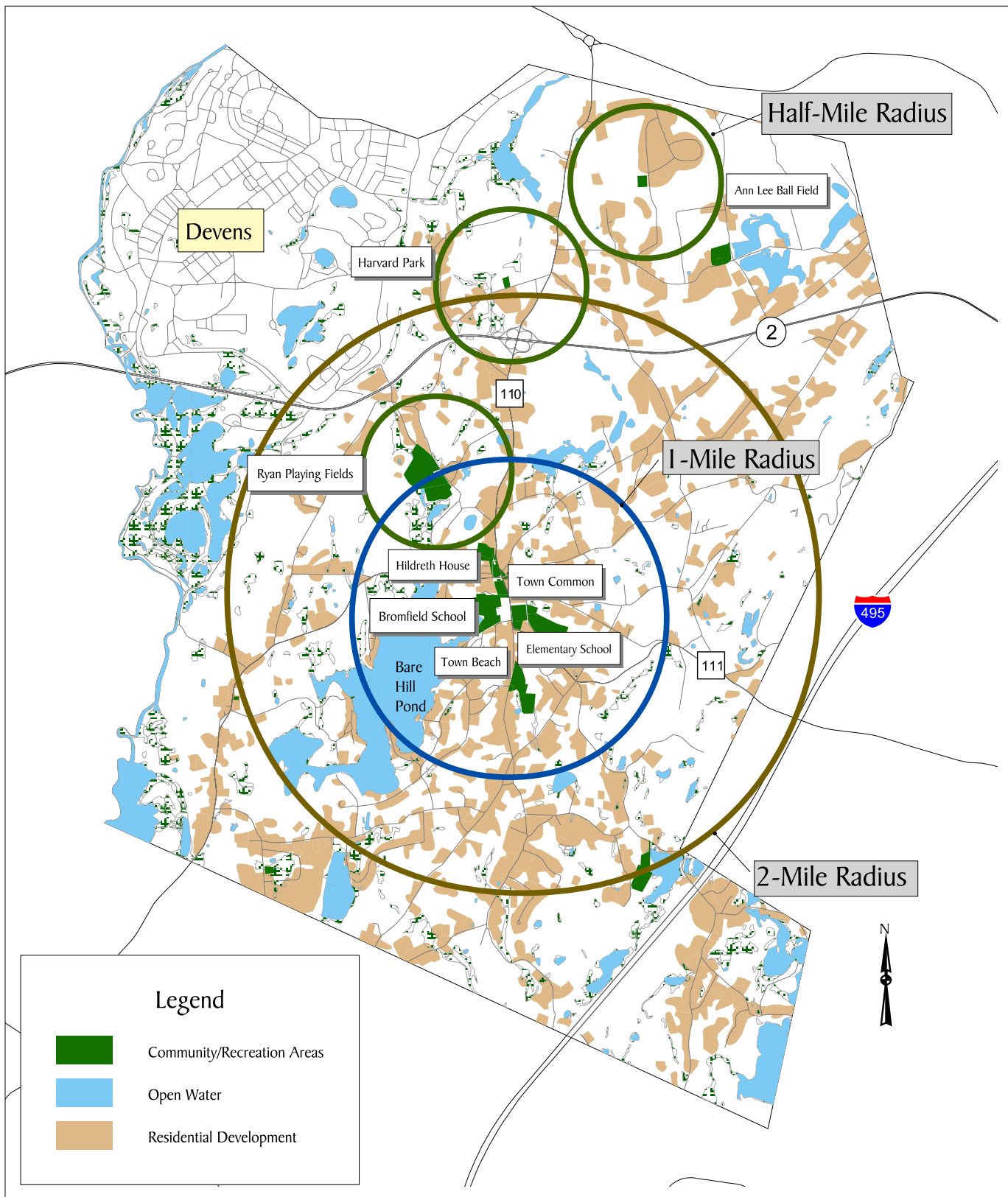
Other recreation needs

Along with adequate facilities, there are programmatic and policy concerns that affect recreation management in Harvard. For example:

- A recreation shortfall currently exists in the administrative side of recreation. The Harvard Athletic Association (HAA) has generally been able to find enough volunteer coaches and referees. In some cases, students are paid a nominal fee to provide referee services. However, HAA has seen a decrease in administrative volunteers, making it difficult to provide consistent organizational support in the creation and oversight of leagues and in the day-to-day functioning of the organization.²⁴ The HAA has considered hiring paid administrative support but has not done so because of budget constraints.
- Harvard's Park and Recreation Commission has no budget for extraordinary maintenance and renovations to existing recreational facilities.²⁵ As a result, maintenance and upkeep responsibilities generally fall to the Public Works Department, which is stretched tightly by other responsibilities throughout town. As a result, fields are not always maintained at an optimum level. Residents have expressed concern about the maintenance and irrigation of some of the town's playing fields, but both the Public Works Department and the HAA are constrained by lack of funds.
- Because land costs are prohibitive and open space is a major priority in Harvard, recreation advocates sometimes find it difficult to locate areas that are suitable for expanded or new facilities. While the construction of two new soccer fields will likely meet foreseeable demands, there is a need for added capacity in basketball gym space, tennis courts and potentially, in baseball and softball fields. Harvard has given primacy to conservation and open space planning over recreation planning for a long period of time. Although the *Town Plan* (1988) foresaw needs for neighborhood-level recreation areas, no land has been acquired or set aside for this purpose. Harvard has moved forward to develop soccer fields on land that the town received as a gift, however.

24. Steve Frost, President of Harvard Athletic Association, interview by Rahul J. Young, February 8, 2002.

25. Jim Lee, Chairman, Town of Harvard Park and Recreation Commission, interview by Rahul J. Young, February 11, 2002.



Data Sources: MassGIS, Harvard OPEN SPACE & RECREATION PLAN (1996), NRPA Standards.

Map by J. A. Barrett

0 1 2 Miles

Harvard, Massachusetts NRPA Service Areas

Map 3-B



Community Opportunities Group, Inc.
Boston, Massachusetts

Community Facilities & Services

Community development affects the responsibilities of local government in several ways. School enrollment growth is the most obvious fiscal impact of new-home construction. In Harvard and many other towns, school budgets absorb more than half of all local operating expenditures. Enrollment growth also triggers increases in non-school spending, such as soaring debt service payments. Local governments experience the impact of population growth on municipal services as well. They process more tax bills, dispose of more solid waste, respond to more fires, traffic accidents and medical emergencies, impound more stray dogs, and inherit more roads to salt, sand, plow and sweep. Public libraries issue more patron cards and overdue notices, circulate more books, tapes and films, and process more inter-library loan requests. The same children who need teachers, textbooks and classroom space also create demands for soccer fields and playgrounds. Behind every contact between residents and the town clerk, school principal, building inspector or police officer lies the invisible yet crucial infrastructure of local government: administration and finance.

A master plan should anticipate the best possible fit between a town's population, size and land use pattern and the location of its public facilities. Like so many issues in Harvard, planning for adequate municipal and school buildings is complicated by the uncertain fate of Devens. However, Harvard will have to address these challenges even if the town declines to reclaim jurisdiction over its land at Devens. In fact, many of the public facility and service needs that exist in Harvard today were evident when the last master plan was written: before the Army announced that it would close Fort Devens.

Planning for Public Facilities

Harvard does an admirable job at meeting resident expectations today. It has an established set of management and governance traditions that are obviously important to local residents, yet at times, Harvard seems so devoted to the excellence of its schools and the visual image of the town that other important needs are not addressed. Though Harvard benefits from having a decentralized form of government that attracts many qualified volunteers, a highly democratic system like Harvard's can bring consequences that are not always advantageous. For example, without a sizeable base of constituents, it is difficult to persuade residents that if Harvard wants to retain senior citizens, the town must focus not only on housing, but also on elder services and a fully accessible senior center. In addition, it takes considerable time, patience and coordination to agree on and implement policy in a form of government with many boards and commissions. As a result, a critical community resource like Bare Hill Pond lacks a comprehensive watershed management plan – not because Harvard lacks capable, committed town officials but rather, because there are so many of them.

Harvard faces fairly significant constraints in terms of public capital, available land and political will to address its long-term community facility needs. Local residents already tax themselves quite heavily to finance the cost of local government. Throughout the 1990s, town meeting appropriated nearly every dollar that was available under Proposition 2 ½, leaving Harvard with a very low percentage of “excess tax capacity” compared to most towns in Massachusetts. During the past few years, the town gradually rebuilt its cash reserves to pre-recession levels, but regardless of how affluent its mainstream population may be, Harvard is not in the same fiscal condition as several demographically similar communities. Absorbing more debt to construct new buildings or finance major renovations to existing buildings is not the only issue that Harvard has to contend with, however. Very little of Harvard's town-owned land was acquired for general municipal purposes. The town's dedication to protected open space has resulted in an enviable portfolio of conservation land and a strikingly limited amount of “flexible” land, i.e., for schools, a playground or playing fields, or a satellite fire station. If Harvard needs to relocate or expand facilities outside of the Town Center, residents will likely have to purchase land at prevailing market prices. It would behoove Harvard to acquire property for future school site now because the town still has a fairly generous supply of vacant land from which to choose.

The community vision statement describes Harvard's future in terms of a broader tax base, balanced spending, and a community of villages and small neighborhoods that house a diverse population. Whether Harvard should strive to keep current municipal and school services in the Town Center, it is important to recognize that as the town develops, future residents will need access to a range of possibilities for the location of public facilities. Another consideration is that Harvard Center's municipal buildings are historic assets and they need the town's stewardship. Routine maintenance, adequate budgeting for extraordinary repairs and scheduled capital improvements are essential to protecting the integrity of older structures, yet Harvard apparently has no long-range town buildings plan.

Planning for choice, not chance, is responsible and cost-effective management of town resources. To meet the goals of the master plan, the key facilities planning issues that Harvard needs to address include:

- The Town Center is Harvard's most important community facility. Its character-defining significance requires special attention from town and school officials alike. They *must* coordinate their policies and actions in order to protect the Town Center as a resource for everyone who lives in Harvard. The numerous town boards and committees with jurisdiction over activity in the Town Center can be an asset to a comprehensive planning process, but only if they work toward common goals.
- Local governance in Harvard involves many people – community volunteers and paid staff — who work hard to serve the town. Moreover, Harvard is a town that clearly prefers an open, participatory form of government, one that involves many committees. They need adequate, barrier-free space to conduct business. The inaccessibility of Harvard's public and school buildings places the town at risk of a corrective action order from state government, which has adopted policies to curtail public meetings in buildings that do not comply with the Americans with Disabilities Act.
- Harvard's near-term public facility needs have less to do with planning for new facilities than with managing and maintaining the existing portfolio of old, historically significant buildings. The town may benefit from a single oversight committee to address long-term municipal facility needs, i.e., a permanent town buildings committee.
- The Harvard Public Library is expected to move from its present location to Old Bromfield, which will be renovated and enlarged. Several possibilities exist for the present library when the Old Bromfield project goes forward, but there is no use and disposition plan for this important Town Center landmark. It will be important for Harvard to make library reuse decisions soon so there is adequate time to assemble preservation and development resources.

Circulation & Traffic

A community's transportation network provides strategic links to adjacent towns, which means that local and non-local residents use it every day, regardless of their occupation, socio-economic status, or age. Views of neighborhoods, open space, and other land uses define a town's image and contribute to the sense of community that residents share. A roadway system that provides safe, efficient access for in-town travel and allows others to travel through town without interfering with local traffic flows is generally considered to be a good vehicular traffic network. It includes regional highways that are suitable for through traffic and commercial trips, and local roadways to provide access for residents and employees. The entire network must serve the needs of travelers whether they live within the town, have business within the town, or travel through the town.

Harvard is in a steadily growing region, namely the I-495 corridor, but it is also affected by the redevelopment of Devens. Taken at face value, current traffic volumes could double within the next five to ten years based on the number and size of development projects that are currently proposed or under consideration in surrounding towns and at Devens. For example, the Notice of Project Change (NPC) for Cisco Systems in Boxborough²⁶ identifies eighteen developments that are underway or planned in Boxborough, Littleton, Acton, Westford, and Maynard. The NPC indicates that along with trips generated by Cisco Systems, traffic volumes at the Route 110/Route 111 intersection in Harvard Center will see an increase of about fifty percent. While the NPC analysis is designed to be conservative and such studies tend to over-estimate traffic growth, the implications are clear: traffic volumes in Harvard will grow in response to internal and external development activity.

Non-Local Traffic

Just as the Route 128 corridor changed significantly in the 1960s and 1970s, the I-495 corridor has grown recently and it will continue to grow. In addition to traffic generated by regional development, the prevalence of family households in Harvard means that a sizeable percentage of the town's daily traffic involves resident trips to the schools, children's activities, and shopping or appointments in business districts outside of town. According to statistics maintained by MassHighway, traffic on I-495 in Harvard's region has grown at a relatively fast pace in recent years: 2.9% per year between 1998-2000. However, since a single highway like I-495 may have several count stations, regional traffic growth recorded on the highway may not reflect a lower rate of growth or traffic volume declines on less travel routes. As a result, state traffic data must be used cautiously, though they do provide value in estimating future traffic conditions.

Cisco Systems in Boxborough and the redevelopment of Devens will be the most likely sources of non-local traffic on Harvard roads in the foreseeable future. Though the traffic generated by these facilities may not be as substantial as Harvard residents fear, the town will experience an increase in traffic volumes – as homeowners living on or adjacent to Ayer Road already know. In terms of Cisco Systems, at least two conditions are apt to dissuade commuters from using Harvard's roadway system on a regular basis. First, improvements at the Route 111/I-495 interchange are designed to induce traffic to use the regional highway network. Enhancing access to I-495 while making no improvements to travel in other directions should encourage Cisco-related trips to use the highway even if their goal is to travel west along Route 117 or Route 2. Accordingly, the environmental impact studies prepared for Cisco Systems assign some of the project's traffic to the west through Harvard Center and a slightly larger percent to Route 2/I-495. Second, commuter route choices are often based on the errands that employees make on their way to or from work, e.g., stopping at a dry cleaner or grocery store. Since Harvard Center and Ayer Road between the center and Route 2 have very few services and retail establishments, the opportunity for convenience-oriented trips between Cisco Systems and the center of town is reduced. A change in the Town Center's mix of land uses could attract these types of non-local commuter trips in the future, but only if the trip is actually "convenient," i.e., with few obstacles en route, ample parking, and no delays upon exit.

Harvard's other significant non-local traffic generator is Devens. Access to Devens often occurs either directly from Route 2 at the Shirley/Devens interchange or through Ayer along the Route 2A corridor. While traffic – particularly large trucks – also use the Harvard exit along Route 2, it seems doubtful that accessing Devens from Harvard will remain convenient once improvements at the Jackson Road/Route 2 interchange are completed.

26. EOE #6761, June 2001, New England Development Center, Site II, Phase II

Local Traffic

Harvard's estimated build-out potential represents a significant increase over existing conditions but overall, the town's roadway network has sufficient capacity to accommodate projected traffic growth. However, traffic safety improvements may become necessary under full build-out conditions, such as signalization at the Ayer Road commercial district and Harvard Center. It is important to point out that some locations in Harvard already suffer from minor to modest traffic safety deficiencies. Because most roads in Harvard carry so little traffic today, it may seem that there is no particular urgency for eliminating the hazards; as traffic grows, the urgency will increase. As an alternative to signalization, some intersections may need to be redesigned to improve sight distances or modify the angle of intersecting streets. The goal should be to enhance safety rather than improve capacity.

Traffic growth from full build-out will be associated primarily with activities *in* Harvard. This kind of traffic will be difficult to eliminate because it must either originate or end inside the town. Further, commercial development, be it local or regional, has an impact on the character of traffic. For example, regional access to commercial activities on Ayer Road would be inclined to arrive and depart via Route 2. Conversely, businesses that cater to local customers such as grocery stores or drug stores will attract a very high percentage of trips from within Harvard and neighboring towns, leading to an overall increase in locally generated traffic. Though trips of this variety are often combined with personal errands and trips to and from the schools or other appointments, they generally lead to higher volumes along local streets. Businesses serving local patrons also tend to attract traffic from adjacent towns along local streets as opposed to the highways.

More than most communities, Harvard is concerned about traffic growth associated with economic and residential development, particularly development that occurs around, rather than within, the town. However, the fact that Harvard residents have to travel out of town to obtain goods and services adds to their overall travel times and driving distances. With this in mind, development that encourages internal sources for goods and services will generally reduce the amount of driving that local residents must do. At the same time, it will also increase the number of trips into Harvard from surrounding towns. The Town Center and the commercial district on Ayer Road provide some services today, but the concentration of businesses is not significant enough to create a sense of commercial community. That is, Harvard residents do not all shop at the same stores or visit the same services on a daily basis, as is the case in many towns. A core commercial district that attracts locally oriented, complementary businesses would allow residents to make a single trip to accomplish several purposes and would also reinforce a sense of community in Harvard.

There is strong local support for providing a "walkable" Town Center with commercial, municipal and institutional uses, yet Harvard's zoning regulations discourage this outcome. Setback, landscaping, and parking requirements all tend to push developments apart rather than concentrate them in a village-like setting. In addition, while Harvard identifies with the Town Center as a cluster of community facilities, they are, in fact, relatively spread out. For most people, it is inconvenient to drive to the Town Center, park in one location and visit more than one or two community facilities. In particular, Town Hall and the schools are not close enough to promote walking. In many communities, an effort is made to create and retain a village with clusters of compatible land uses, sidewalk connections, pedestrian amenities and conveniently located parking. However, traditional sidewalks, on-street parking and buildings close to the street would be completely out of place in Harvard's Town Center because it is a rural village. Harvard residents will need to agree on the concept for their Town Center before they can develop a suitable traffic and zoning framework.