
TOWN OF BROOKLINE, NEW HAMPSHIRE

**BUILDOUT ANALYSIS
EXECUTIVE SUMMARY**



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**Prepared by the
NASHUA REGIONAL PLANNING COMMISSION**

I. INTRODUCTION

A buildout analysis is an effort to estimate what level of residential and non-residential development may occur in the future. "Buildout" is a theoretical condition that exists when all available land suitable for residential and commercial/industrial construction has been developed. The analysis determines: (1) an estimate of the maximum number of housing units that will result when all of the available developable land is consumed; (2) an estimate of the year of ultimate buildout; (3) an estimate of the maximum population of the Town; and (4) an estimate of the population in 5 year increments and at buildout. This study does not consider the re-use of property, but rather new uses of undeveloped, underdeveloped and subdividable lots.

The four estimates noted above are determined in the following manner:

- Constraints to development relating to the Brookline Zoning Ordinance and Subdivision Regulations, such as wetlands, steep slopes and floodplains, and development restrictions relating to parcel ownership or conservation efforts, are mapped using Geographic Information System software (GIS). The net developable area is determined by subtracting the number of acres of constrained land from the total acreage for each undeveloped parcel.
- The net developable area is divided by the average density of recent Brookline subdivisions to determine the number of housing units or industrial and commercial lots that can be developed on the net developable area. The buildout study estimated the number of potential new lots on (a) vacant parcels less than 5 acres in size, (b) vacant and subdividable parcels between 5 and 20 acres, and (c) vacant and subdividable parcels greater than 20 acres in size.
- A maximum population estimate is determined by multiplying the projected number of housing units by the average household size and adding this to the current population.
- The year of ultimate buildout and population forecasts in 5-year increments is estimated using the average annual housing unit growth rate from 1993 - 2003.

II. METHODOLOGY

A. Constraints Mapping

The first step in the Brookline buildout analysis involved updating the local land use designations to accurately identify vacant and subdividable properties. To simplify the process, all parcels were assigned one of five land use categories: Vacant, Undevelopable (roads, water), Open (Permanent Open Space or Town Owned Lands), Developed Residential, or Developed Non-Residential. **Map 1** displays the distribution of these land-uses in Brookline. Properties considered Vacant, Developed Residential or Developed Non-Residential were subject to constraints mapping as the next step in the process.

Parcels that were considered ‘underdeveloped’ are those currently in some form of active use and greater than 5 acres in size. Given the current minimum lot size in Brookline, these could conceivably be subdivided into several new lots. For these parcels, 2 acres was uniformly subtracted from the total developable area in order to accommodate the existing home. The remaining acreage is considered subdividable.

Constraints mapping is used to determine the net developable area of undeveloped or underdeveloped parcels. Net developable areas are the undeveloped or underdeveloped parcels in Brookline that could conceivably accommodate new housing units. To determine this, a parcel based map displaying land use constraints was developed. This map was analyzed with the GIS to determine the net constrained area and the net developable area. The net developable area was then divided by the minimum lot size requirement to determine the hypothetical potential number of new lots.

For the purposes of this buildout analysis, net developable area in Brookline is defined as the proportion of a privately owned vacant or underdeveloped parcel that is not constrained by the following features:

- Wetlands and the 50-foot wetland buffer zone
- Slopes in excess of 25%
- 100-year floodplain
- Areas containing an existing improvement or set aside as permanent open space

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III. AVERAGE DENSITY

The density assumptions for this analysis are based on a review of recently approved subdivisions in Brookline. As shown in Table 1, the average density of recently approved conventional subdivisions in Brookline is 1 unit per 3.02 acres. The odd shape of many lots, together with the presence of wetlands and other constraints, results in a “real world” density less than the minimum lot size allows.

Table 1. Average Densities of Recently Approved Conventional Subdivisions

Subdivision Name	Approval Date	Net Buildable Area (acres)*	Number of Lots Approved	Density (acres per unit)
Comeau	2002	9.5	3	3.17
Cadorette	2002	9.0	2	4.5
Bross	2002	11.0	4	2.75
David Farwell	2003	7.17	3	2.39
Gerald Farwell	2003	11.68	4	2.92
Axel	2003	4.8	2	2.40
Average Density				3.02

Source: Town of Brookline Planning Department.

**Net Buildable Area = gross parcel area – area of wetlands and floodplains.*

The Brookline Zoning Ordinance anticipates that most subdivisions of tracts greater than 20 acres will be developed as “open space developments”, where the overall density of lots cannot exceed one unit per 80,000 square feet, but where individual lots can be a minimum of one acre. The “leftover” acreage is permanently protected open space. At least 35% of the total area being subdivided must be set aside as open space. Because this development style often permits the developer to place house lots on the best (unconstrained) land, the net density of open space developments more closely approximates the minimum lot size required by zoning, as seen in Table 2.

Table 2. Average Densities of Recently Approved Open Space Development Subdivisions

Subdivision Name	Approval Date	Net Buildable Area (acres)*	Number of Lots Approved	Density (acres per unit)
Beaver Woods	1999	18.6	7	2.65
Maplewood Estates	2001	27	12	2.25
Stonehouse Estates	2002	78.2	36	2.17
Castle Drive	2000	27.94	13	2.15
Glendale	2003	41.6	15	2.77
Average Density				2.39

Source: Town of Brookline Planning Department.

**Net Buildable Area = gross parcel area – area of wetlands and floodplains.*

IV. RESULTS

The table below shows the potential number of new residential and industrial/commercial lots for vacant land, underdeveloped (or subdividable) land with a non-residential use (Developed Nonresidential), underdeveloped land with a residential use (Developed Residential), and totals for land zoned both residential (R) and industrial/commercial (I/C). The two zoning districts are treated separately because of their different minimum lots size requirements; one acre for industrial/commercial and approximately two acres for residential.

Table 3 is a summary of the results of the three tables addressing potential new development on various size parent parcels. The total number of potential new residential lots in Brookline at buildout is estimated at **1,606**. The total number of new industrial/commercial lots is **132**. As Brookline now (2003) has approximately 1,478 dwelling units, total buildout will mean a total of about **3,084** dwelling units.

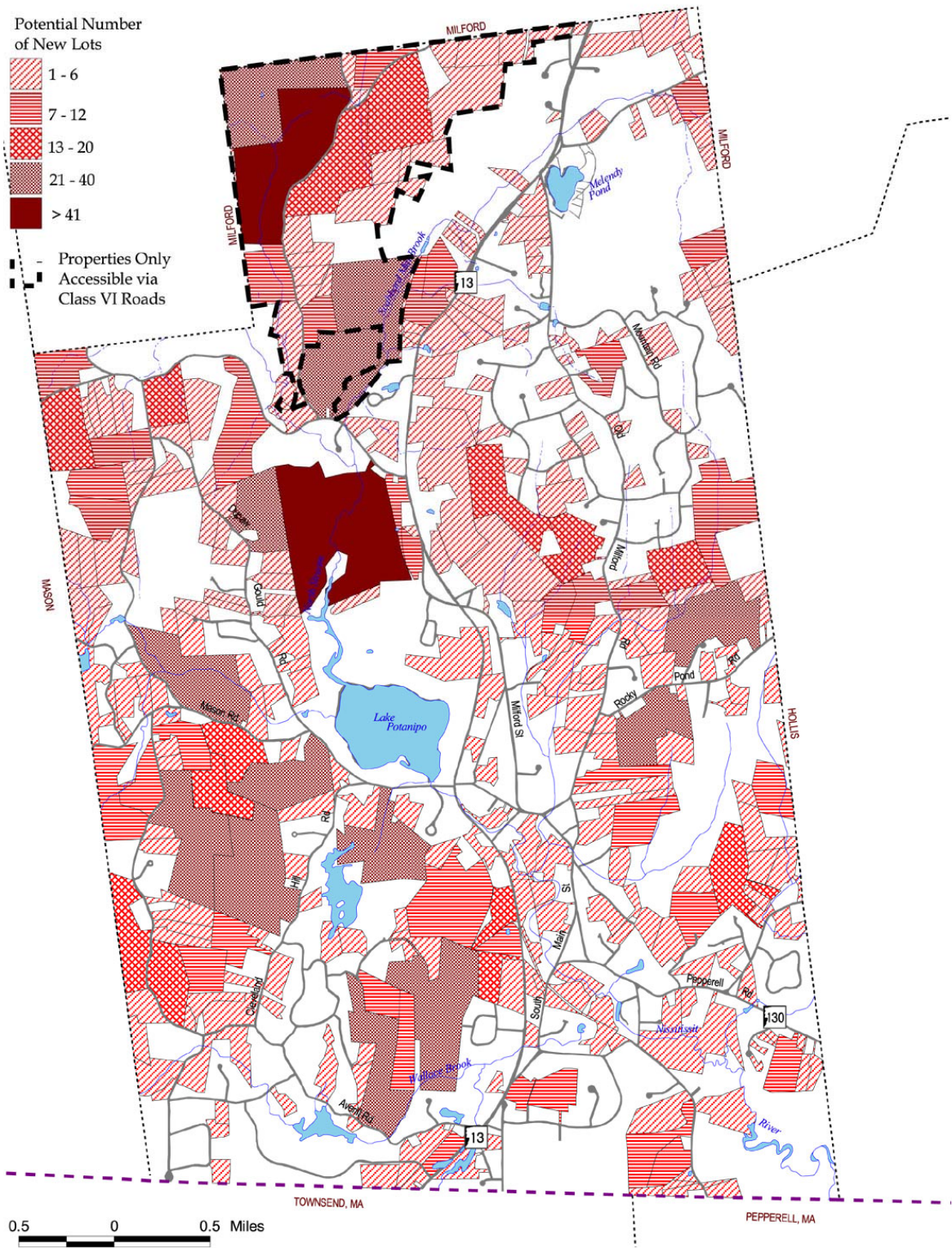
The average amount of commercial and industrial space on lots zoned for these uses is 5,776 square feet per acre. Therefore, full buildout could generate an additional 762,432 square feet of commercial and industrial space in Brookline. This amount of new commercial and industrial development should help to generate jobs and enhance Brookline's tax base in the years to come.

Map 2 shows the location of potential new development in Brookline. The darker the shading, the greater the number of potential new lots.

Table 3. Total Potential New Lots for the Town of Brookline

Dev. Status	Zoning	# of Parcels	Total Parcel Acres	Built Upon Acres	Constrained Land (acres)	Net Developable Area	Potential New Lots
Vacant	R	191.0	4,456.9	0.0	1,608.8	2,850.1	1,127
	I/C	12.0	113.6	0.0	31.9	81.7	
Developed	R	3.0	67.1	6.0	27.9	33.2	14
Nonres	C/I	6.0	61.3	12.0	13.4	35.0	42
Developed Residential	R	151.0	2,022.8	302.0	475.9	1,244.9	466
	C/I	1.0	20.7	2.0	11.6	7.1	8
Totals	R	345.0	6,546.8	308.0	2,110.6	4,128.2	1,606
	C/I	19.0	195.6	14.0	56.9	124.7	132

Map 2. Potential Number of New Lots at Buildout



V. ANALYSIS AND CONCLUSIONS

A. Estimated Time to Buildout

This study estimates that an additional 1,606 homes are possible in Brookline's future. As there are about 1,478 homes in Brookline today (2003), it appears that Brookline is roughly halfway to its full buildout potential of 3,084 homes. At the present rate of development, it will take several decades for Brookline to reach full buildout. An average of 44 building permits for new homes were issued during the decade 1993 – 2003. This represents a decade average growth rate of 3.6%, somewhat higher than the 3% target growth rate of the growth management ordinance. If this rate of growth is extended outward in a linear progression, it will take 36.5 years for Brookline to reach full buildout. This means that Brookline will likely achieve buildout in the year 2039 or thereabouts.

B. Brookline's Future Population

In 2000, Brookline had an average of 3.11 persons per household according to the United States Census. Brookline's population in 2000, according to the US Census, was 4,181. By 2003, the Town's population is estimated to have increased by nearly 10% to 4,597, due to the growth in housing units since 2000. By 2035, given the above assumptions, Brookline will nearly double to 8,975 people. The population at full buildout of 3,084 units would be approximately 9,591. Because Brookline's Growth Management Ordinance limits the number of new homes that can be built in approved subdivisions each year, there will be a gap of several years between the time the "last" subdivision is approved and the "final" home is constructed and occupied. Therefore, it is possible that new homes may still be constructed several years past the estimated buildout year of 2039 or 2040.

**Table 4 Estimated Number of Dwelling Units and Population Changes
2000 - Buildout**

Year	Number of Dwelling Units	Percentage Increase	Population	Percentage Increase
2000	1,367		4,181	
2003	1,478	8.1%	4,597	9.9%
2010	1,786	20.8%	5,554	20.8%
2015	2,006	12.3%	6,239	12.3%
2020	2,226	11.0%	6,923	11.0%
2025	2,446	9.9%	7,607	9.9%
2030	2,666	9.0%	8,291	9.0%
2035	2,886	8.3%	8,975	8.3%
2040	3,106	7.6%	9,660	7.6%

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