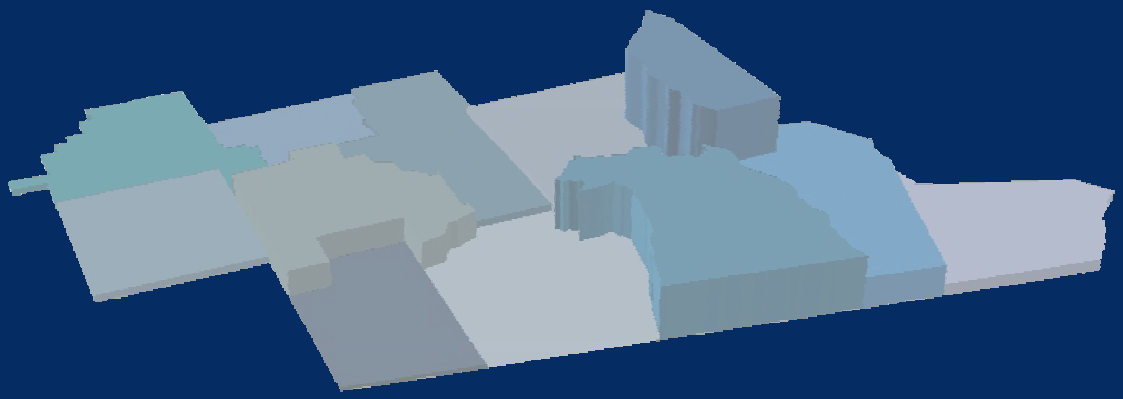


REGION-WIDE BUILDOUT IMPACT ANALYSIS

Nashua Regional Planning Commission

October 24, 2005

REGION-WIDE BUILDOUT IMPACT ANALYSIS

October 24, 2005

Prepared by

Nashua Regional Planning Commission

With Financial Assistance from the

NH Office of Energy and Planning

Nashua Regional Planning Commission
115 Main Street P.O. Box 847
Nashua, NH 03061
Phone: (603) 883-0366
Fax: (603) 883-6572
www.nashuarpc.org

Stephen Williams, Executive Director

Steve Schaffer, GIS Manager
Ryan Friedman, GIS Planner
Sam Lingeman, GIS Planner

Special Thanks to
Julie Esp

Table of Contents

Table of Contents cont.

Table of Contents cont.

MAP **Page**

TABLE **Page**

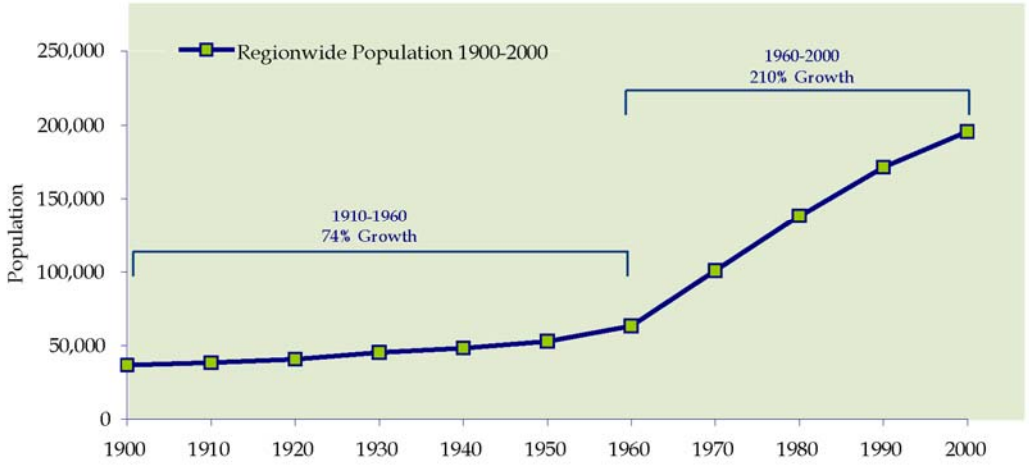
This page left intentionally blank

CHAPTER 1 INTRODUCTION

The Nashua Regional Planning Commission region is typically characterized as a small urban center (Nashua) surrounded by suburban communities of varying degrees of density. From moderately mixed-use communities such as Hudson and Milford to traditionally single family residential communities such as Hollis and Brookline, the region is comprised of a diverse and multi-faceted landscape. From the spruce fir forests adorning the highest hills in Lyndeborough, to the urban landscape of Nashua, the colonial villages of Hollis and Amherst, and the prime farmland along the Merrimack River in Litchfield, the landscape of the NRPC region is perhaps the most varied in the state. The region is located in the Merrimack River Valley. The river runs from north to south through the region and its major tributaries in the region include the Nashua River, the Souhegan River, Salmon Brook and Pennichuck Brook.

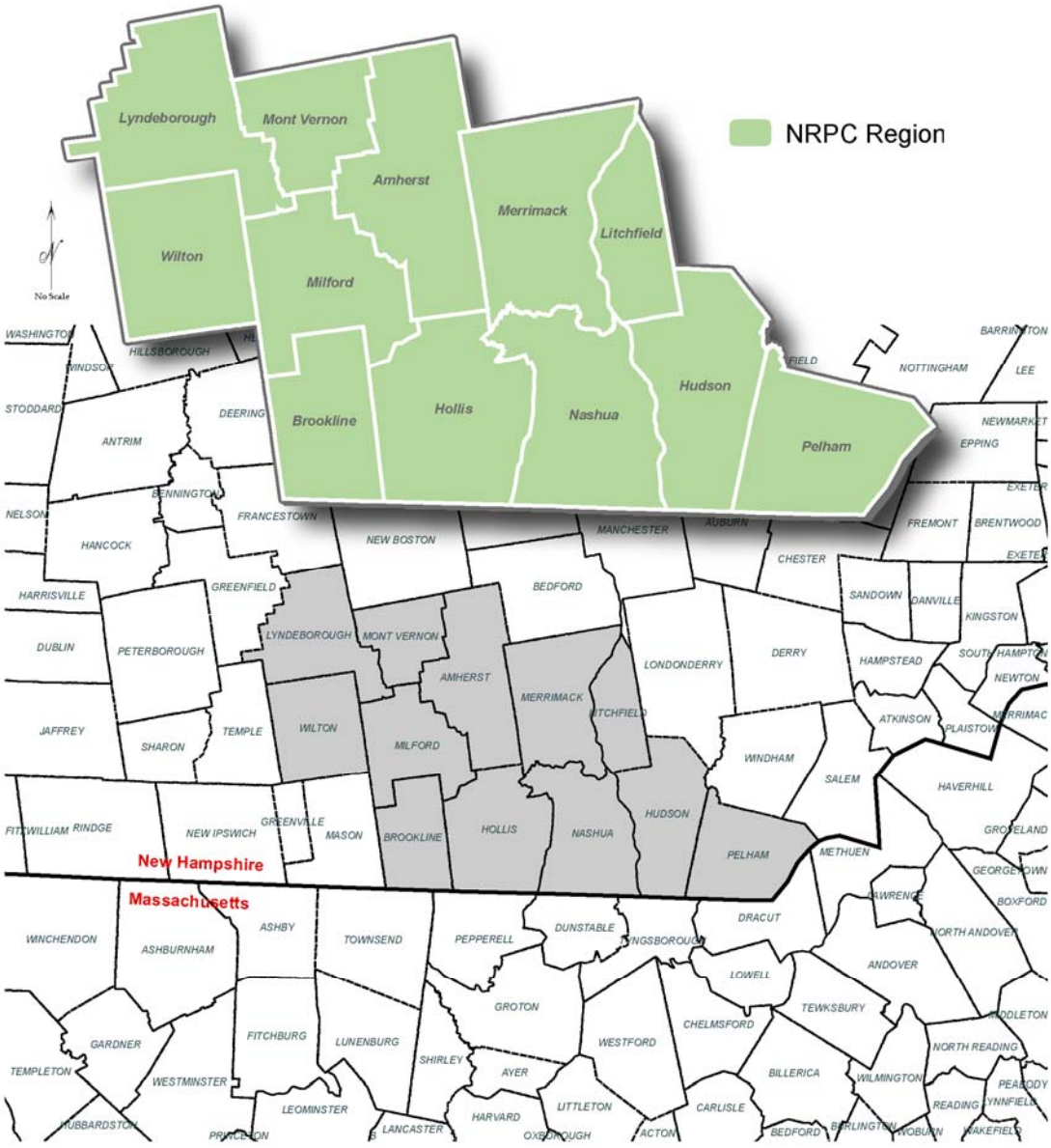
The NRPC region, located in Southern New Hampshire, consists of the City of Nashua and the 11 towns of Amherst, Brookline, Hollis, Hudson, Litchfield, Lyndeborough, Merrimack, Milford, Mont Vernon, Pelham and Wilton. The region is facing development pressure due to its proximity to metropolitan Boston, and as a whole has experienced rapid population growth over the last forty years as depicted in Figure 1-1. The regional population grew from 63,216 in 1960 to 195,788 in the year 2000, an increase of 210% and a 53% average growth rate every ten years. This growth has resulted in a loss of natural resources and open space, and increased costs of providing public services. Major impacts on public services offered by communities include schools, roads and emergency services, and impacts on natural resources include water demand and solid waste disposal. Effective land use planning with a goal of long-term sustainability is essential to confront the pressures of development growth. Decisions on how to effectively plan and manage growth are often difficult because of the complexity and longevity of the land development process.

Figure 1-1: Region-wide Population Growth 1900-2000



Source: U.S. Census and New Hampshire Historical Society

Map 1-1: NRPC Region



Source: NRPC GIS Database and University of New Hampshire Complex Systems GRANIT Database—August 2005

"Buildout" is a theoretical condition and exists when all available land suitable for residential and non-residential construction has been developed. Within the set parameters and under a particular set of adopted policies, buildout represents the carrying capacity of an area, community or region. Through an application of development requirements and past development patterns, combined with an inventory of developable space, a community can produce an estimate of the type and amount of future growth. This buildout project is an attempt at a region-wide scale to approximate that process and forecast growth into the future. Buildout estimates are determined for the maximum number of single

family and multiple family housing units that will result when all of the available developable land is consumed; an estimate of the maximum square footage and number of employees for commercial, office and industrial developments at buildout; and the spatial location of potential new developments at the parcel level. These values are calculated for each of the twelve communities in the NRPC region and for the region as a whole. Finally, these estimates are used to determine the impacts of buildout including: housing and population, employment, non-residential square footage, traffic, the number of school children, demand for water and solid waste disposal, and the buildout demand for public safety services. The most unique aspect of the buildout is that once all of the basic information is input into the system the individual parameters can be changed to assess the development impacts to the community; for example, the minimum lot size in the residential district could be increased/decreased or developable land could be designated as conservation land.

"Buildout" is a theoretical condition and exists when all available land suitable for residential and non-residential construction has been developed.

The primary goal of the buildout analysis is to provide policy makers and the public with the information needed to make informed choices regarding the future growth of the region. Understanding what the region will look like at buildout is critical to the evaluation of current land use policies, including zoning and growth management ordinances and open space acquisition. A better understanding of the growth potential for a municipality can be a valuable resource for planners and elected officials struggling with land use decisions. A further purpose of this analysis is to explore how current regulations set the blueprint for future growth. Zoning regulations pertaining to allowable uses and allowable densities are an indication of the desired type and amount of growth that will occur in currently undeveloped areas.

Finally, the purpose of the buildout analysis is to explore the relationship between buildout population and infrastructure and the demands on resources that will be produced. Values for "Impacts" of buildout are identified for the following categories:

1. Housing
2. Population
3. Non-residential employment and square footage
4. Students
5. Traffic
6. Water Demand
7. Solid Waste
8. Emergency Services

This study was funded by the NH Office of Energy and Planning (OEP) in support of regional land use planning.

CHAPTER 2 METHODOLOGY

This buildout analysis is performed using an automated Geographic Information System (GIS). Inputs, such as housing, population, non-residential uses and constraints, are loaded into the computer model which produces estimated buildout results. Because regulations differ between communities, twelve separate buildout analyses were conducted, one for each municipality in the NRPC region. The NRPC has completed buildout studies for several communities in the past. These studies were completed at different times, and used widely divergent methods. This project standardizes methods and approaches across the entire region producing a coherent, holistic and highly comparable picture of buildout growth.

A more in-depth analysis regarding land use type distributions is provided in this study than is typically assessed in other buildout methods, resulting in multiple residential and non-residential land use type estimates. Residential land use is classified as being Single family or Multi family and non-residential land use is classified as being Commercial (defined as retail, service and health related), Office and Industrial. The existing land use classifications identified as developable include Agricultural and Vacant. All other current land uses, including Municipal Facilities, Conserved Lands, Institutional, Other Government, Rights-of-Way are considered non-eligible for development. The land use classifications and codes used in this study are listed in Table 2-1.

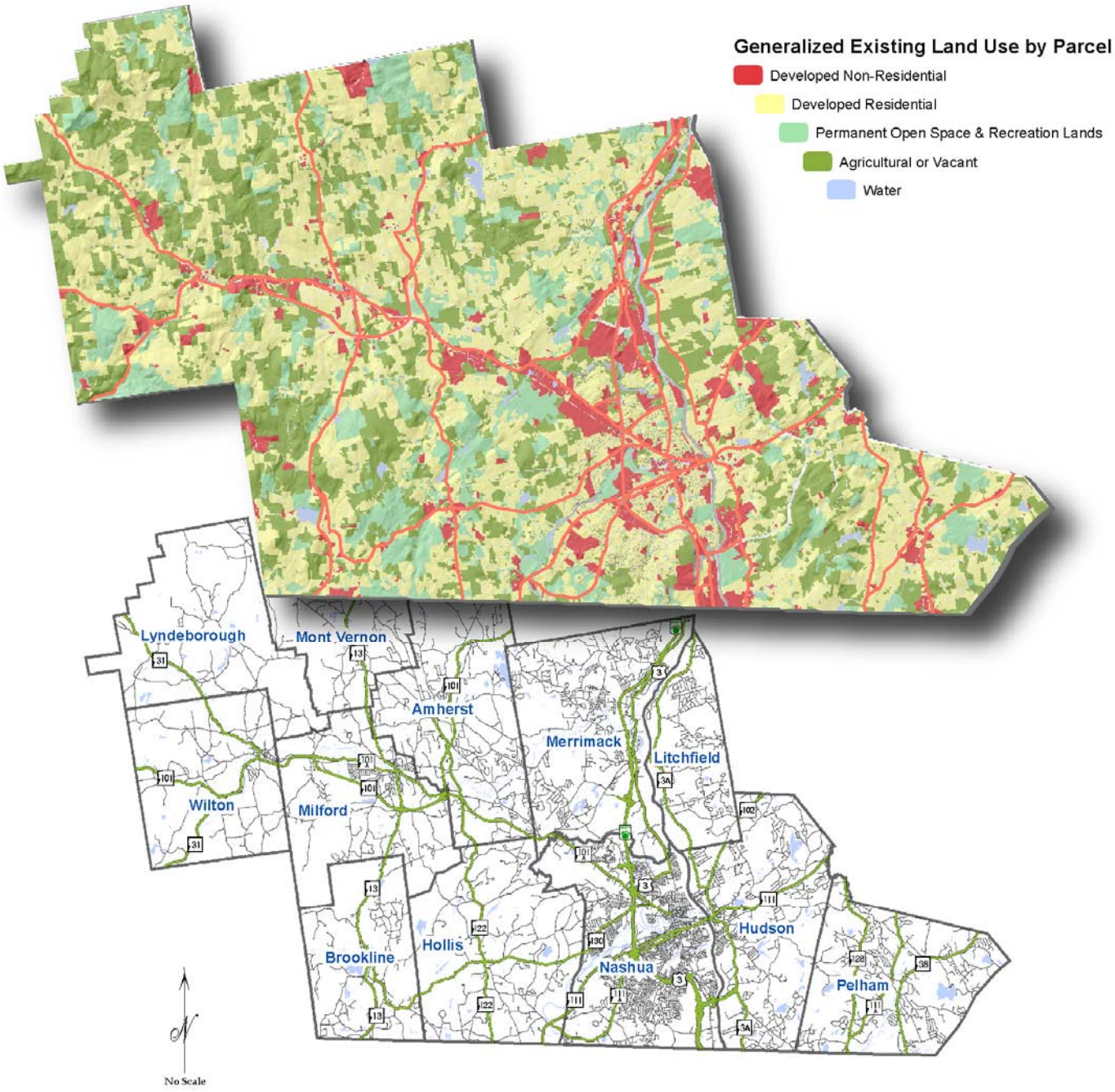
Table 2-1: Generalized Land Use

Land Use Code	Land Use Description
SF	Single family Residential
MF	Multi family Residential
Comm	Commercial
Off	Office
Ind	Industrial
Agr	Agricultural
Vacant	Vacant
Non-Eligible	Includes Municipal Facilities, Conserved Lands, Institutional, Other Government, Right-of-Way

A parcel-based buildout analysis offers several advantages over lump-sum or gross-area studies that have been done in the past. First, it estimates the number of new lots at buildout for each developable parcel in the region. This allows for a very explicit and accurate identification of where and how much growth will occur. Second, it accounts for the ownership, configuration and size of each lot region-wide. Parcels that are prohibited from further development can be immediately removed from the process such as municipally owned parks, facilities, street and utility rights-of-way and those parcels that are permanently protected as conservation lands. The process is illustrated in Step 2 of figure 2-1. This analysis also accounts for "under-developed parcels" or those properties that are currently built on, but because of their size and shape, have the potential to be further developed.

The buildout analysis is based on the zoning regulations for each community in effect in 2004. The zoning regulations are interpreted for each parcel region-wide as stated in Step 3 of Figure 2-1. A list of minimum lot sizes and permitted uses is then created for each individual parcel. Where more than one type of use is allowed, a ratio of uses is applied based on the current development pattern in that zoning district.

Map 2-1: Region-wide Generalized Existing Land Use



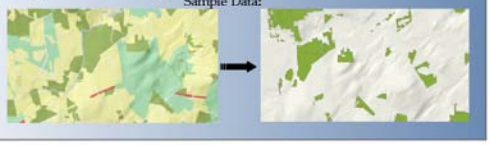
Source: NRPC GIS Database—2004

Figure 2-1: Step-by-Step Buildout Process

1. Identify existing conditions
   a. Land Use
   b. Housing
   c. Population
   d. Non-Residential

2. Remove non-eligible parcels based on ownership or use
   a. Municipal Properties
   b. Rights-of-Way
   c. Conserved Lands
   d. Developed to Zoning

Sample Data:



3. Identify the Zoning District for each Parcel
   a. Allowable Uses
   b. Minimum lot size

4. Identify partial constraints that may apply:
   a. Moderate slopes
   b. Design Features on large parcels
      1.) New Subdivision Roads
      2.) Rights-of-Way

Sample Constraints:

Constraint	Factor
Moderate Slopes	0.85
Design Features	0.90

5. Overlay and remove absolute constraint areas

Sample Constraints:

6. Calculate new lots for each parcel

Acres (after Absolute Constraint areas have Been removed)	x	Moderate Slope constraint	x	Design Features constraint	=	Developable Acres	/	Minimum Allowable Lot Size (Acres)	=	New lots (Developable Acres divided by minimum allowable lot size)
211		0.85		0.90		161		2		80

Sample parcel:

7. Calculate housing, population, non-residential & impacts at buildout from new lots created.

All buildout analyses remove certain constraint areas from the land available for development. For this buildout, these are called "Absolute Constraints" and they include:

- Water
- Wetlands
- 100 year floodplain
- Steep slopes >25%
- Riparian Buffers required by regulation

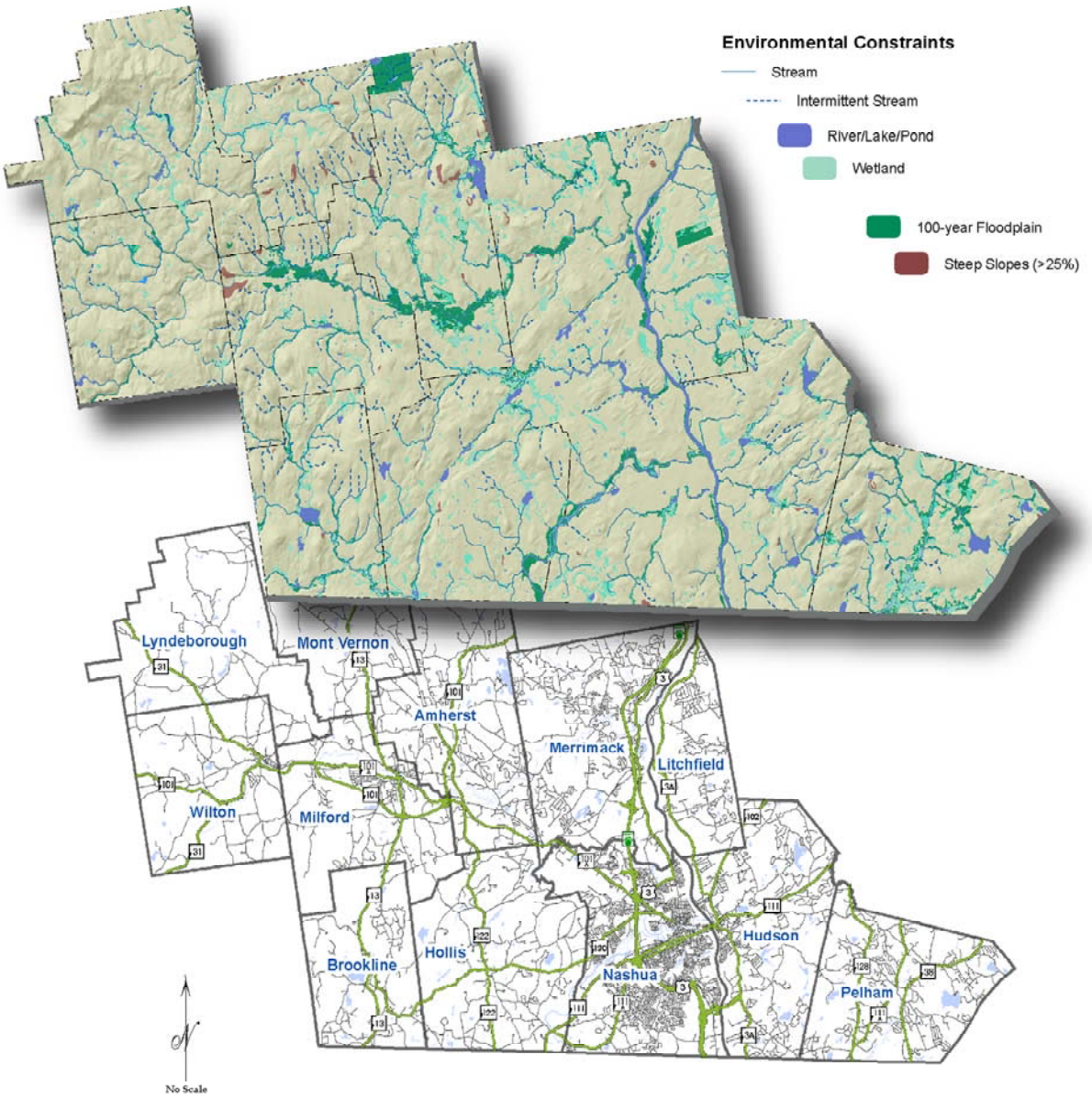
Using the GIS process, these constraint areas are removed from the acreage of developable land as shown in Step 5 of Figure 2-1.

In addition to the "absolute constraints" this analysis accounts for "partial constraints." These are features that may limit the amount of development that could occur on a parcel but do not absolutely restrict development. The application of partial constraints factors is illustrated in Step 4 of Figure 2-1.

Partial constraints include:

- Moderate slopes 15-25%
- Design features on large parcels: factors such as new subdivision roads, right-of-way areas, and other site-specific constraints that are difficult to calculate in a general way and may limit the number of new lots that could be created on a parcel.

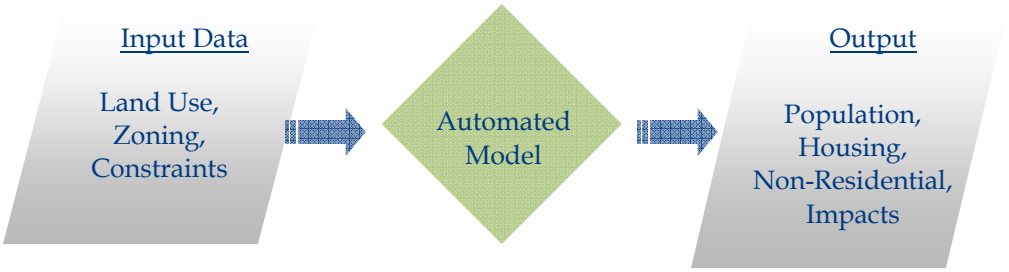
Map 2-2: Region-wide Environmental Constraints



Source: NRPC GIS Database and University of New Hampshire Complex Systems GRANIT Database—October2005

The buildout study is designed as an automated GIS based computer model. Current condition variables such as population, housing units, non-residential development and zoning are needed as inputs to the model. These quantitative measurements serve as baseline figures for the model's estimated output buildout values. The automated process permits step-by-step changes of the assumptions and input values such as zoning, allowable uses or densities. This process also allows for ease of updating when land use inputs change such as when land is purchased for conservation and no longer developable or changes to the zoning that increase or decrease the density of development. The model is designed to be highly tunable and repeatable. Figure 2.2 illustrates the basic inputs and outputs of the model.

Figure 2-2 Automated Model




MAJESTIC
HEIGHTS
(800) 350-4442
(603) 425-2300

CHAPTER 3
REGION-WIDE BUILDOUT IMPACTS

The buildout study estimates the maximum scale and type of growth that can be reasonably expected if the region's municipalities' current planning policies and regulations are continued into the future. The buildout model estimates the developable acreage and number of new lots that can be expected at buildout conditions for residential and non-residential development. From these values, impacts are calculated for housing units, population, commercial, office and industrial development, employees, school enrollment, traffic, water demand, solid waste, and emergency services. In this chapter, these impacts are reviewed on a community by community basis and as region-wide totals. Buildout totals region-wide can be represented as the number of new lots on developable areas and visually depicted as the development footprint at buildout. For more detailed buildout values for individual communities, refer to chapter 4.

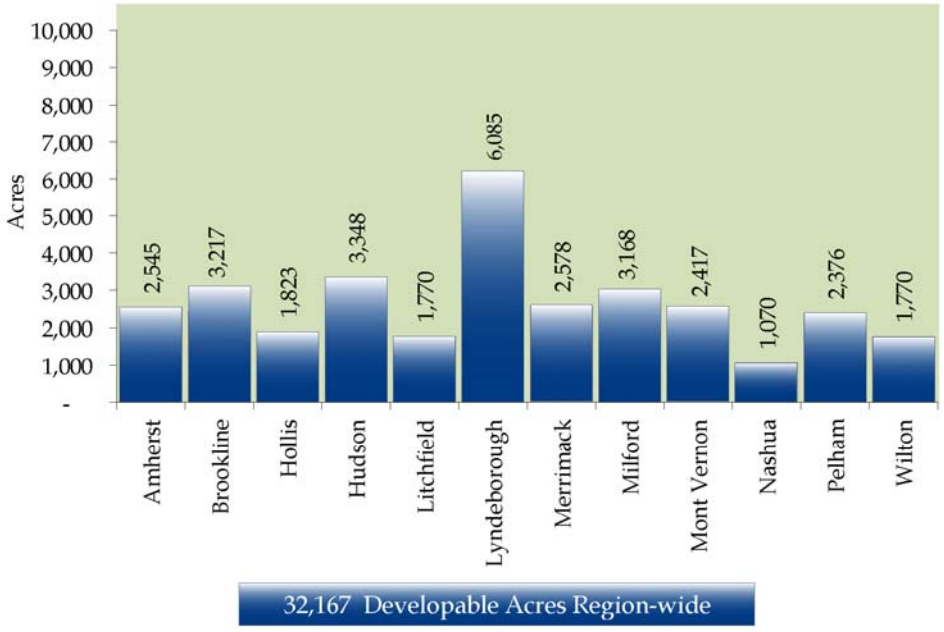
The impacts derived from this study are illustrative only. The buildout analysis is not a prediction or forecast of growth in the region and there is no timeline attached. The study is a planning tool that attempts to recognize the maximum potential for growth under current land use regulations. It is not appropriate for budgeting, capital improvement plans or growth management purposes, except as a general guide. The best available local and state data was used in the analysis. In some cases specific data was not available.

The impacts derived from this study are illustrative only. The buildout analysis is not a prediction or forecast of growth in the region and there is no timeline attached. The study is a planning tool that attempts to recognize the maximum potential for growth under current land use regulations. It is not appropriate for budgeting, capital improvement plans or growth management purposes, except as a general guide. The best available local and state data was used in the analysis. In some cases specific data was not available.

A. DEVELOPABLE ACRES

After the removal of non-eligible parcels, absolute constraints and partial constraints, the remaining land is the developable acreage. Figure 3-1 shows the total developable acreage for each community and the region as a whole. Developable acreage for each zoning district is included in Chapter 4 with individual community results. Map 3-1 depicts new lots in the region by parcel.

Figure 3-1: Developable Acres

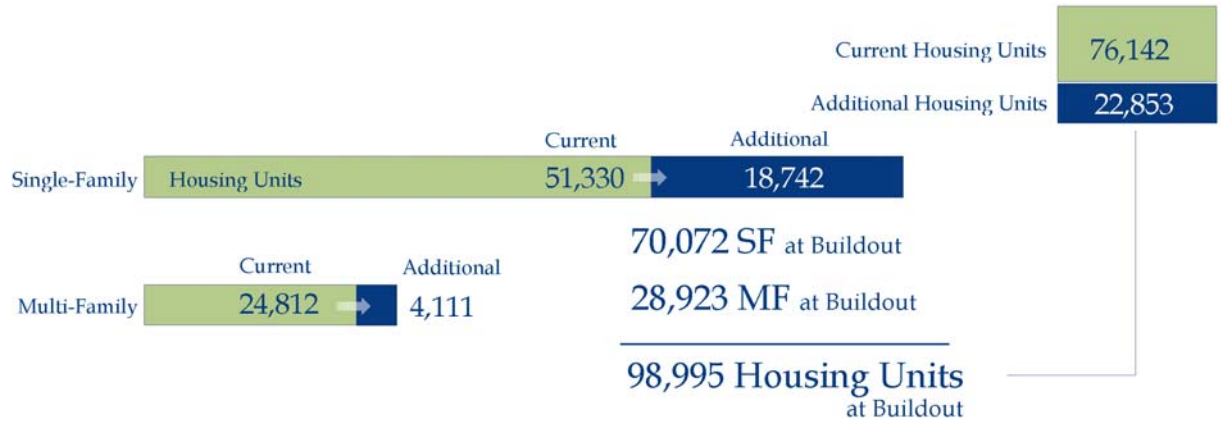


Source: NRPC Buildout Analysis—August 2005

B. HOUSING UNITS AT BUILDOUT

The buildout analysis estimates 98,995 housing units region-wide at buildout. This represents a 30% increase, or 22,853 units, from the base year (2003 NHOEP estimates) amount of 76,142 housing units. The majority of this new housing, 82%, is estimated to be detached single family housing units, with only 18% estimated to be multi family units. This is indicative of exclusive single family zoning districts and the continuation of existing land use trends in the buildout model. The buildout housing estimates are included in Figure 3-2 and 3-3 and depicted on Maps 3-1 and 3-2.

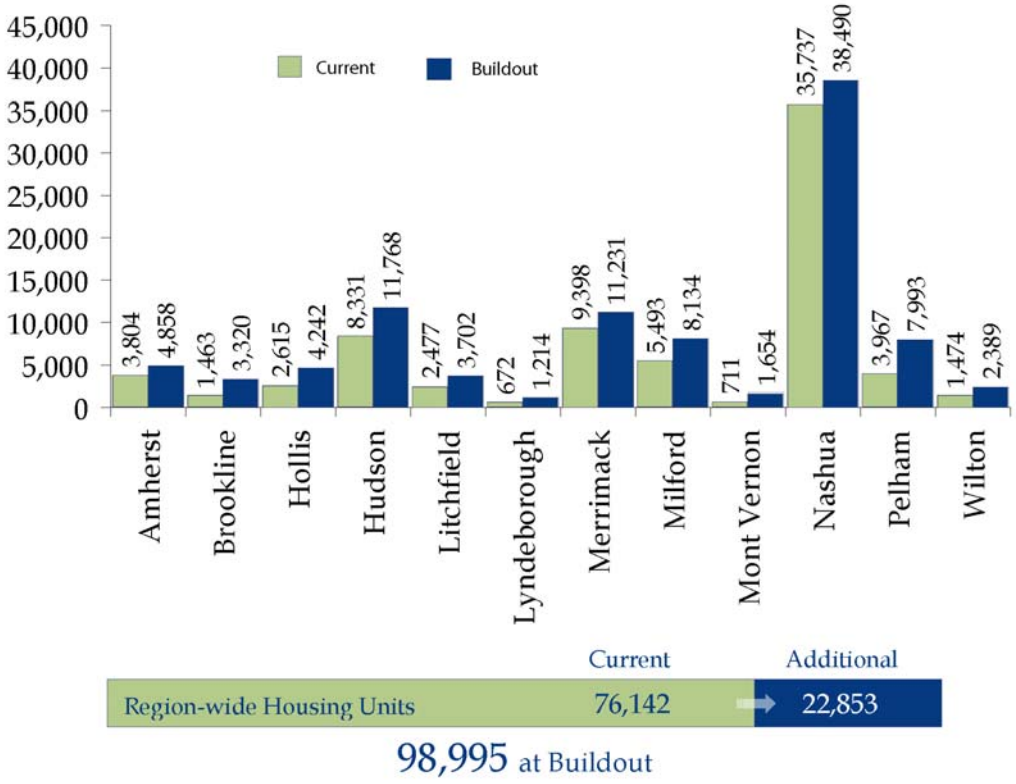
Figure 3-2: Estimated Housing Units at Buildout by Type



Source: NRPC Buildout Analysis—October 2005

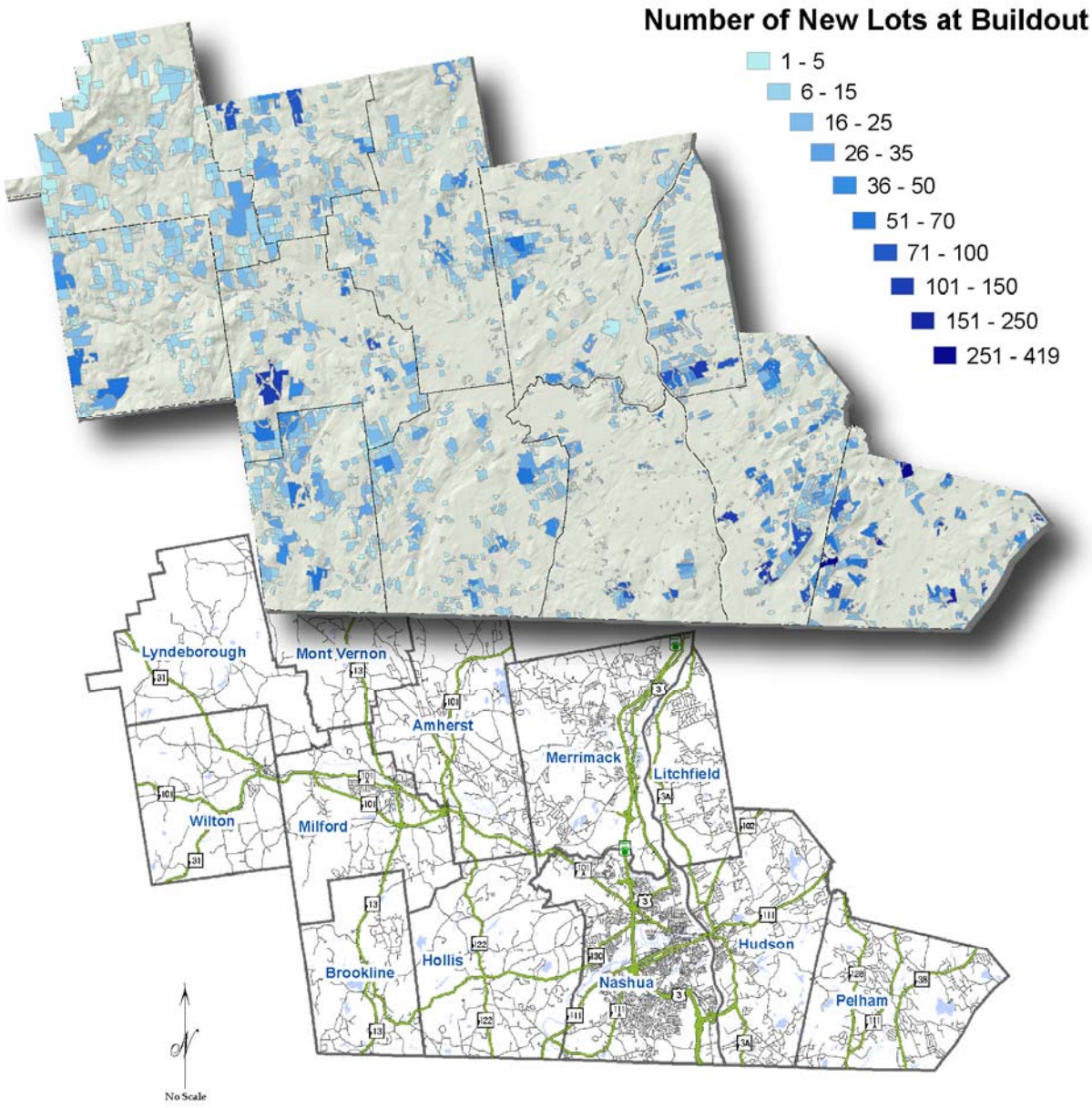
Single Family Housing accounts for 82% of the new estimated housing units region-wide at buildout.

Figure 3-3: Estimated Housing Units at Buildout by Community



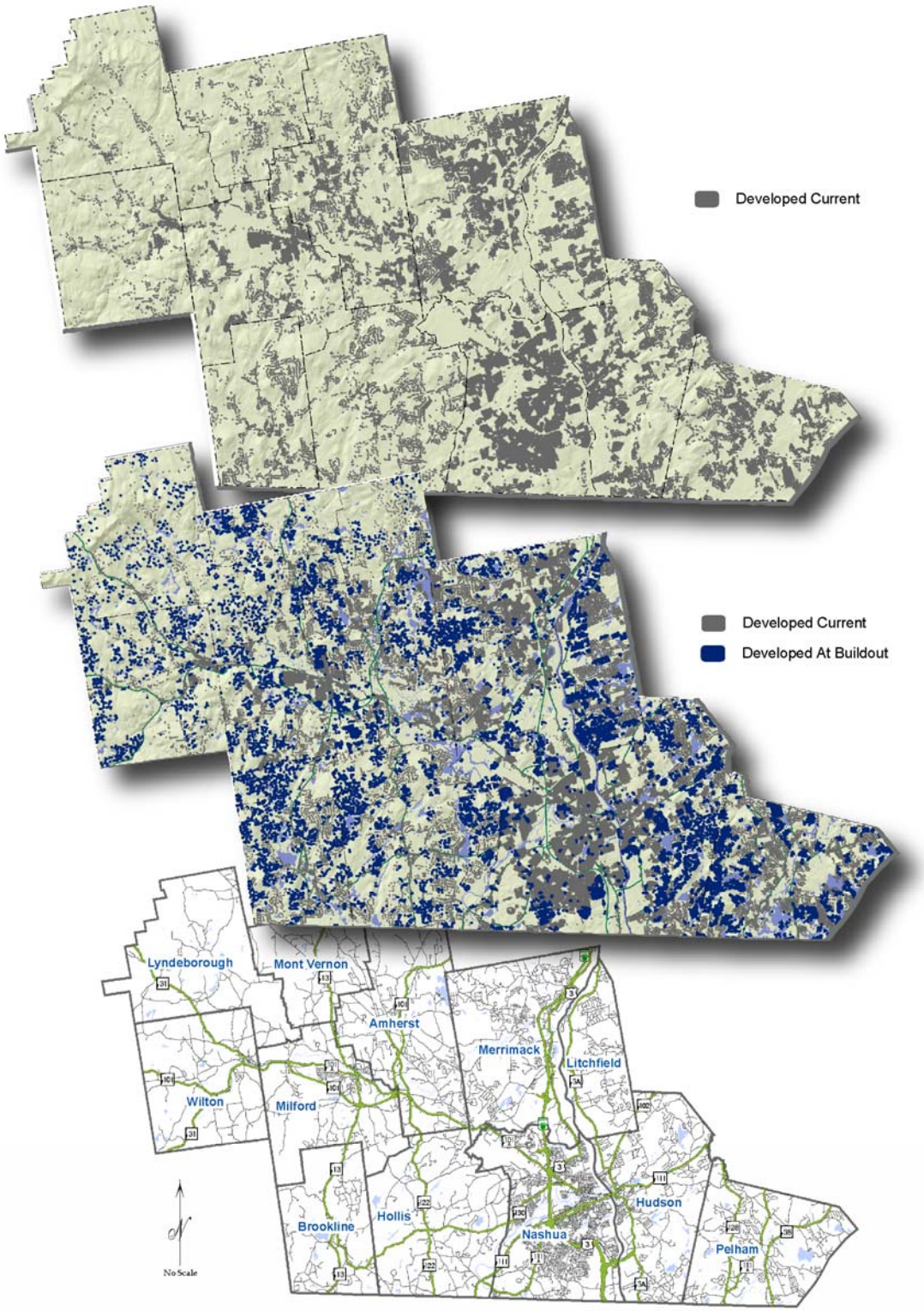
Source: NRPC Buildout Analysis—October 2005

Map 3-1: Estimated New Lots at Buildout



Source: NRPC Buildout Analysis—October 2005

Map 3-2: Estimated Development Footprint at Buildout

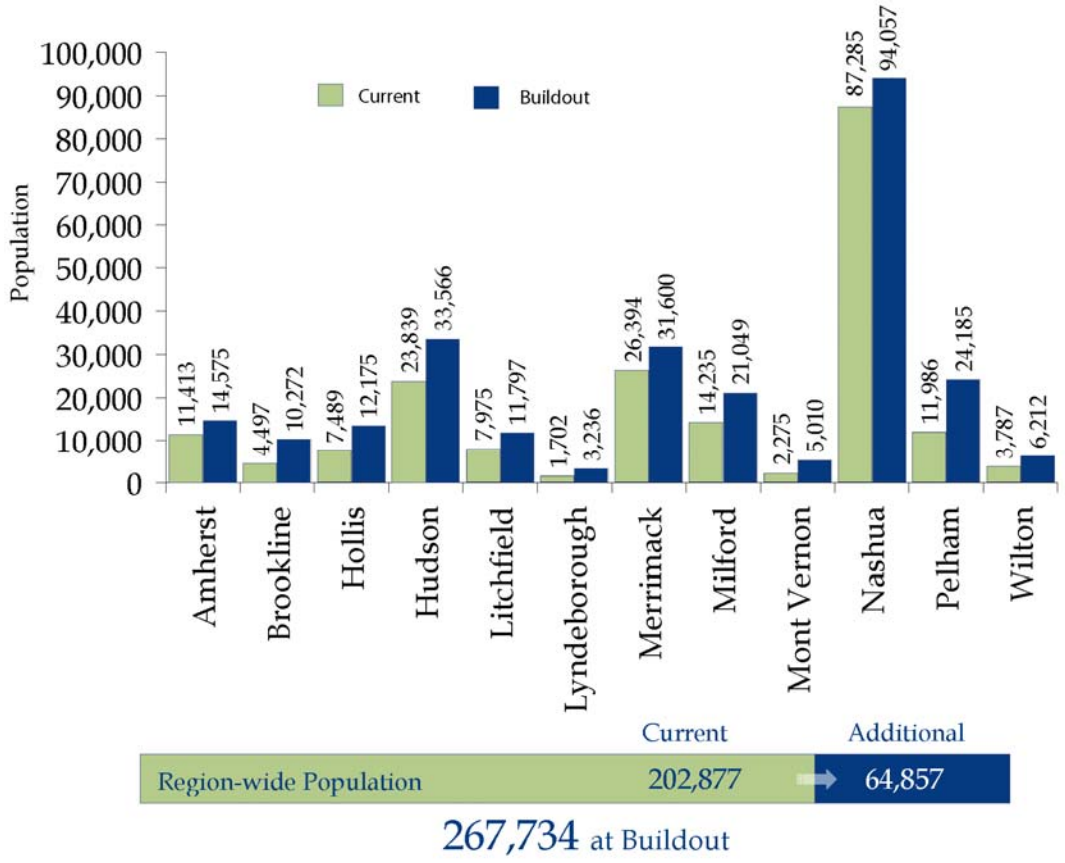


Source: NRPC Buildout Analysis—October 2005

C. POPULATION AT BUILDOUT

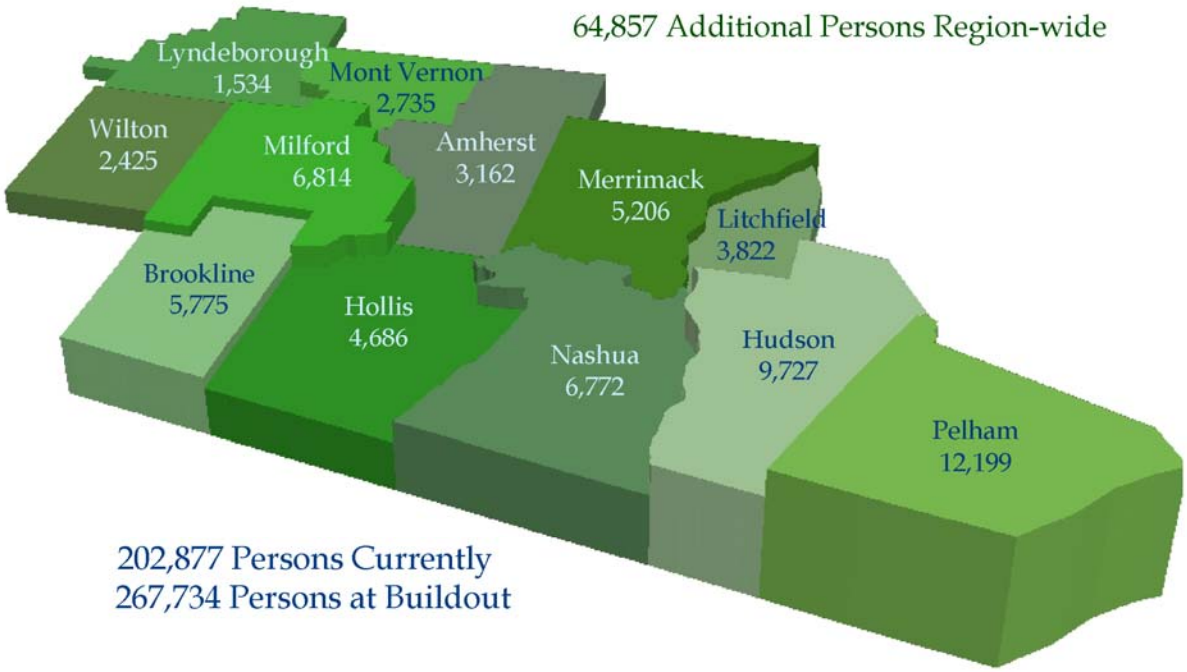
Buildout population is derived for each community by multiplying the U.S. Census 2000 value of persons per household by the estimated number of housing units at buildout. Individual community values are added together to derive region-wide totals. Population is estimated to be 267,734 persons region-wide at buildout. This represents a 32% increase, or 64,857 additional persons, from the base year (2003) population of 202,877. Figure 3-4 shows the increase in population from the 2003 base year (NHOEP Estimates) to buildout for the NRPC communities. Maps 3-3 and 3-4 illustrate the actual growth and the percent growth in each community in the region.

Figure 3-4: Estimated Population at Buildout



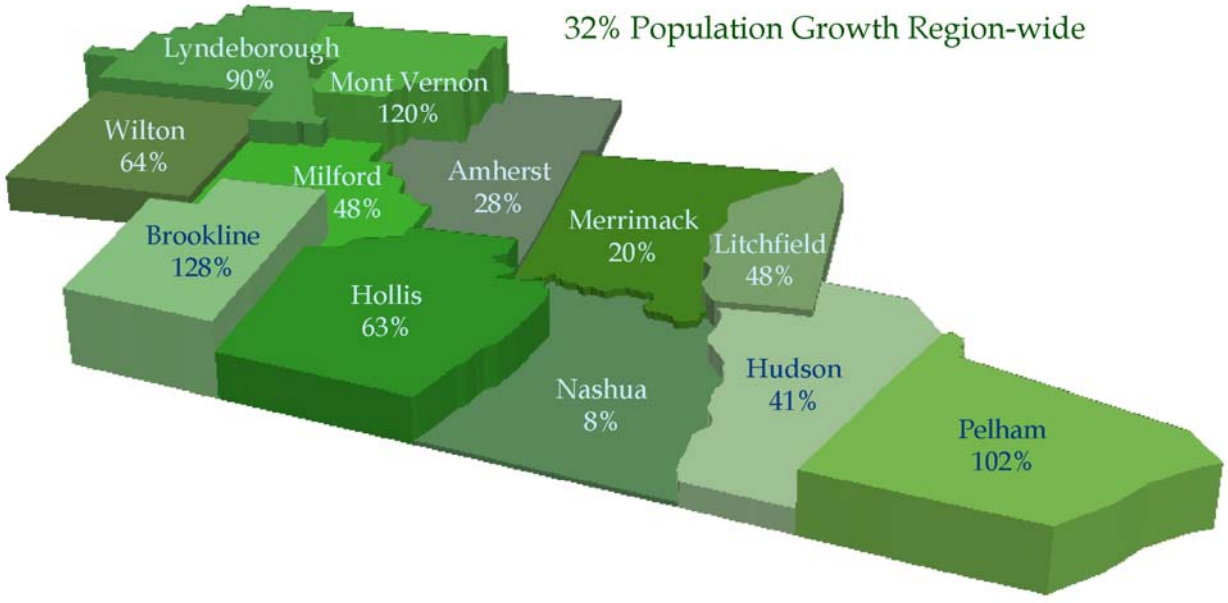
Source: NRPC Buildout Analysis—October 2005

Map 3-3: Estimated Additional Persons at Buildout



Source: NRPC Buildout Analysis—October 2005

Map 3-4: Estimated Percent Population Increase at Buildout



Source: NRPC Buildout Analysis—October 2005

D. NON-RESIDENTIAL GROWTH AT BUILDOUT

The buildout estimates the amount of non-residential growth in the following three classes: commercial, office and industrial. Impacts are also measured by the number of employees and the square footage of non-residential space available at buildout. Based on the 2004 zoning regulations for each community, region-wide, non-residential land use is expected to increase by 71%, or 2,042 new lots, at buildout. Map 3-5 illustrates the total increase in the number of non-residential lots estimated for each community.

Commercial, office and industrial square footage at buildout is estimated using a region-wide average square foot per lot value derived from GIS and assessing data. Different values were applied to the City of Nashua due to its role as the urban center for the region and to Merrimack for commercial because of pending development. Applying the average value figures in Table 3-1 to the new lot calculations indicates that the region can expect an additional 45,927,984 square feet of non-residential development at buildout.

Through data gathered for the regional travel demand model, NRPC can estimate for each municipality the number of employees per business for commercial, office and industrial business types by community. The expected number of employees region-wide can be calculated by applying these ratios to the estimates for non-residential development at

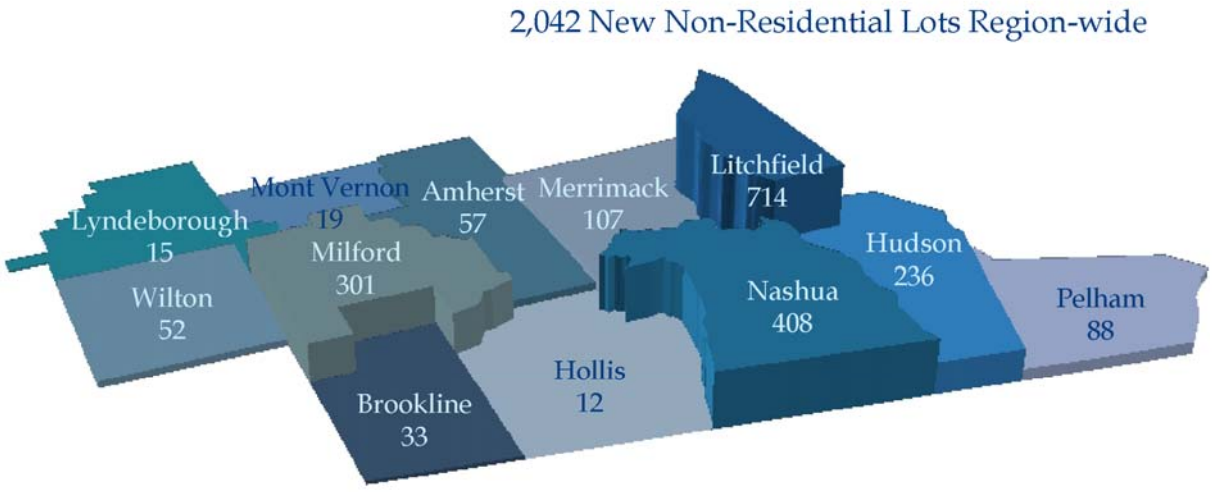
Table 3-1: Average Non-Residential Square Feet per Lot

Land Use	Average Square Feet/Lot		Nashua Average Square Feet/Lot
Commercial*	6,240		17,196
Office	7,819		18,687
Industrial	23,618		51,785

Source: Municipal Assessing Data—2003-2004

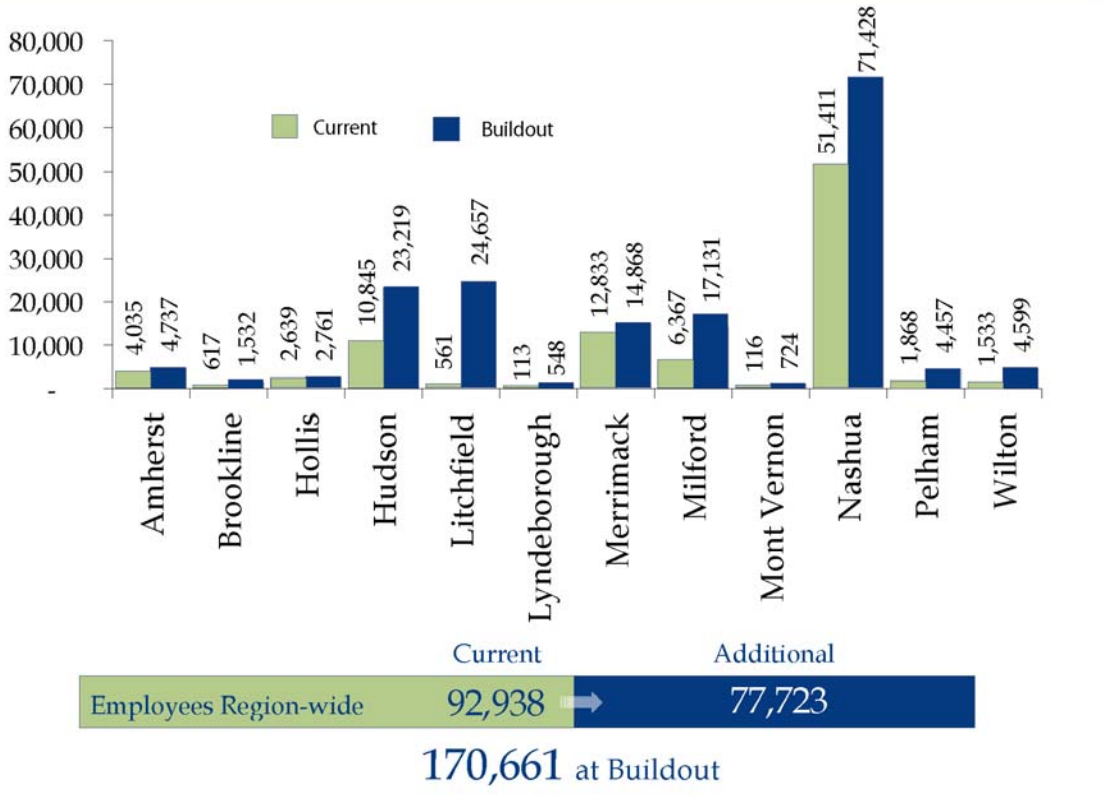
** Merrimack Average Commercial Square Foot: 18,720—Per Town Request to include several planned large developments*

Map 3-5: Estimated Non-Residential Lots at Buildout



Source: NRPC Buildout Analysis—October 2005

Figure 3-5: Estimated Employees at Buildout by Community



Source: NRPC Buildout Analysis—October 2005

buildout. The total number of employees region-wide is estimated to grow by 84%, or 77,723, to a buildout total of 170,661. Figure 3-5 compares the current employee estimates to the buildout estimates for each community.

The 71% growth in non-residential lots region-wide indicate a large amount of developable land in commercial, office or industrial zoning districts.

E. STUDENTS AT BUILDOUT

Estimates are calculated for the total number of students, kindergarten through high school, that are expected to be enrolled in public schools at buildout conditions. Current enrollment figures for each community in the region were gathered from community profiles and directly from school districts. These values represent the number of students enrolled in public school who live in the community. Using the 2003 base year housing figures, a students per housing unit ratio was derived for each community by dividing total enrollment by total number of housing units. The student per housing unit figures for each community are included in Table 3-2. This ratio is then applied to the total number of housing units at buildout to calculate total students expected at buildout. As indicated in Figure 3-6, an additional 11,091 students can be expected at buildout for a total of 46,052 students region wide, an increase of 32% over the 2003 base year of 34,961 students.

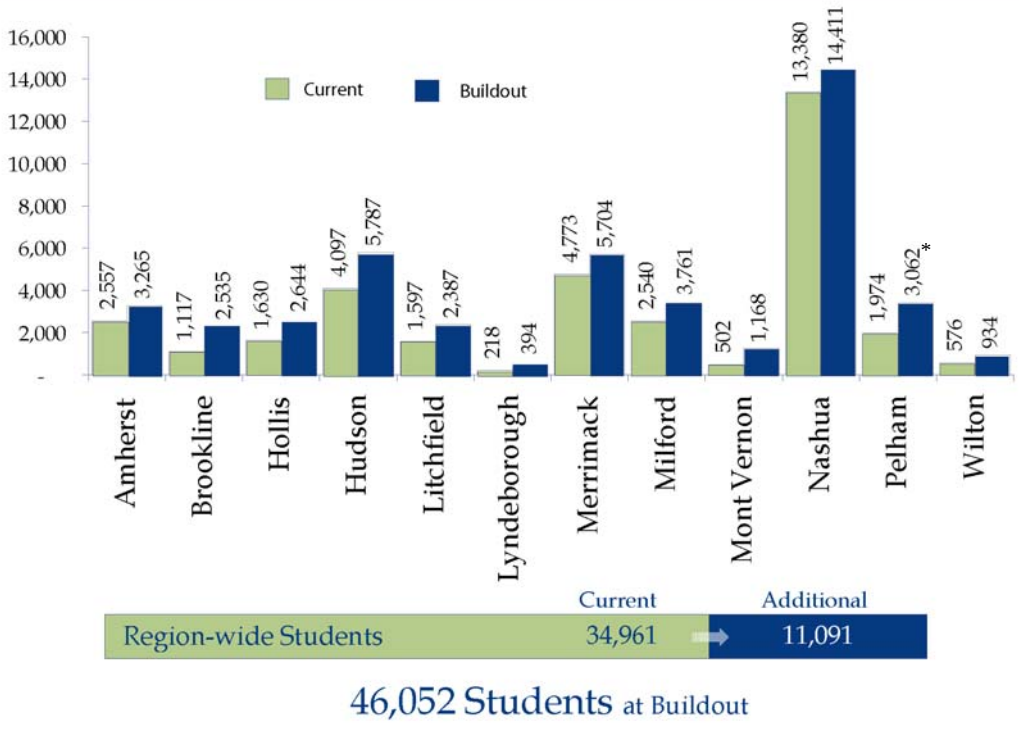
Table 3-2: Students Per Housing Unit

Municipality	Students Per-Housing Unit
Amherst	0.67
Brookline	0.76
Hollis	0.62
Hudson	0.49
Litchfield	0.64
Lyndeborough	0.32
Merrimack	0.51
Milford	0.46
Mont Vernon	0.71
Nashua	0.37
Pelham	0.50
Wilton	0.39

Source: NHOEP and Individual School Districts

Buildout values estimate an additional 11,091 public school students.

Figure 3-6: Estimated Public School Students at Buildout



Source: NRPC Buildout Analysis—October 2005

* See Pelham Buildout - Page 56

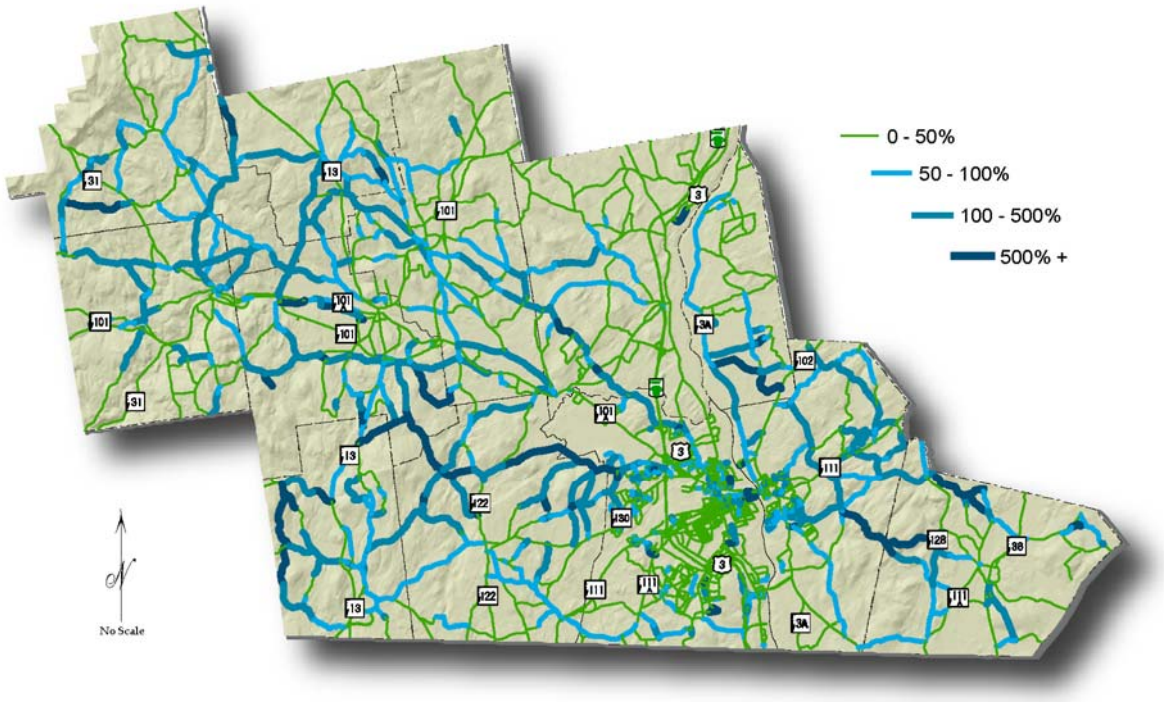
F. TRAFFIC AT BUILDOUT

NRPC maintains a sophisticated Regional Travel Demand Model to predict traffic patterns and volumes on road segments region-wide. The base year (2000) version of the traffic model contains current road networks and current housing and non-residential information. A buildout version of the traffic model was created by applying the estimated buildout totals. This was done using the base year road network without any improvements or new roads that may be built. The traffic volumes and conditions are compared between the base year model and the buildout model. According to the model, the mean percent volume increase in traffic for road segments region-wide, shown in Map 3-6, is 55%. Three (3) percent of road segments are estimated to increase in volume by 300% or more at buildout. Fifteen (15) percent are estimated to increase by 100% or more and 30% are estimated to increase by 50% or more. The transportation model includes only major routes. It does not include every street in the region.

Buildout values estimate an additional 43,673 vehicles in the region.

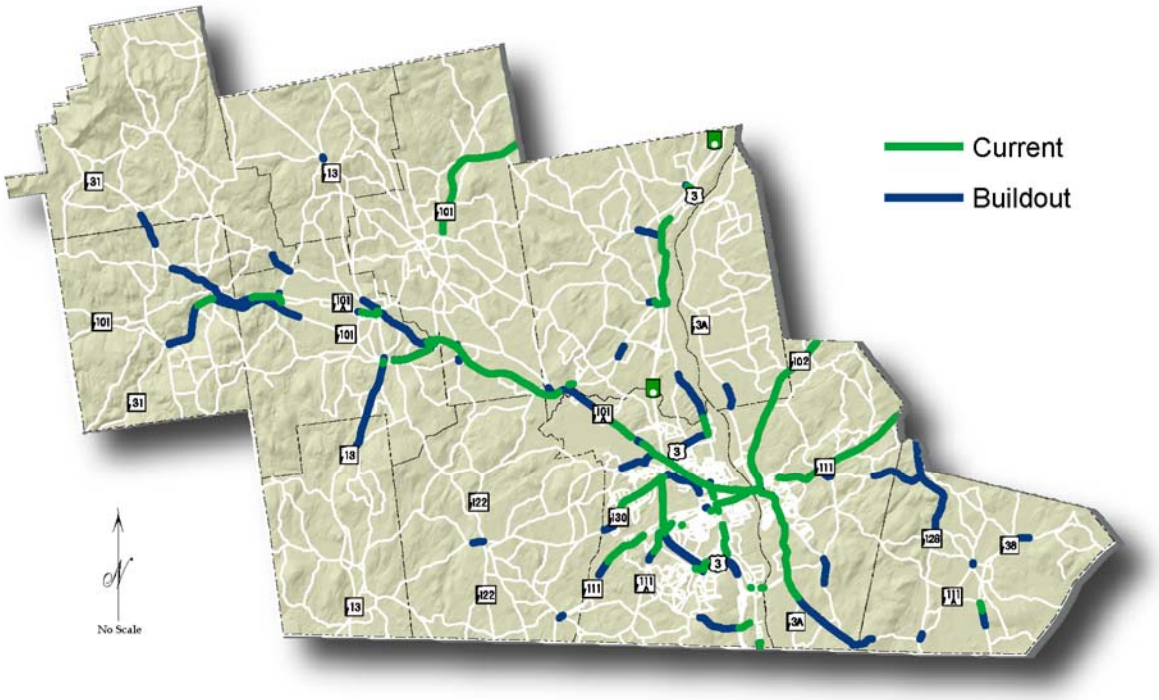
Road segments that are at or over capacity can also be identified by the transportation model. Road capacity is based on standards that account for the number of lanes and the type of road. A road segment is over capacity when the volume is greater than the capacity. The base year (2000) model

Map 3-6: Estimated Percent Increase in Traffic Volume at Buildout



Source: NRPC Buildout Analysis—October 2005

Map 3-7: Estimated Street Segments Over Capacity at Buildout



Source: NRPC Buildout Analysis—October 2005

indicates that 7% of the roadway network is operating at or above capacity. After applying the buildout totals, approximately 12% of the roadway network would be operating at or above capacity. The comparison of the base year with the buildout values is illustrated on Map 3-7.

According to U.S. Census 2000 figures, there is an average of 1.9 vehicles per household in the region. Applying this value to estimated housing units at buildout provides an estimate of 43,421 additional vehicles region-wide at buildout.

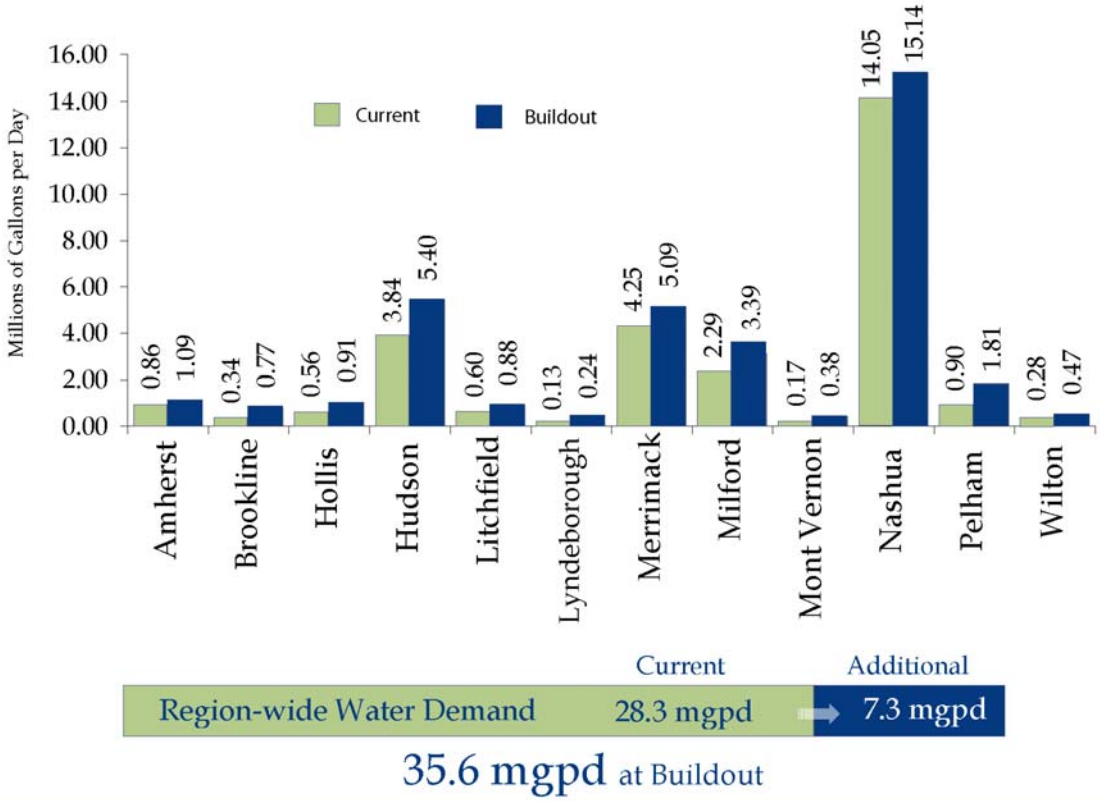
G. WATER DEMAND AT BUILDOUT

As the amount of housing and non-residential development grows in the region, the demand for fresh water will increase proportionately. In the NRPC region, water is supplied through a combination of private and public wells, and private and public water systems, with the biggest water system being Pennichuck Water Works. Water demand is often estimated using gallons per day per capita values. Using system-wide Pennichuck Water Works' measurements, gallons per day per capita averages were derived for the region. An average of 161 gallons per day per capita value is applied to communities with a mix of residential and non-residential development and an average of 75 gallons per day per capita value is applied to largely suburban, residential communities. The larger (161 gpd) value accounts for the generally higher water use of commercial, office and industrial businesses.

Values for regional water demand at buildout are calculated by applying the buildout population estimates to the average per capita water use figures. These values assume that households using wells have the same average water demand as households on water systems. Based on these calculations the region will need an additional 7.3 million gallons per day (mgd) of water for a total of 35.6 mgd to accommodate the estimated buildout demand for water use. Figure 3-7 shows current water demand and buildout water demand for the NRPC communities.

It should be noted that there are several very large water users in the region, with the biggest being the Anheuser-Busch plant in Merrimack. The plant uses approximately 1.8 million gallons per day of water that is not included in the per capita averages.

Figure 3-7: Estimated Water Demand at Buildout



Source: NRPC Buildout Analysis and Pennichuck Water Works - August 2005

H. SOLID WASTE AT BUILDOUT

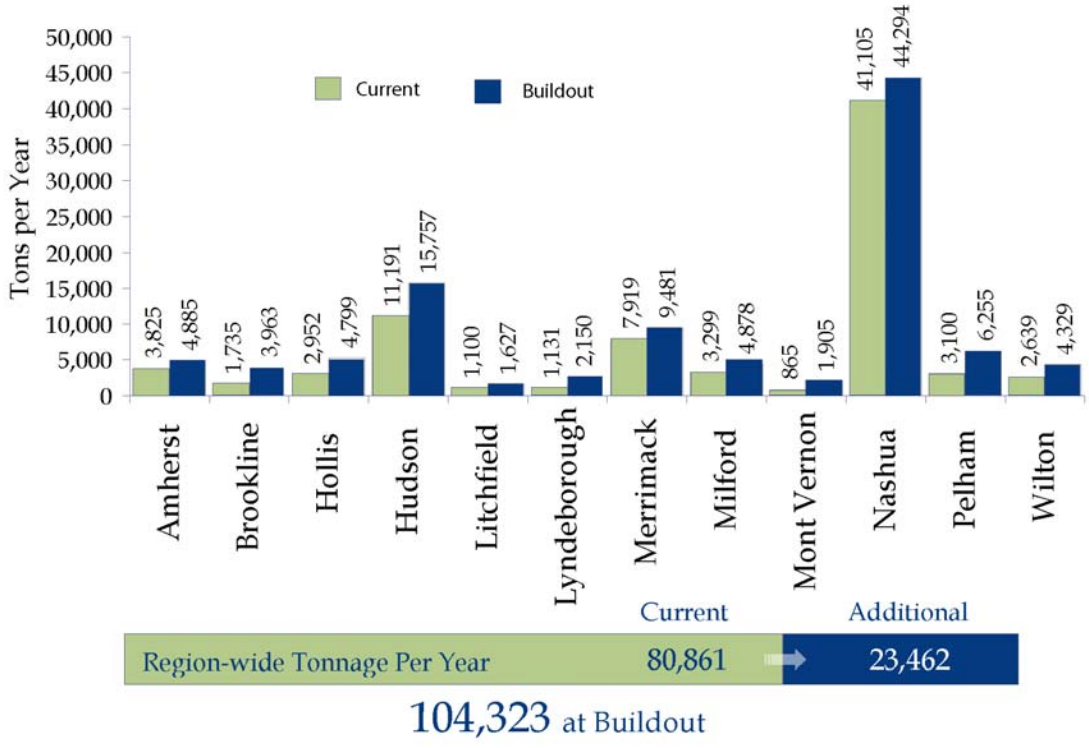
The amount of solid waste, or trash, that is contributed to landfills by the region is another important consideration of buildout. The New Hampshire Department of Environmental Services, Bureau of Solid Waste, tracks the tonnage of trash per year contributed from each municipality. Using the 2003 base year population figures and the 2003 tonnage information, a tons per year per capita value is calculated for each community in the region as indicated in Table 3-3. This value is then applied to the estimated buildout population figures to derive an estimate of region-wide tonnage per year at buildout. Based on these calculations, an increase of 23,462 tons of solid waste can be expected region-wide at buildout for a total of 104,323 tons per year. Figure 3-8 compares the 2003 solid waste generation figures with the buildout generation figures for the NRPC communities. These values do not include recycling or certain building construction materials that are usually not disposed of in a local landfill.

Table 3-3: Solid Waste Disposal per Capita

Municipality	Tons per Capita
Amherst	0.34
Brookline	0.39
Hollis	0.39
Hudson	0.47
Litchfield	0.14
Lyndeborough	0.66
Merrimack	0.30
Milford	0.23
Mont Vernon	0.38
Nashua	0.47
Pelham	0.26
Wilton	0.70

Source: NHDES—2003

Figure 3-8: Estimated Solid Waste Disposal at Buildout



Source: NRPC Buildout Analysis—October 2005

I. EMERGENCY SERVICES AT BUILDOUT

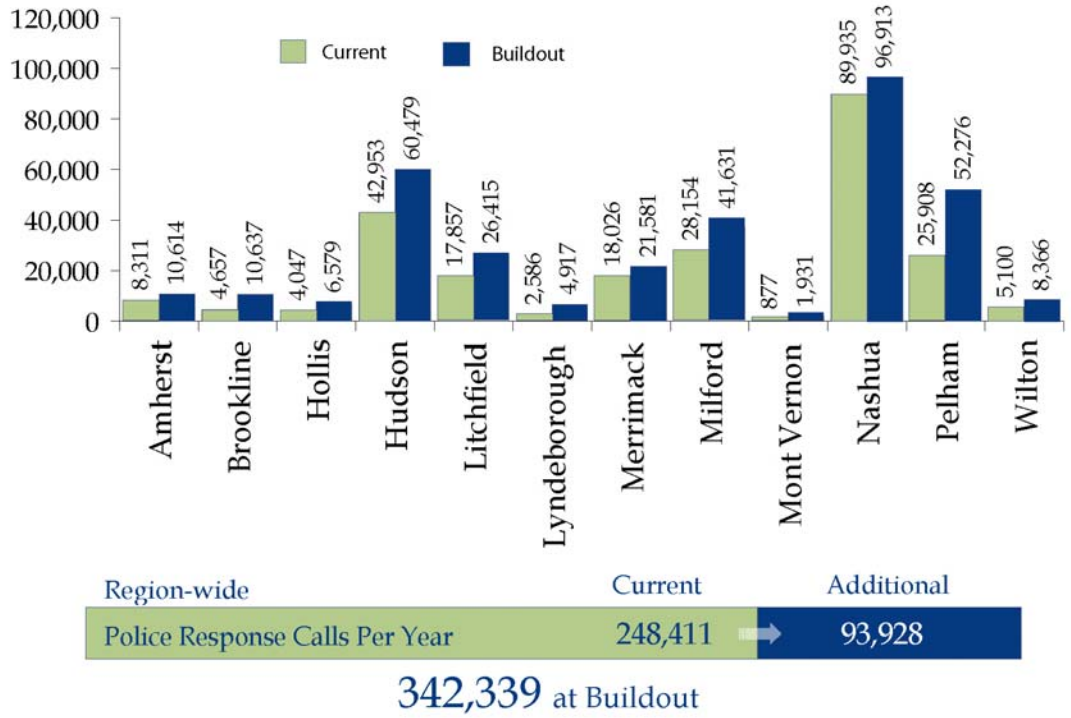
As the region grows, communities will need to plan for the increased resources needed to provide police, fire and ambulance protection at buildout populations. Each municipality in the region tracks the number of police and fire/ emergency calls that are handled in a year. Annual per capita service responses are calculated using the 2003 base year population figures and the call data for 2003 and are indicated in Table 3-4. These values were then applied to population estimates at buildout to derive estimated yearly police and emergency service calls expected at buildout. As shown in Figures 3-9 and 3-10, police calls are expected to increase by 93,928 calls region-wide for a total of 342,339 calls annually and fire/emergency calls are expected to increase by 5,806 calls region wide for a total of 23,391 calls annually at buildout. Tracking fire/ambulance estimates is complicated by the use of private ambulance services and by support often provided across municipal borders.

Table 3-4: Police and Emergency Service Annual Responses per Capita

Municipality	Police Responses per Capita	Fire Responses per Capita
Amherst	0.73	0.09
Brookline	1.03	0.03
Hollis	0.54	0.09
Hudson	1.79	0.12
Litchfield	2.28	0.06
Lyndeborough	1.50	0.08
Merrimack	0.68	0.09
Milford	1.95	0.07
Mont Vernon	0.39	0.04
Nashua	1.02	0.07
Pelham	2.15	0.08
Wilton	1.30	0.15

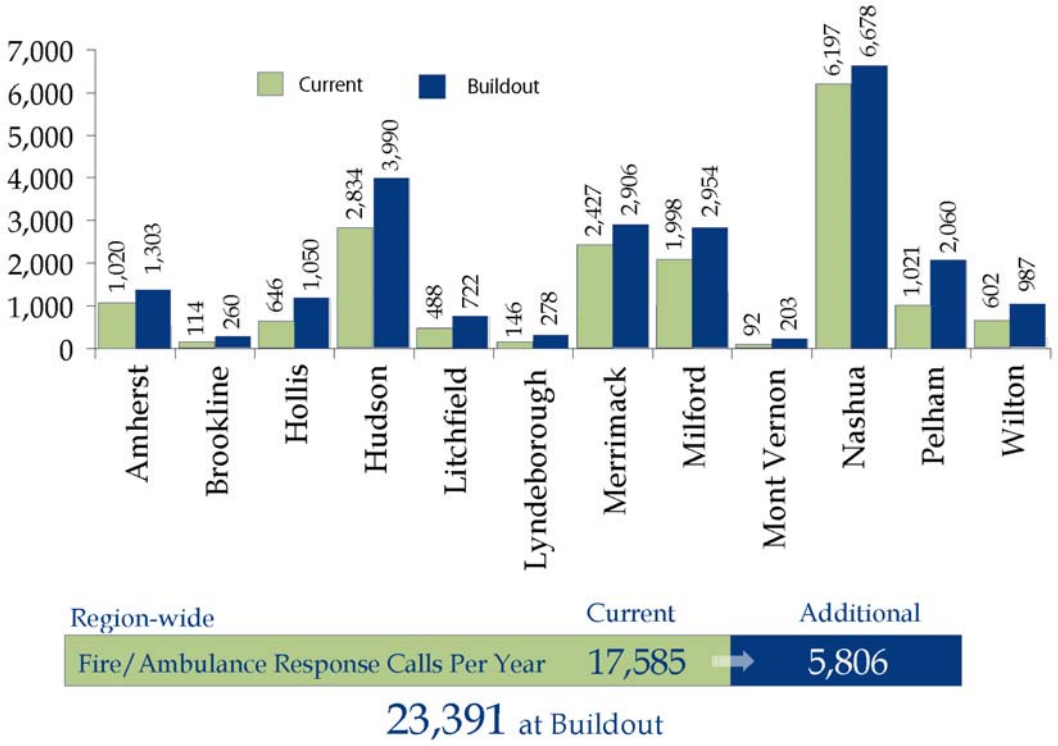
Source: Municipal Annual Reports - 2003-2004

Figure 3-9: Estimated Police Response Calls per Year at Buildout



Source: NRPC Buildout Analysis—October 2005

Figure 3-10: Estimated Emergency Service Calls per Year at Buildout



Source: NRPC Buildout Analysis - October 2005

J. REGION-WIDE BUILDOUT SUMMARY

Continued growth to buildout conditions would have significant impacts on resources and services in the region. A summary of the region-wide buildout results includes:

- Housing units region-wide are estimated to increase by 30%, from 76,142 in 2003, to 98,995 at buildout; an increase of 22,853 housing units.
- 82% of the housing unit growth is estimated to be single family houses.
- Population region-wide is estimated to increase by 32%, from 202,877 persons in 2003, to 267,735 persons at buildout; an increase of 64,857 persons.
- Non-residential lots region-wide are estimated to increase by 71%, with an additional 2,042 new non-residential lots at buildout.
- An additional 11,091 public school students are estimated region-wide at buildout.
- An additional 43,421 automobiles are estimated region-wide at buildout.

- According to the NRPC transportation model, an estimated 12% of road segments region-wide would be operating over capacity at buildout, compared with 7% in 2000 operating over capacity.

- Water demand is estimated to increase by 7.3 mgpd (million gallons per day) from 28.3 mgpd in 2003 to 35.6 mgpd at buildout.

- Solid waste demand, or trash placed in landfills, is estimated to increase region-wide by 23,462 tons per year, from 80,861 tons per year in 2003 to 104,323 tons per year at buildout.

- Police response calls per year are estimated to increase region-wide by 93,928 responses, from 248,411 in 2003 to 342,339 at buildout.

- Fire and emergency service response calls per year are estimated to increase region-wide by 5,806 responses, from 17,585 in 2003 to 23,291 at buildout.

CHAPTER 4: COMMUNITY BUILDOUT RESULTS

In this chapter, buildout results are presented community-wide and for each zoning district within the community. The amount of developable acres is calculated for each eligible parcel in the community. The zoning-based minimum lot size is then divided into the developable acres to produce an estimate of the number of new lots at buildout. This value is aggregated to the zoning district and community-wide level and used to estimate the number of housing units, population and non-residential development at buildout. The number of new lots estimated at buildout are provided for each zoning district and by the five generalized land uses: single family residential, multi family residential, commercial, office and industrial. For zoning districts that allow multiple uses, new estimated lots may be distributed among multiple land use types. This distribution is based on the current ratio of allowable use types within the zoning district. Appendix B lists the ratios applied to each zoning district for each municipality.

The additional population at buildout is calculated by multiplying new estimated housing units by the number of persons per household from U.S. Census 2000 figures. The total non-residential square feet is calculated for current (base year 2003) values and for the additional amount at buildout. Each of the twelve communities in the region is presented separately in alphabetical order.

Map 4-1: Communities in the NRPC Region

Source: NRPC GIS Database- October 2005

The impacts derived from this study are illustrative only. The buildout analysis is not a prediction or forecast of growth in the region and there is no timeline attached. The study is a planning tool that attempts to recognize the maximum potential for growth under current land use regulations. It is not appropriate for budgeting, capital improvement plans or growth management purposes, except as a general guide. The best available local and state data was used in the analysis. In some cases specific data was not available.

A. AMHERST

Results of the buildout analysis for the Town of Amherst are included in Table 4-1 below. The buildout study estimates that an additional 1,054 housing units are possible in Amherst, all of which will be single family houses. This represents a 28% increase, from 3,804 current housing units to 4,858 housing units at buildout.

Using the population multiplier of 3.0 persons per household, based on the 2000 Census, population increases by 3,162 persons, from 11,413 to 14,575 at buildout.

Commercial (retail/service) space is estimated to increase by 25% from 499,200 square feet to 624,000 square feet. Office space is estimated to increase by 20% from 273,665 square feet to 328,398 square feet. Industrial space is estimated to increase the greatest amount by 75% from 944,720 square feet to 1,653,260 square feet. The Town of Amherst has approved two very large retail developments along NH Route 101A that will add several hundred thousand square feet to the commercial space in town. This additional square footage is not included in the estimated value at buildout.

Table 4-1: Amherst—Town-wide Buildout Results

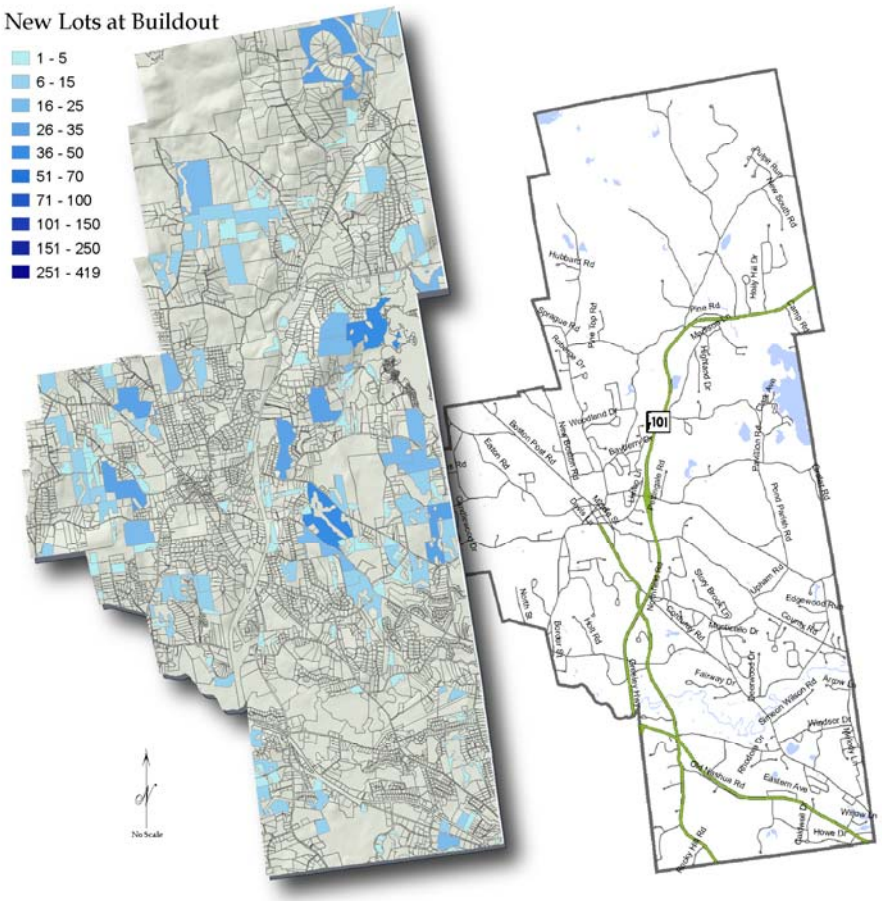
	Current[1]	Additional	At Buildout
Population	11,413	3,162	14,575
Persons per Household[2]	3.00		3.00
Housing units	3,804	1,054	4,858
Single family Housing	3,637	1,054	4,691
Multi family Housing units (incl. Mobile Home)	167	0	167
Multi family lots[3]	43	0	43
Multi family Housing units per lot[4]	3.9		
Commercial/retail lots[3]	80	20	100
Commercial/retail square feet[5]	499,200	124,800	624,000
Office lots[3]	35	7	42
Office square feet[6]	273,665	54,733	328,398
Industrial lots[3]	40	30	70
Industrial square feet[7]	944,720	708,540	1,653,260

[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family Housing units divided by multi family lots.
[5] Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.
[6] Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.
[7] Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.

Table 4-2: Amherst—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
C	8	9	-	-	8	1	-
GO	4	4	3	0	0	1	-
I	46	46	-	-	12	5	30
LC	0		-	-	-	-	-
NR	563	112	112	-	-	-	-
NT	94	26	26	-	-	-	-
POD	0		-	-	-	-	-
RR	1830	913	913	-	-	-	-
Totals:	**2,545**	**1,110**	**1,054**	**0**	**20**	**7**	**30**

Map 4-2: Amherst—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

B. BROOKLINE

Results of the buildout analysis for the Town of Brookline are included in Table 4-3 below. The buildout study estimates that an additional 1,857 housing units are possible in Brookline, of which 1,680 will be single family houses and 177 will be multi family units. This represents a 127% increase from 1,463 current housing units to 3,320 housing units at buildout.

Using the population multiplier of 3.11 persons per household, based on the 2000 Census, population increases by 5,775 persons, from 4,497 to 10,272 at buildout.

Commercial (retail/service) space is estimated to increase by 48% from 193,440 square feet to 287,040 square feet. Office space is estimated to increase by 50% from 234,570 square feet to 351,855 square feet. Industrial space is estimated to increase by 43% from 165,326 square feet to 236,180 square feet.

Table 4-3: Brookline—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	4,497	5,775	10,272
Persons per Household[2]	3.11		3.11
Housing units	1,463	1,857	3,320
Single family Housing	1,357	1,680	3,037
Multi family Housing units (incl. Mobile Home)	106	177	283
Multi family lots[3]	31	52	83
Multi family Housing units per lot[4]	3.4		
Commercial/retail lots[3]	31	15	46
Commercial/retail square feet[5]	193,440	93,600	287,040
Office lots[3]	30	15	45
Office square feet[6]	234,570	117,285	351,855
Industrial lots[3]	7	3	10
Industrial square feet[7]	165,326	70,854	236,180

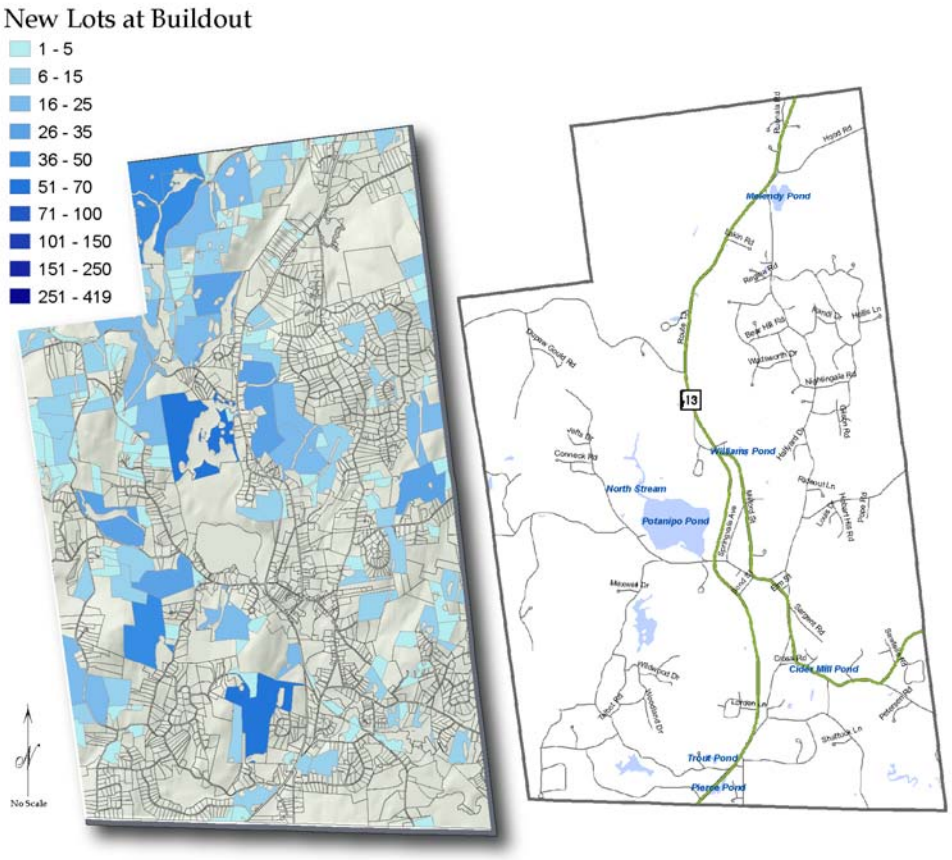
[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family Housing units divided by multi family lots.
[5] Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.
[6] Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.
[7] Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.

Table 4-4: Brookline—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
Ind/Commercial	34	34	-	-	15	15	3
Residential/Agr.	3,183	1,732	1,680	52	-	-	-
Totals:	**3,217**	**1,766**	**1,680**	**52**	**15**	**15**	**3**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-3: Brookline—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

C. HOLLIS

Results of the buildout analysis for the Town of Hollis are included in Table 4-5 below. The buildout study estimates that an additional 1,627 housing units are possible in Hollis, of which 1,577 will be single family houses and 50 will be multi family units. This represents a 62% increase from 2,615 current housing units to 4,242 housing units at buildout.

Using the population multiplier of 2.88 persons per household, based on the 2000 Census, population increases by 4,686 persons, from 7,489 to 12,175 at buildout.

Commercial (retail/service) space is estimated to increase by 14% from 230,880 square feet to 263,827 square feet. Office space is estimated to increase by 6% from 93,828 square feet to 99,458 square feet. Industrial space is estimated to increase by 40% from 354,270 square feet to 495,978 square feet. These values are based on estimates provided by town officials and are not results of the model.

Table 4-5: Hollis—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	7,489	4,686	12,175
Persons per Household[2]	2.88		
Housing units	2,615	1,627	4,242
Single family Housing	2,375	1,577	3,952
Multi family Housing units (incl. Mobile Home)	240	50	290
Multi family lots[3]	10	2	12
Multi family Housing units per lot[4]	25.0		
Commercial/retail lots[3]	37	5	42
Commercial/retail square feet[5]	230,880	32,947	263,827
Office lots[3]	12	1	13
Office square feet[6]	93,828	5,630	99,458
Industrial lots[3]	15	6	21
Industrial square feet[7]	354,270	141,708	495,978

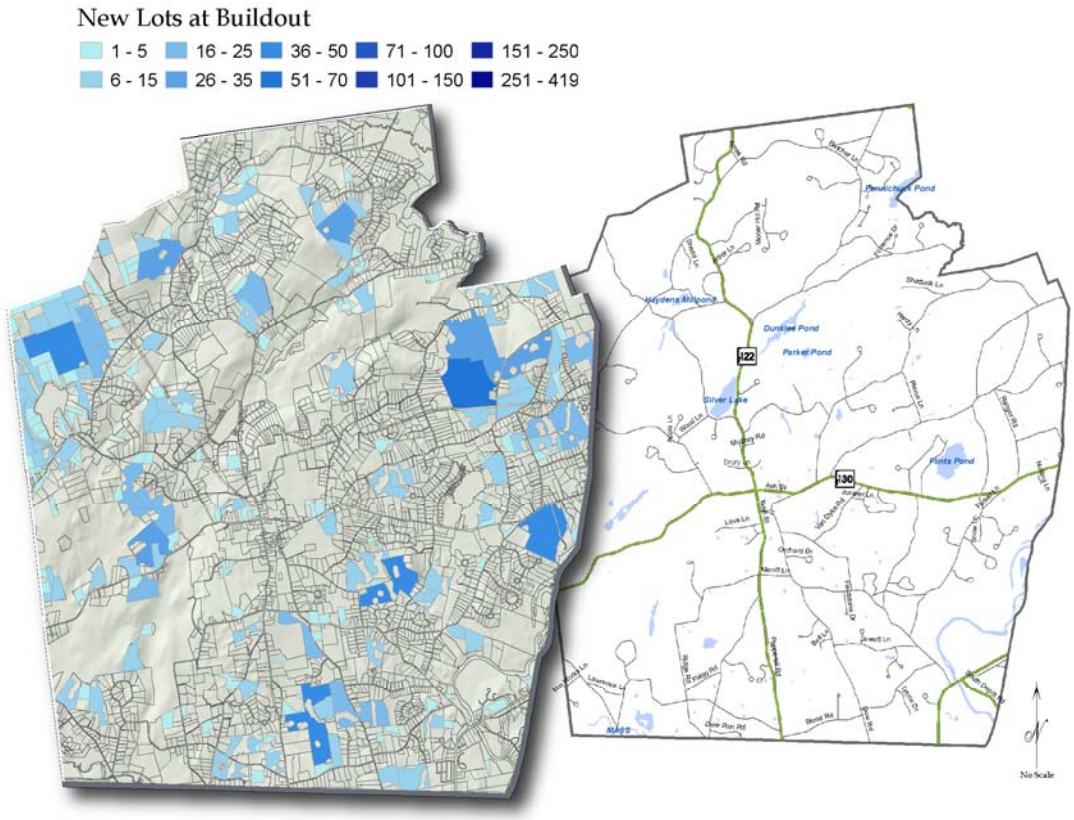
[1] *Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.*
[2] *Persons per Household based on U.S. Census 2000 figures.*
[3] *Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.*
[4] *Current Multi family Housing units divided by multi family lots.*
[5] *Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.*
[6] *Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.*
[7] *Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.*

Table 4-6: Hollis—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
AB	15	6	0	0	5	1	0
C		0	0	0	0	0	0
I	17	6	0	0	0	0	6
MH		0	0	0	0	0	0
R	79	48	46	2	0	0	0
RA	1,071	985	985	0	0	0	0
RL	615	530	530	0	0	0	0
TC	21	14	14	0	0	0	0
WSC	5	2	2	0	0	0	0
Total:	**1,823**	**1,591**	**1,577**	**2**	**5**	**1**	**6**

The developable acreage for Hollis declines significantly when the Open Space Development standards, where 50% of the available land on a parcel is set aside for conservation, are applied. Per the adopted regulations, a one acre minimum lot size was used in the model for these parcels. Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-4: Hollis—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

D. HUDSON

Results of the buildout analysis for the Town of Hudson are included in Table 4-7 below. The buildout study estimates that an additional 3,437 housing units are possible in Hudson, of which 2,374 will be single family houses and 1,063 will be multi family units. This represents a 41% increase from 8,331 current housing units to 11,768 housing units at buildout.

Using the population multiplier of 2.83 persons per household, based on the 2000 Census, population increases by 9,727 persons, from 23,839 to 33,566 at buildout.

Commercial (retail/service) space is estimated to increase by 28% from 1,104,480 square feet to 1,410,240 square feet. Office space is estimated to increase by 34% from 250,208 square feet to 336,217 square feet. Industrial space is estimated to increase by 122% from 3,400,992 square feet to 7,557,760 square feet.

Table 4-7: Hudson—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	23,839	9,727	33,566
Persons per Household[2]	2.83		2.83
Housing units	8,331	3,437	11,768
Single family Housing	6,228	2,374	8,602
Multi family Housing units (incl. Mobile Home)	2,103	1,063	3,166
Multi family lots[3]	851	425	1,276
Multi family Housing units per lot[4]	2.5		
Commercial/retail lots[3]	177	49	226
Commercial/retail square feet[5]	1,104,480	305,760	1,410,240
Office lots[3]	32	11	43
Office square feet[6]	250,208	86,009	336,217
Industrial lots[3]	144	176	320
Industrial square feet[7]	3,400,992	4,156,768	7,557,760

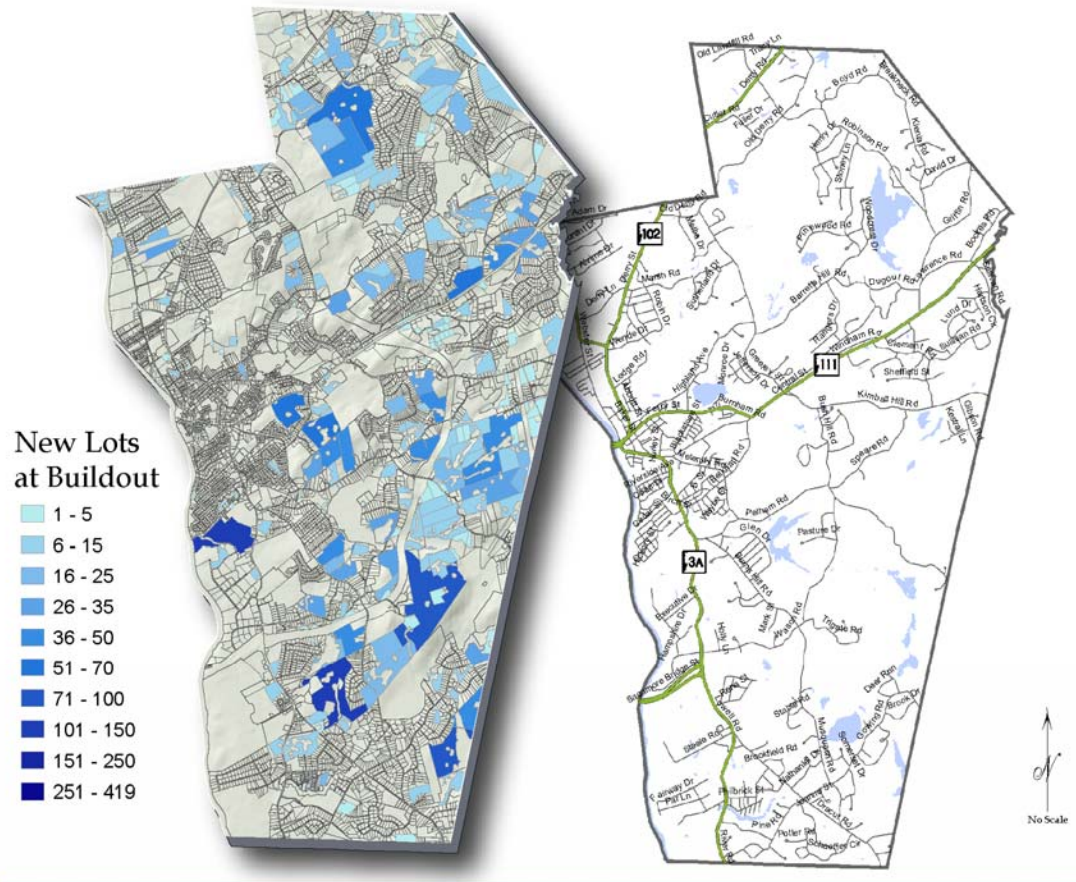
[1] *Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.*
[2] *Persons per Household based on U.S. Census 2000 figures.*
[3] *Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.*
[4] *Current Multi family Housing units divided by multi family lots.*
[5] *Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.*
[6] *Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.*
[7] *Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.*

Table 4-8: Hudson—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
R1	28	41	41	-	-	-	-
R2	655	950	817	133	-	-	-
TR	28	124	124	-	-	-	-
B	30	43	-	13	22	3	5
I	110	159	-	-	-	8	151
G	497	720	634	79	7	-	-
G1	2,000	998	758	200	20	-	20
Total:	**3,348**	**3,035**	**2,374**	**425**	**49**	**11**	**176**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-5: Hudson—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

E. LITCHFIELD

Results of the buildout analysis for the Town of Litchfield are included in Table 4-9 below. The buildout study estimates that an additional 1,225 housing units are possible in Litchfield, of which 1,020 will be single family houses and 205 will be multi family units. This represents a 49% increase from 2,477 current housing units to 3,702 housing units at buildout.

Using the population multiplier of 3.12 persons per household, based on the 2000 Census, population increases by 3,822 persons, from 7,975 to 11,797 at buildout.

Commercial, Office and Industrial use was estimated to grow dramatically in the buildout. This is mostly due to zoning districts focusing on commercial/industrial particularly along the proposed Circumferential Highway corridor. Commercial (retail/service) space is estimated to increase by 1324% from 106,080 square feet to 1,510,080 square feet. Office space is estimated to increase by 8000% from 15,638 square feet to 1,266,678 square feet. Industrial space is estimated to increase by 8225% from 94,472 square feet to 7,864,794 square feet.

Table 4-9: Litchfield—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	7,975	3,822	11,797
Persons per Household[2]	3.12		3.12
Housing units	2,477	1,225	3,702
Single family Housing	2,102	1,020	3,122
Multi family Housing units (incl. Mobile Home)	375	205	580
Multi family lots[3]	57	31	88
Multi family Housing units per lot[4]	6.6		
Commercial/retail lots[3]	17	225	242
Commercial/retail square feet[5]	106,080	1,404,000	1,510,080
Office lots[3]	2	160	162
Office square feet[6]	15,638	1,251,040	1,266,678
Industrial lots[3]	4	329	333
Industrial square feet[7]	94,472	7,770,322	7,864,794

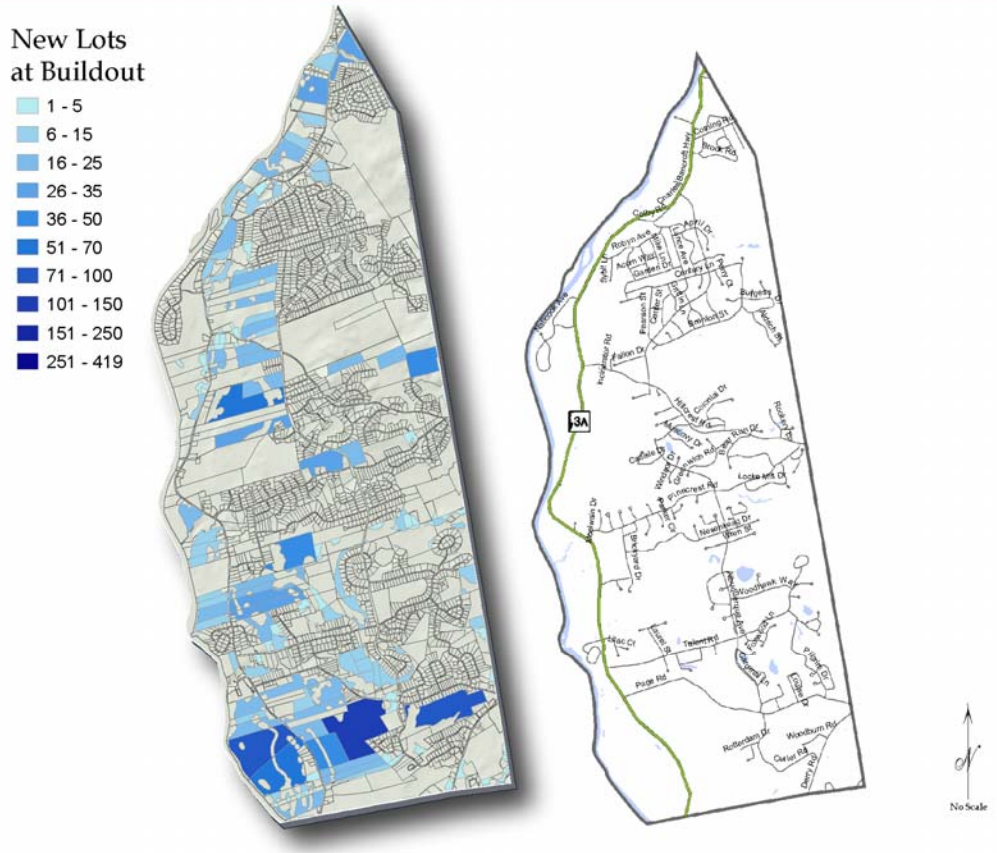
[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family Housing units divided by multi family lots.
[5] Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.
[6] Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.
[7] Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.

Table 4-10: Litchfield—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
R	1,028	1028	997	30	0	0	0
HC	16	14	1	0	12	1	0
SWC	231	231	7	0	120	104	0
NC	93	94	15	0	76	3	0
T	72	69	0	0	17	52	0
SCI	330	329	0	0	0	0	329
NCI	0	0	0	0	0	0	0
Total:	**1,770**	**1,765**	**1,018**	**30**	**225**	**160**	**329**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-6: Litchfield—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

F. LYNDEBOROUGH

Results of the buildout analysis for the Town of Lyndeborough are included in Table 4-11 below. The buildout study estimates that an additional 542 housing units are possible in Lyndeborough, all of which will be single family houses. This represents an 81% increase from 672 current housing units to 1,214 housing units at buildout.

Using the population multiplier of 2.83 persons per household, based on the 2000 Census, population increases by 1,534 persons, from 1,702 to 3,236 at buildout.

Commercial (retail/service) space is estimated to increase by 167% from 18,720 square feet to 49,920 square feet. Office space is estimated to increase by 250% from 15,638 square feet to 54,733 square feet. Industrial space is estimated to increase by 167% from 70,854 square feet to 188,944 square feet.

Table 4-11: Lyndeborough—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	1,702	1,534	3,236
Persons per Household[2]	2.83		2.83
Housing units	672	542	1,214
Single family Housing	654	542	1,196
Multi family Housing units (incl. Mobile Home)	18	-	18
Multi family lots[3]	9	-	9
Multi family Housing units per lot[4]	2.0		
Commercial/retail lots[3]	3	5	8
Commercial/retail square feet[5]	18,720	31,200	49,920
Office lots[3]	2	5	7
Office square feet[6]	15,638	39,095	54,733
Industrial lots[3]	3	5	8
Industrial square feet[7]	70,854	118,090	188,944

[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family housing units divided by multi family lots.
[5] Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.
[6] Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.
[7] Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.

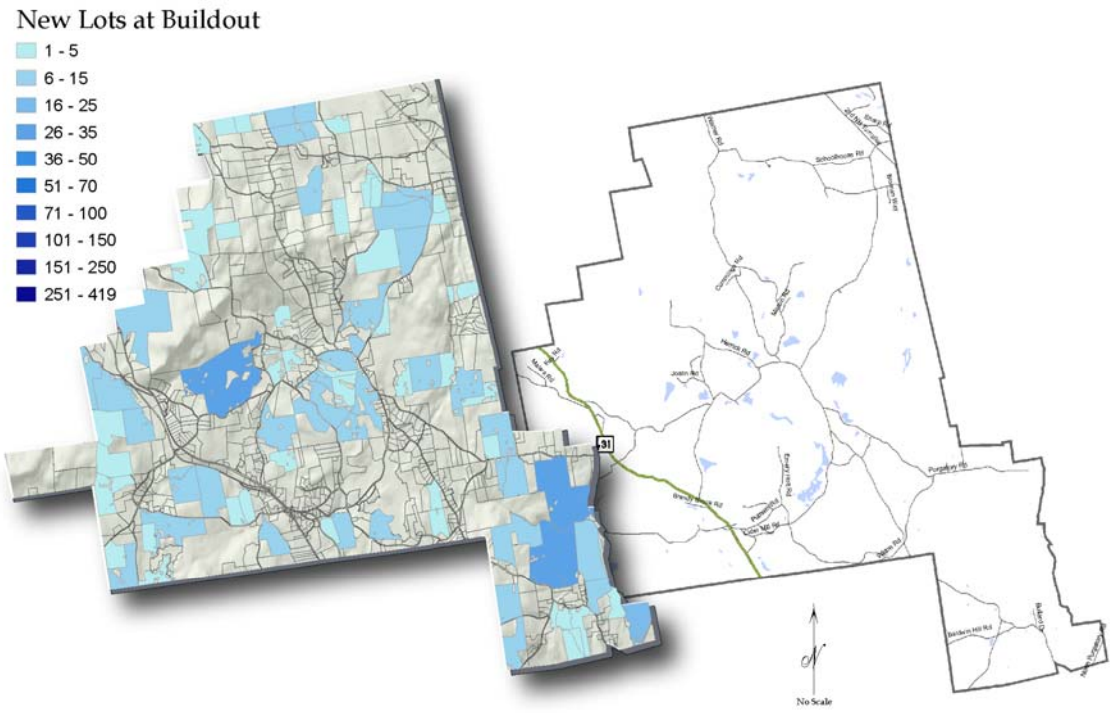
Larger minimum lot sizes are used in the Lyndeborough buildout model than are stated in the zoning regulations. This is due to the severe terrain and ledge geology which makes it virtually impossible to develop at the minimum lot sizes under the adopted soils-based zoning of the Town of Lyndeborough. These larger lot sizes are based on recommendations from Town officials and are meant to account for the soils-based zoning.

Table 4-12: Lyndeborough—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
LI	81	15	-	-	5	5	5
RL1	5,061	505	505	-	-	-	-
RL2	784	33	33	-	-	-	-
RL3	159	4	4	-	-	-	-
V	-	-	-	-	-	-	-
Total:	**6,085**	**557**	**542**	**-**	**5**	**5**	**5**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-7: Lyndeborough—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

G. MERRIMACK

Results of the buildout analysis for the Town of Merrimack are included in Table 4-13 below. The buildout study estimates that an additional 1,833 housing units are possible in Merrimack, of which 1,009 will be single family houses and 824 will be multi family units. This represents a 20% increase from 9,398 current housing units to 11,231 housing units at buildout. Because a large number of multi family lots (206) were created in the buildout, the value of multi family housing units per lot has an enormous effect on the results. The median number of units per permit, as reported by the U.S, Census, was used in this analysis.

Using the population multiplier of 2.84 persons per household, based on the 2000 Census, population increases by 5,206 persons, from 26,394 to 31,600 at buildout.

Commercial (retail/service) space is estimated to increase by 26% from 3,294,720 square feet to 4,137,120 square feet. Office space is estimated to increase by 25% from 1,383,963 square feet to 1,735,818 square feet. Industrial space is estimated to increase by 25% from 1,582,406 square feet to 1,983,912 square feet.

Table 4-13: Merrimack—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	26,394	5,206	31,600
Persons per Household[2]	2.84		2.84
Housing units	9,398	1,833	11,231
Single family Housing	7,920	1,009	8,929
Multi family Housing units (incl. Mobile Home)	1,478	824	2,302
Multi family lots[3]	2,335	206	2,541
Multi family Housing units per lot[4]	4.0		
Commercial/retail lots[3]	176	45	221
Commercial/retail square feet[5]	3,294,720	842,400	4,137,120
Office lots[3]	177	45	222
Office square feet[6]	1,383,963	351,855	1,735,818
Industrial lots[3]	67	17	84
Industrial square feet[7]	1,582,406	401,506	1,983,912

[1] *Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.*
[2] *Persons per Household based on U.S. Census 2000 figures.*
[3] *Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.*
[4] *U.S. Census Median number of units per permit 1994-2004*
[5] *Based on town-specified average of 18,720 square feet per lot.**
[6] *Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.*
[7] *Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.*

*The large average square feet of commercial lots attempts to account for several large developments Town Officials feel are likely to occur in Merrimack. Due to this adjustment, the current square footage of commercial properties is most likely overestimated.

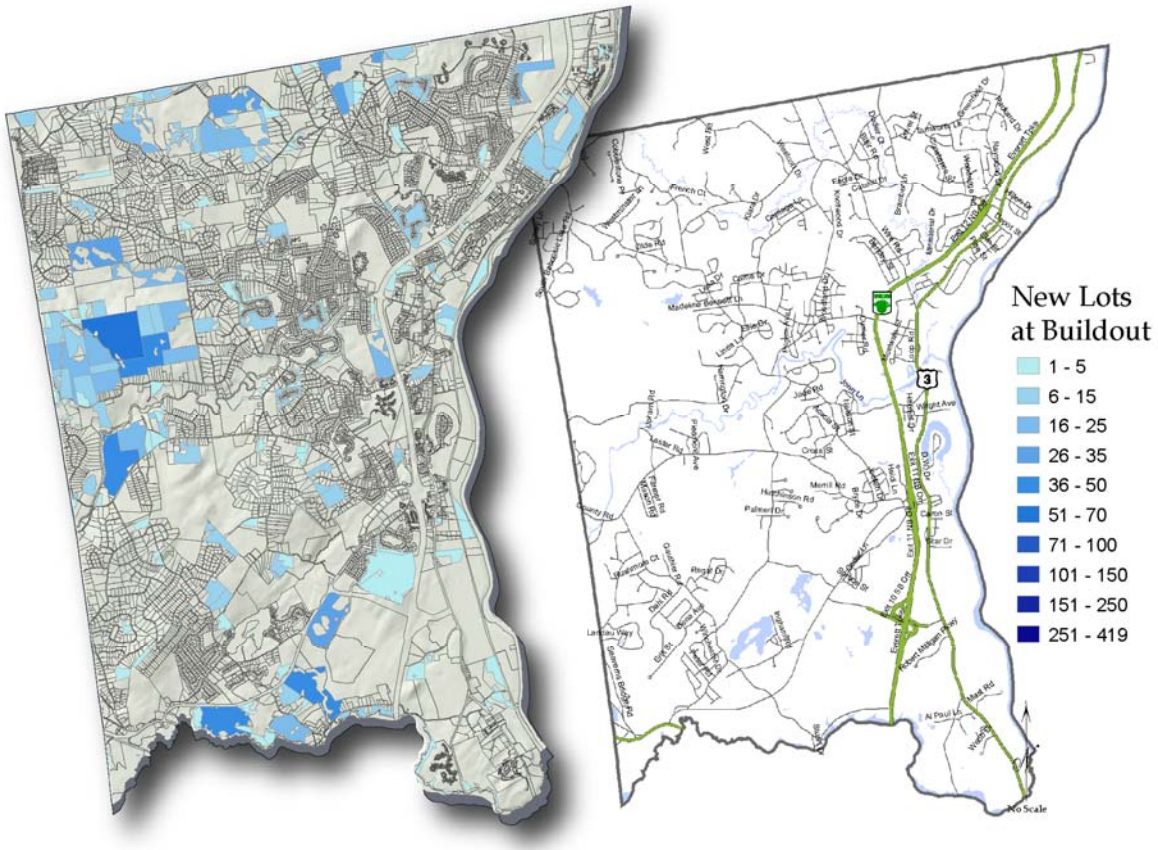
The Town of Merrimack has implemented a Elderly Housing overlay District that allows for higher density housing (up to 8 dwelling units per acre) where implemented. Therefore this district has the potential to significantly increase the housing and population of Merrimack at buildout. The Elderly Housing District was not included in this study.

Table 4-14: Merrimack—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
R	2,185	1,213	1,007	206	-	-	-
C-1	3	4	2	0	1	1	-
C-2	23	49	-	-	33	16	-
I-1	260	51	-	-	11	28	12
I-2	107	5	-	-	-	-	5
I-3	-	-	-	-	-	-	-
Total:	**2,578**	**1,322**	**1,009**	**206**	**45**	**45**	**17**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-8: Merrimack—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2004

H. MILFORD

Results of the buildout analysis for the Town of Milford are included in Table 4-15 below. The buildout study estimates that an additional 2,641 housing units are possible in Milford, of which 2,204 will be single family houses and 437 will be multi family units. This represents a 48% increase from 5,493 current housing units to 8,134 housing units at buildout.

Using the population multiplier of 2.58 persons per household, based on the 2000 Census, population increases by 6,814 persons, from 14,235 to 21,049 at buildout.

Commercial (retail/service) space is estimated to increase by 51% from 985,920 square feet to 1,485,120 square feet. Office space is estimated to increase by 90% from 531,692 square feet to 1,008,651 square feet. Industrial space is estimated to increase the greatest by 205% from 1,842,204 square feet to 5,621,084 square feet.

Table 4-15: Milford—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	14,235	6,814	21,049
Persons per Household[2]	2.58		2.58
Housing units	5,493	2,641	8,134
Single family Housing	3,115	2,204	5,319
Multi family Housing units (incl. Mobile Home)	2,378	437	2,815
Multi family lots[3]	455	84	539
Multi family Housing units per lot[4]	5.2		
Commercial/retail lots[3]	158	80	238
Commercial/retail square feet[5]	985,920	499,200	1,485,120
Office lots[3]	68	61	129
Office square feet[6]	531,692	476,959	1,008,651
Industrial lots[3]	78	160	238
Industrial square feet[7]	1,842,204	3,778,880	5,621,084

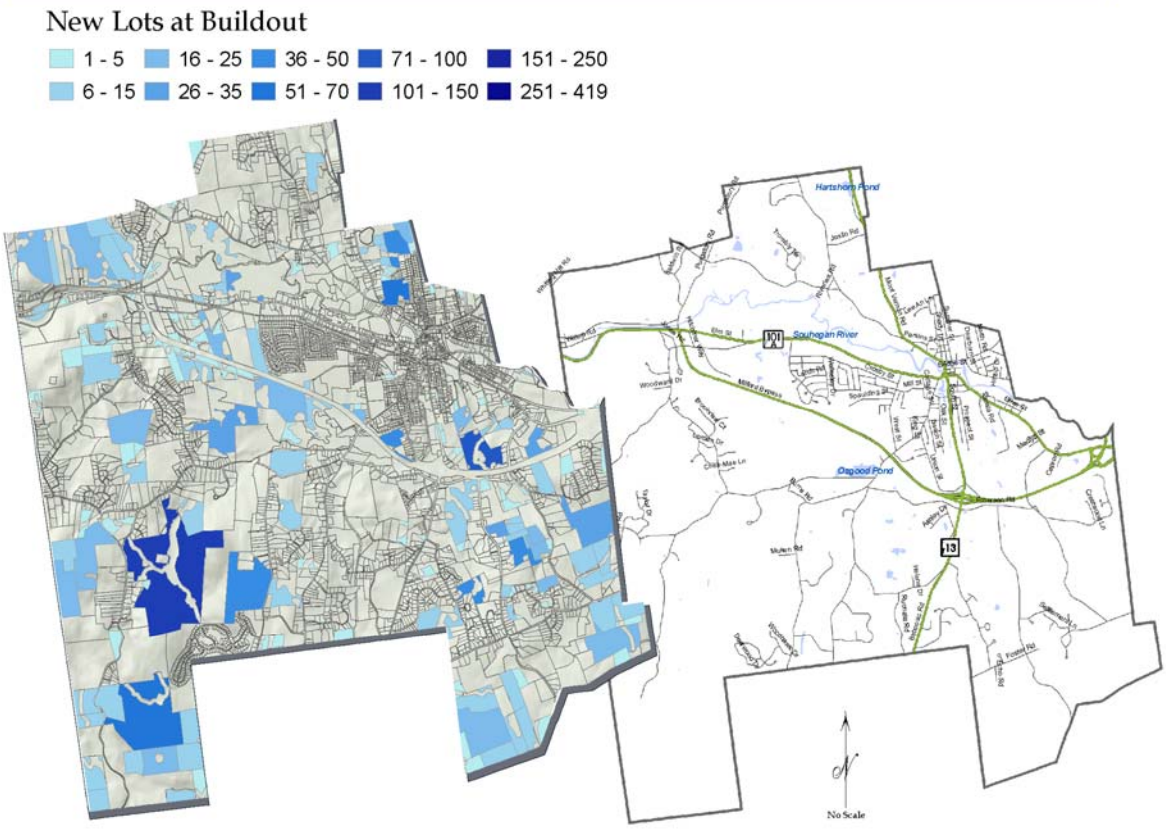
[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family housing units divided by multi family lots.
[5] Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.
[6] Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.
[7] Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.

Table 4-16: Milford—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
A	260	765	765	0	0	0	0
B	93	205	127	78	0	0	0
R	2,616	1,306	1,306	0	0	0	0
C	9	20	6	6	6	2	0
I	141	151	0	0	0	21	130
LC	2	5	0	0	0	5	0
ICI	47	137	0	0	74	33	30
Total:	**3,168**	**2,589**	2,204	84	80	61	160

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-9: Milford—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

I. MONT VERNON

Results of the buildout analysis for the Town of Mont Vernon are included in Table 4-17 below. The buildout study estimates that an additional 943 housing units are possible in Mont Vernon, all of which will be single family houses This represents a 133% increase from 711 current housing units to 1,654 housing units at buildout.

Using the population multiplier of 2.90 persons per household, based on the 2000 Census, population increases by 2,735 persons, from 2,275 to 5,010 at buildout.

Commercial (retail/service) space is estimated to increase by 475% from 24,960 square feet to 143,520 square feet.

Table 4-17: Mont Vernon—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	2,275	2,735	5,010
Persons per Household[2]	2.90		2.90
Housing units	711	943	1,654
Single family Housing	688	943	1,631
Multi family Housing units (incl. Mobile Home)	23	-	23
Multi family lots[3]	1	-	1
Multi family Housing units per lot[4]	23.0		
Commercial/retail lots[3]	4	19	23
Commercial/retail square feet[5]	24,960	118,560	143,520
Office lots[3]	-	-	-
Office square feet[6]	-	-	-
Industrial lots[3]	1	-	1
Industrial square feet[7]	23,618	-	23,618

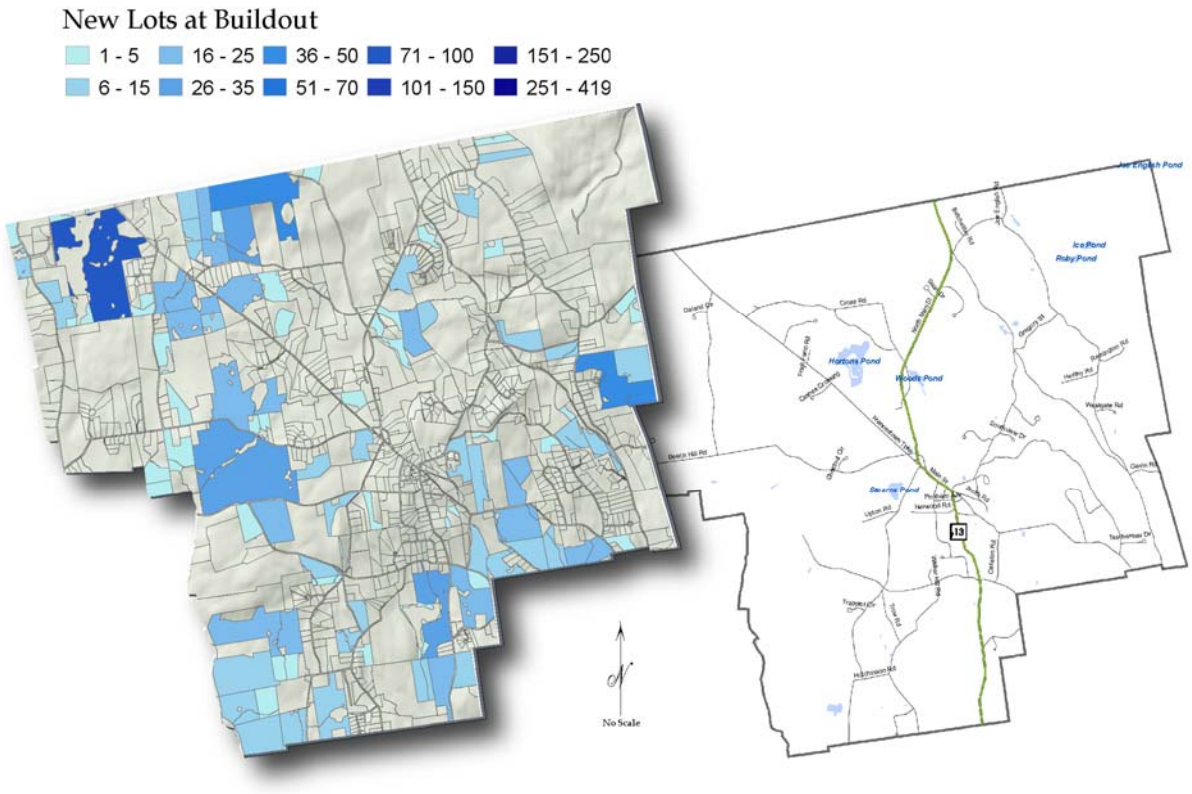
[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family housing units divided by multi family lots.
[5] Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.
[6] Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.
[7] Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.

Table 4-18: Mont Vernon—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
WRR	830	168	168	-	-	-	-
WR	0	-	-	-	-	-	-
R	0	-	-	-	-	-	-
RR	1,549	775	775	-	-	-	-
LC	38	19	-	-	19	-	-
MCC	0	-	-	-	-	-	-
Total:	**2,417**	**962**	**943**	**-**	**19**	**-**	**-**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-10: Mont Vernon—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

J. NASHUA

Results of the buildout analysis for the City of Nashua are included in Table 4-19 below. The buildout study estimates that an additional 2,753 housing units are possible in Nashua, of which 1,729 will be single family houses and 1,024 will be multi family units. This represents an 8% increase from 35,737 current housing units to 38,490 housing units at buildout.

Using the population multiplier of 2.46 persons per household, based on the 2000 Census, population increases by 6,772 persons, from 87,285 to 94,057 at buildout.

Commercial (retail/service) space is estimated to increase by 20% from 14,874,540 square feet to 17,918,232 square feet. Office space is estimated to increase by 48% from 3,324,286 square feet to 4,933,368 square feet. Industrial space is estimated to increase by 70% from 10,667,710 square feet to 18,176,535 square feet. City-wide 20% of the land area is zoned industrial and 22% of the estimated developable land is zoned industrial.

Table 4-19: Nashua—City-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	87,285	6,772	94,057
Persons per Household[2]	2.46		2.46
Housing units	35,737	2,753	38,490
Single family Housing	18,569	1,729	20,298
Multi family Housing units (incl. Mobile Home)	17,168	1,024	18,192
Multi family lots[3]	3,290	197	3,487
Multi family Housing units per lot[4]	5.2		
Commercial/retail lots[3]	865	177	1,042
Commercial/retail Sq feet[5]	14,874,540	3,043,692	17,918,232
Office lots[3]	178	86	264
Office square feet[6]	3,326,286	1,607,082	4,933,368
Industrial lots[3]	206	145	351
Industrial square feet[7]	10,667,710	7,508,825	18,176,535

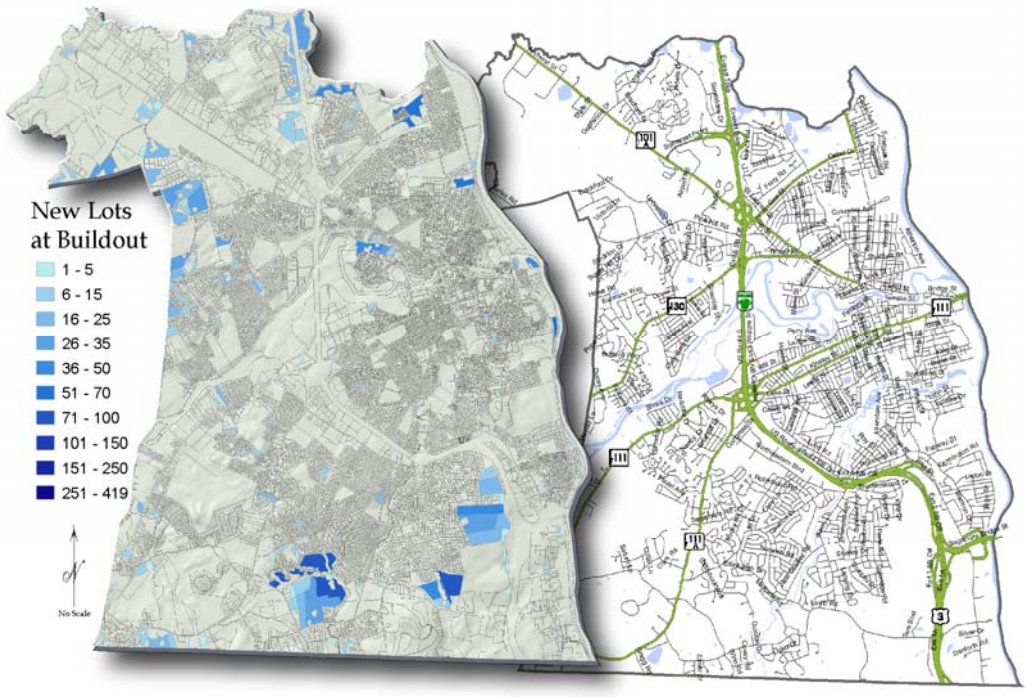
[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family housing units divided by multi family lots.
[5] Based on Nashua average of 17,196 square feet per lot.
[6] Based on Nashua average of 18,687 square feet per lot.
[7] Based on Nashua average of 51,785 square feet per lot.

Table 4-20: Nashua—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
R-40	317	344	344	-	-	-	-
R-30	152	218	218	-	-	-	-
R-18	206	503	503	-	-	-	-
R-9	85	402	402	-	-	-	-
R-A	30	174	174	-	-	-	-
R-B	16	78	47	31	-	-	-
R-C	23	138	41	97	-	-	-
LB	0	-	-	-	-	-	-
GB	2	6	-	-	5	1	-
CB	0	-	-	-	-	-	-
HB	0.3	1	-	-	1	-	-
PI	181	261	-	52	105	52	52
GI	18	166	-	17	66	33	50
AI	40	43	-	-	-	-	43
PRD	0	-	-	-	-	-	-
Total:	**1,070**	**2,334**	**1,729**	**197**	**177**	**86**	**145**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-11: Nashua—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

K. PELHAM

Results of the buildout analysis for the Town of Pelham are included in Table 4-21 below. The buildout study estimates that an additional 4,026 housing units are possible in Pelham, of which 3,783 will be single family houses and 243 will be multi family units. This represents a 101% increase from 3,967 current housing units to 7,993 housing units at buildout

Using the population multiplier of 3.03 persons per household, based on the 2000 census, population increases by 12,199 persons, from 11,986 to 24,185 at buildout.

Commercial (retail/service) space is estimated to increase by 39% from 436,800 square feet to 605,280 square feet. Office space is estimated to increase by 233% from 46,914 square feet to 156,380 square feet. Industrial space is estimated to increase by 188% from 590,450 square feet to 1,700,496 square feet.

Table 4-21: Pelham—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	11,986	12,199	24,185
Persons per Household[2]	3.03		3
Housing units	3,967	4,026	7,993
Single family Housing	3,507	3,783	7,290
Multi family Housing units (incl. Mobile Home)	460	243	703
Multi family lots[3]	153	81	234
Multi family Housing units per lot[4]	3.0		
Commercial/retail lots[3]	70	27	97
Commercial/retail square feet[5]	436,800	168,480	605,280
Office lots[3]	6	14	20
Office square feet[6]	46,914	109,466	156,380
Industrial lots[3]	25	47	72
Industrial square feet[7]	590,450	1,110,046	1,700,496

[1] *Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.*
[2] *Persons per Household based on U.S. Census 2000 figures.*
[3] *Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.*
[4] *Current Multi family housing units divided by multi family lots.*
[5] *Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.*
[6] *Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.*
[7] *Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.*

The Town of Pelham has implemented an Elderly Housing Overlay District that allows for higher density housing where implemented. Elderly Housing regulations allow for up to 40 dwelling units per acre with 30% of land set aside as open space. Based on recommendations from Town officials, ten percent (10%) of the acres in the Rural District were designated as Elderly Housing. These higher density areas significantly increased the housing and population of Pelham at buildout. Without the inclusion of this district, housing units and population at buildout in Pelham would have been estimated at 50% less, or approximately 8,000 additional residents at buildout.

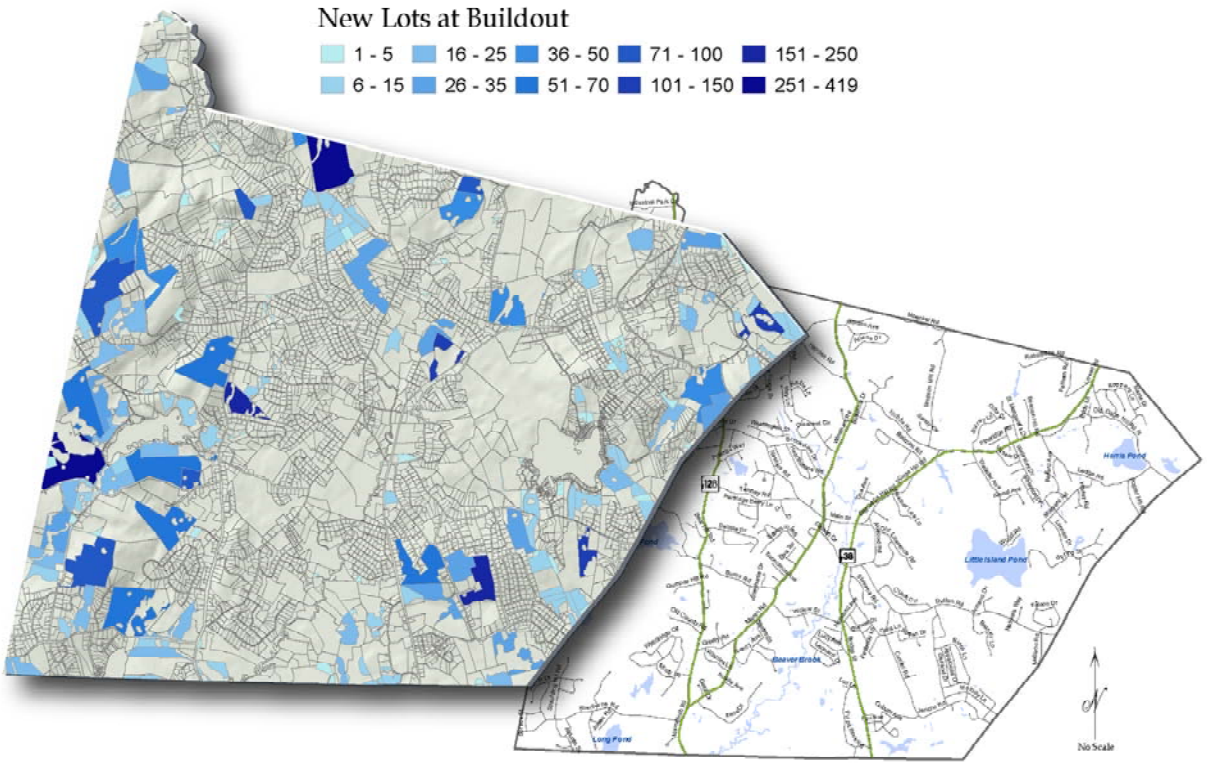
The new housing estimated under the Elderly Housing District was not included in the estimate of students at buildout. If all of these properties are developed as single family housing and not as elderly housing, Pelham's student estimate at buildout would be 3,245 students, 183 more than the 3,062 reported on page 26.

Table 4-22: Pelham—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
B	22	22	-	-	13	9	-
I	91	66	-	-	14	5	47
R	2023	2,023	1,942	81	-	-	-
RCA	0	-	-	-	-	-	-
RU	1	1	1	0	-	-	-
EH	239	1,840	1,840				
Total:	**2,376**	**3,952**	**3,783**	**81**	**27**	**14**	**47**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-12: Pelham—Estimated New Lots at Buildout



Source: NRPC Buildout Analysis - October 2005

L. WILTON

Results of the buildout analysis for the Town of Wilton are included in Table 4-23 below. The buildout study estimates that an additional 915 housing units are possible in Wilton, of which 827 will be single family houses and 88 will be multi family units. This represents a 62% increase from 1,474 current housing units to 2,389 housing units at buildout.

Using the population multiplier of 2.65 persons per household, based on the 2000 Census, population increases by 2,425 persons, from 3,787 to 6,212 at buildout.

Commercial (retail/service) space is estimated to increase by 25% from 343,200 square feet to 430,560 square feet. Office space is estimated to increase by 255% from 86,009 square feet to 304,941 square feet. Industrial space is estimated to increase by 53% from 448,742 square feet to 684,922 square feet.

Table 4-23: Wilton—Town-wide Buildout Results

	Current[1]	Additional	At Buildout
Population	3,787	2,425	6,212
Persons per Household[2]	2.65		3
Housing units	1,474	915	2,389
Single family Housing	1,178	827	2,005
Multi family Housing units (incl. Mobile Home)	296	88	384
Multi family lots[3]	27	8	35
Multi family Housing units per lot[4]	11.0		
Commercial/retail lots[3]	55	14	69
Commercial/retail square feet[5]	343,200	87,360	430,560
Office lots[3]	11	28	39
Office square feet[6]	86,009	218,932	304,941
Industrial lots[3]	19	10	29
Industrial square feet[7]	448,742	236,180	684,922

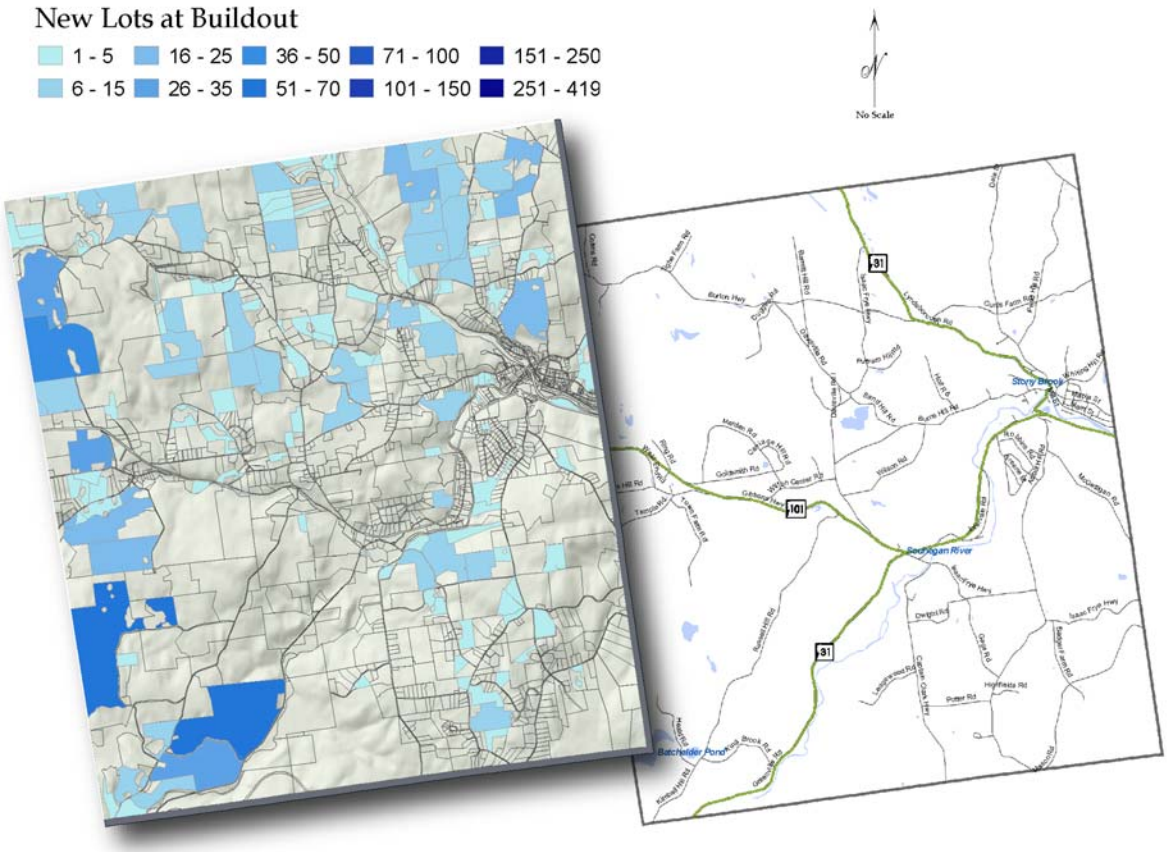
[1]Current Population and Housing units based on NH Office of Energy and Planning 2003 Estimates.
[2] Persons per Household based on U.S. Census 2000 figures.
[3] Number of Multi family, Commercial, Office & Industrial lots derived from NRPC GIS database.
[4] Current Multi family housing units divided by multi family lots.
[5] Based on region-wide average (excluding Nashua) of 6,240 square feet per lot.
[6] Based on region-wide average (excluding Nashua) of 7,819 square feet per lot.
[7] Based on region-wide average (excluding Nashua) of 23,618 square feet per lot.

Table 4-24: Wilton—Buildout Results by Zoning District

Zoning	Devel-opable Acres	Lots	Single Family	Multi family	Comm-ercial	Office	Indus-trial
RD	9	16	16	-	-	-	-
R&A	1658	819	811	8	-	-	-
C	0	-	-	-	-	-	-
IN	47	24	-	-	14	-	10
OPD	56	28	-	-	-	28	-
Total:	**1,770**	**887**	**827**	**8**	**14**	**28**	**10**

Detailed worksheet tables used in the buildout to inventory zoning classifications and land use type ratios can be found in Appendix B.

Map 4-13: Wilton—Estimated New Lots at Buildout

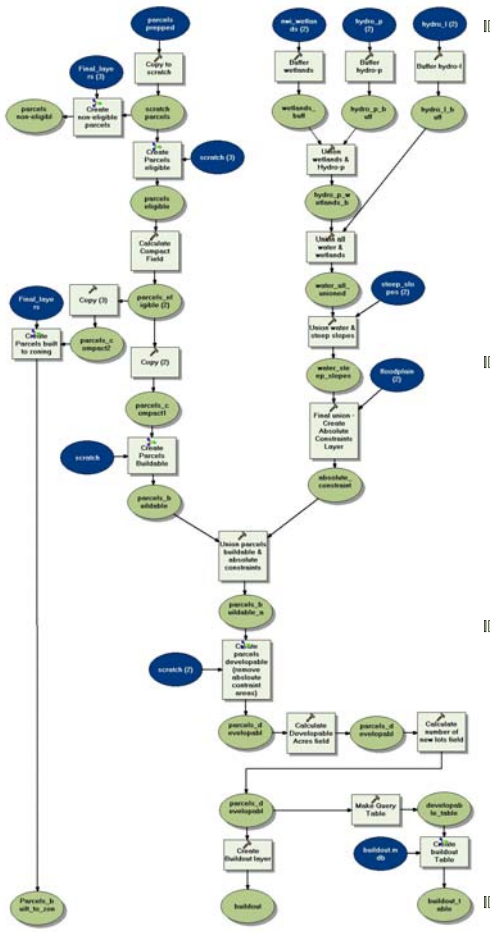


Source: NRPC Buildout Analysis - October 2005

This page left intentionally blank

Figure A-1: The Buildout Model—Step-by-Step

GIS Model



STEPS

- Prep input datasets for the model
  - Identify Land Use & Zoning for each parcel
    - Assign allowable uses and minimum lot size for each parcel
- Add base year population, housing and non-residential lot totals

Zoning

User input into GIS and Spreadsheet

- Remove non-eligible parcels, e.g.:
  - Municipally owned, Right-of-Way, Conserved Areas
  - Compactness ratio calculated.
    - Under-developed parcels are identified.
    - "Built to zoning" parcels removed from eligibility

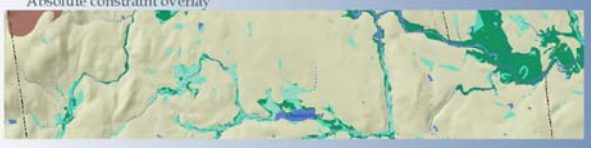
Existing land use input

After non-eligible parcels removed

Automatically completed inside GIS model

- Overlay and remove absolute constraint areas.
  - Water, wetlands, floodplains, steep slopes, riparian buffers

Absolute constraint overlay

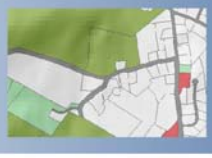


Automatically completed inside GIS model

- Apply partial constraints factor to applicable parcels.

Sample Contsraints:

Constraint	Factor
Moderate Slopes	0.85
Design Features	0.90



Automatically completed inside GIS model

- Calculate the developable acres
- Calculate the number of new lots for each parcel

Sample parcel:

Acres (after Absolute Constraint areas have Been removed)		Moderate Slope constraint		Design Features constraint	=	Developable Acres	/	Minimum Allowable Lot Size (Acres)	=	New lots (Developable Acres divided by minimum allowable lot size)
211	X	0.85	X	0.90	=	161	/	2	=	80

Automatically completed inside GIS model

- Distribute new lots within each zoning district by allowable uses and land use type ratios
- Sum total Housing units and non-residential lots
- Calculate values at Buildout for population based on new housing units
- Calculate Impacts based on Buildout values for housing, population and non-residential lots

Exported from GIS model and completed in a spreadsheet

APPENDIX A: DETAILED BUILDOUT METHODOLOGY

A.. DESCRIPTION OF MODEL

The buildout study is a Geographic Information Systems (GIS) based analysis. Inputs into the model, including parcels, parcel ownership, land use, water, wetlands, slopes and floodplains, were in a GIS data format. The initial model calculations of developable acres and estimated lots were completed in GIS. The software used was Environmental Resource Systems Institute (ESRI) ArcGIS 9.1®. Initial model results were transferred to Microsoft Excel® for the calculation of impacts. The GIS data layers used in the analysis are listed in Table A-1.

Table A-1: GIS Datasets used in the Buildout Analysis

Data Layer	Source	Description
Parcels	NRPC GIS Database & City of Nashua GIS	Parcel boundaries & attributes
Land Use	NRPC GIS Database	Obtained from Assessing data, aerial image analysis & field checking
Zoning Districts	NRPC GIS Database	Unique to each municipality
Town Boundaries	NH GRANIT Database	Based on USGS Digital Line Graph
Hydrography	NH GRANIT Database	Based on USGS Digital Line Graph
Wetlands	NH GRANIT Database	National Wetlands Inventory
Slopes (Soils)	NH GRANIT Database	Digital version of USDA Hillsborough County Soil Survey
Floodplains	FEMA	Depicts Zone A (100-year) floodplains

A buildout analysis is not a predictive model in that it does not predict the likelihood of development occurring on a given parcel, but simply identifies if a parcel is available for development and estimates the maximum number of developed lots that could be created. Recent techniques in modeling urban growth involve the use of cellular, iterative, input intensive modeling. This study is an attempt to quantify the spatial patterns and development dynamics sufficiently for planning purposes without the use of such time consuming modeling.

B. METHODS

Buildout analysis for planning purposes typically falls into two categories: land use, or lump-sum, buildouts and parcel based buildouts. In a land use based buildout, the gross buildable area minus constraints, is calculated for each zoning category and the number of new lots is determined from the minimum allowable lot size. This simpler type of buildout is usually done when parcel level data is not available. The analysis in this study is a parcel based buildout, where the number of new lots is determined for each buildable parcel. This type of analysis provides a greater degree of spatial information on where new development will occur. A parcel based buildout is an improvement over a

lump sum based buildout because it also accounts for site-specific details and constraints such as ownership, lot size and lot configuration of developable parcels.

This buildout uses zoning requirements to determine the density and type of new development. From the zoning code a list of minimum lot sizes and allowable use types is created for each parcel. Where more than one use type is allowed a ratio of uses, based on the current development pattern in that zoning district, is used to determine new lot use types.

The buildout removes certain environmental constraints from the available developable land. Absolute constraints include: open water, wetlands, 100-year floodplain zones, steep slopes and any riparian buffers required by regulation. Partial constraints that may limit the amount of land available for development, but not completely restrict it, include: moderate slopes, open space ordinances and design features on large parcels.

This buildout process is automated in that initial parcel, zoning and constraint information is put into a GIS database and an automated model is run that performs all calculations and overlays. Therefore, this traditionally very time consuming, multi-step process is performed quickly and the number of new lots per parcel is returned. The model is designed to be repeatable and highly tunable. This will allow for future scenario testing and easy updating of the buildout results.

Based on the zoning, the number of new single family, multi family and non-residential lots will be calculated for each parcel. The additional retail, office and industrial square footage will be figured based on a region-wide average square footage.

1. Developable Parcels

Parcels that have the potential for new development will be identified using existing land use data. These include vacant, agricultural and under-developed parcels. Permanently conserved lands, municipal facilities, open water, and rights-of-way will be removed from consideration for development as illustrated in Figure A-1.

Under-developed parcels are defined as parcels having some residential or commercial development that are still large enough to be subdivided. These are identified through a series of criteria based on the minimum lot size established through zoning. In addition a "compactness ratio" is calculated to remove elongated or unusually shaped parcels that are unlikely, due to access problems, to be further developed.

The Compactness Ratio (Also known as the Circularity Ratio)

$$4\pi A/P^2$$

Where:
A = Parcel area
P = Parcel perimeter
Squaring the perimeter produces a 'dimensionless' value
Multiplying by 4pi produces a value between 0 and 1.0.

The model's logic for determining under-developed parcels (calculated for all currently developed parcels):

IF Acres > (5 * Minimum lot size) or

Acres > (3 * Minimum lot size) and CR ≥ 0.6 then → Parcel Is under-developed

ELSE

Parcel is considered 'Built to Zoning' and is removed from Eligible Parcels.

Where:
Acres = Parcel acres
Minimum Lot Size = Zoning based lot size
CR = Compactness Ratio

The generalized land use classifications used in this study are:

SF – Single Family Residential
MF – Multi family Residential (includes Manufactured Housing)
MU – Mixed Use
Comm – Commercial (Retail or Service)
Off – Office
Ind – Industrial
Agr – Agricultural
Vacant – Vacant
Non-eligible – includes Municipal Facilities, Conserved Lands, Institutional, Other Government, Right-of-Way

2. Absolute Constraints

All buildouts remove certain constraint areas from the land available for development. For this buildout, these are called "Absolute Constraints" and they include:

Water, wetlands and riparian buffers
100 year floodplains
Steep slopes >25%

See Figure A-1 for an illustration of how Absolute constraint areas are removed from the buildable land.

Riparian buffers are determined from regulations specific to each municipality. Often these required setbacks are found in Wetlands Conservation districts. Buffer distances can vary based on the type, size or location of wetlands. For the model, one standard value was determined for each community. This determination can be found in the "Constraints" tables in Appendix B.

3. Partial Constraints

In addition to the "absolute constraints" the method used here accounts for "partial constraints." These are natural features or regulatory overlays that do not absolutely restrict development, but may have a limiting influence. Because regulations differ among towns, the buildout analysis will be conducted for each town in the region and the results will be combined to provide region wide figures.

Partial constraints include:

Moderate slopes 15-25% - used for every town.
Design features on large parcels i.e. new subdivision roads, ROW, etc.
Existing development (under-developed parcels)

Partial constraints were determined for each parcel as a factor between 0-1.0 as shown in Figure A-1. Moderate slopes were calculated as a factor between 0.75 and 1.0. The factor is the ratio of percentage of developed acres of parcels affected by moderate slopes to the percentage of developed acres of parcels not affected by moderate slopes. This calculation was completed for each community in the region and is included in the "Moderate Slopes Calculation" tables in Appendix B. Effectively this value represents the constraining factor of moderate slopes within each community.

A Design Features partial constraint factor of 0.9 was applied to all parcels greater than 5 times the minimum lot size.

Open Space or Conservation developments, where a percentage of land must be set aside as conserved when the overall parcel is developed, were input as a constraint where required by ordinance. Because this development type is optional in most cases and is density neutral over the area of the original parcel, it did not affect the results of the buildout.

C. MODEL ASSUMPTIONS/INTERPRETATIONS

A model is a representation of the real world and cannot include all of the complexity of decisions made in the land development process. Certain assumptions and generalizations must be made that are not appropriate for site-specific analysis, but can provide illustrative and useful results for a general analysis. For this buildout model, these fall into five main categories: multi-scale inputs, zoning code interpretation, land use type ratios of new estimated lots, multi family units per lot and the size of new non-residential development.

1. Multi-scale Inputs

Geographic data input into the model is created by different national, state and local agencies with varying scales of accuracy. While parcel and land use data, created by NRPC and local municipalities is highly spatially accurate and provides the base data layers, other datasets such as wetlands, hydrography and slope (soils) are less spatially accurate. These layers represent industry standards and the best available data, but were digitized at scales inappropriate for site-specific analysis. This does not significantly affect the suitability of results at the community or regional scale.

2. Zoning Code Interpretation

Potential new lots for each developable parcel are calculated based on the allowable uses and allowable densities prescribed by zoning. Regulations are often broad allowing multiple land use types and variations in lot size depending on site-specific criteria. The buildout, however, requires specific values for allowable uses and lot sizes for each zoning district. All zoning code interpretations are documented for each community in Appendix B.

Allowable Uses: When interpreting allowable uses for new development only those use types allowed by right were used in the buildout. Uses allowed only by permit or special exception were not included. Additionally it was often the case where a zoning district was recently changed and the majority of developed uses within the district were grandfathered non-conforming uses. The most common example is a new commercial district where the majority of uses are still single family residential. In this case the intent of the zoning was interpreted and new buildout lot types were created based only on that intent.

Minimum Lot Size: Many zoning districts have site-specific lot requirements based on soils, type of use, utility access and other factors. Because this model requires a single minimum lot size for each zoning district, the most appropriate single value had to be selected. Averages of several allowable lot sizes were sometimes used. The lot size of the predominant land use expected to be created in the buildout was used where type of development was a criteria. Where utility access was a criterion, the assumption was made that at buildout utilities would be available where required and therefore the higher density lot size allowed where utilities were currently present was used. When all other factors were equal, the higher density allowable lot size was used.

3. Land Use Type Ratios

Many zoning districts allow by right several different land use types. For example, a district may allow single family residential, multi family residential, retail and office uses. In this case, a ratio of use types was applied to any new buildout lots created in that zone. The ratio was based on the existing ratio of developed lots in that zone. If a zone currently has 50% single family residential, 20% multi family, 20% retail and 10% office uses, this same ratio was applied to new lots created in the buildout. The ratios were calculated only for those land use types currently allowed in the zoning district. If only one use was allowed, 100% of the new lots created were allocated to that use. Appendix B lists the ratios applied to each zoning district by municipality.

4. Multi Family Units Per Lot

The buildout analysis estimated the number of new lots on a parcel based on the minimum allowable lot size. This is a problem for multi family developments where an apartment or condominium complex could place hundreds of housing units on a single lot. At the same time a duplex, considered multi family in this study, would place only two housing units on a lot. To estimate the number of new housing units created in new multi family buildout lots, the number of housing units per lot had to be established for each town. The average number of units for existing multi family lots was used as this value. Because the number of housing units was used as a multiplier to derive population, this value was very significant in communities where a great number of new multi family lots were created in the buildout.

5. Non-Residential Building Size

This buildout analysis estimated the current square footage of commercial (retail/service), office and industrial land uses and what those values would be at buildout. To do this an average square foot per lot was identified for each type. Average square footages were calculated for Nashua and the rest of the region separately. The region-wide averages are calculated from available assessor and GIS data and include only Hudson, Pelham, and Merrimack. Non-residential development can vary significantly in size. These values represent averages based on the best available data.

Table A-2: Average Non-Residential Square Feet per Lot

Land Use	Average Square Feet		Nashua Average Square Feet
Commercial*	6,240		17,196
Office	7,819		18,687
Industrial	23,618		51,785

Source: Municipal Assessing Data - 2003-2004

** Merrimack Average Commercial Square Foot: 18,720—Per Town Request to include several planned large developments*

APPENDIX B:
DETAILED BUILDOUT PROCESS TABLES BY COMMUNITY

A series of tables were created and used to detail zoning and other regulatory constraints for each municipality in the Buildout analysis. There are four tables for each community:

1. Zoning Designations—Includes zoning interpretation on allowable uses and minimum lot sizes
2. Regulatory Constraints—Lists regulatory constraints that may be applied
3. Moderate Slope Constraint Calculator—Calculates constraint factor for each community
4. Land Use Type Ratios— Outlines land use ratios and allocates new estimated lots

Note: These are the raw tables used in the calculation of buildout totals. Rounding errors that were removed in the final report will exist in these tables.

Amherst:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/MU/Comm/ Off/Ind	Mixed Use ratio SF/MF/Comm/Off	Comments
Commercial Zone	C	Comm, Off	1	0/0/0/85/15/0	0/0/0/0	
General Office	GO	SF, MF, Comm, Off	1	65/4/0/8/23/0	0/0/0/0	
Industrial Zone	I	Comm, off, Ind	1	0/0/0/25/10/65		
Limited Commercial Zone	LC	SF, Comm	1	29/0/0/71/0/0		
Northern Rural Zone	NR	SF	5	100/0/0/0/0/0		
Northern Transitional Zone	NT	SF	3.5	100/0/0/0/0/0		
Planned Office Development	POD	SF, Off	1000	100/0/0/0/0/0		Special purpose zoning built out
Residential/Rural Zone	RR	SF, MF	2	100/0/0/0/0/0		

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Open Space Development	Planned Office Development	50% must be set aside, use .5	
Wetlands Conservation District	Wetlands or Water	50 foot Buffer	
Aquifer Protection District	Stratified Drift Aquifers	Restrict Certain uses, no spacial restrictions	
Watershed Protection District	Waterbodies	100 foot buffer	

Moderate Slopes Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percentage	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percentage	Ratio
Moderate Slopes	**0.91**	3,702	2,059	1,643	0.56	18,326	11,223	7,103	0.61	0.91

Amherst: cont.

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
C					85	15	
GO			65	4	8	23	
I					25	10	65
LC			29		71		
NR			100				
NT			100				
POD			100				
RR			100				

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
C	8	9	0	0	8	1	0
GO	4	4	3	0	0	1	0
I	46	46	0	0	12	5	30
LC	0		0	0	0	0	0
NR	563	112	112	0	0	0	0
NT	94	26	26	0	0	0	0
POD	0		0	0	0	0	0
RR	1,830	913	913	0	0	0	0
Totals:	**2,545**	**1,110**	**1,054**	**0**	**20**	**7**	**30**

Brookline:

Zoning Designations:

Zoning	Code	Allowable Uses (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/MU/Comm/Off/Ind	Mixed Use ratio SF/MF/Comm/Off	Comments
Industrial-Commercial	-	MU/Comm/Off/Ind	1	0/0/25/32/32/10	0/0/50/50	
Residential-Agricultural		SF/MF	1.84	97/3/0/0/00		minimum lot size = 80,000 sq. feet

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Open Space Development	Resdential-Agricultural Zoning District	35% of land set aside - 45% may be in an existing constraint (wetland, water, etc.) Will use 25% of developable as restriction	Optional - Not used in model
Auqifer Protection	Statified Drift Aquifer areas	Use restrictions - No spatial restrictions	
Wetland Protection	Water, wetlands	50 foot buffer	

Moderate Slope Calculator:

If >1.0 then =1
or if <.75 then
= .75

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percentage	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percent-age	Ratio
Moderate Slopes	**0.75**	2,623	600	2,023	0.229	9,389	4,711	4,678	0.502	0.456

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
Ind/Commercial			0	0	45	45	10
Residential/Agr.			97	3	0	0	0

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
Ind/Commercial	34	34	0	0	15	15	3
Residential/Agr.	3,183	1,732	1,680	52	0	0	0
Totals:	**3,217**	**1,766**	**1,680**	**52**	**15**	**15**	**3**

APPENDIX B

Hollis:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	**Minimum lot size (acres)**	**Use Ratio (percentages) - SF/MF/MU/Comm/ Off/Ind**	**Mixed Use ratio SF/MF/ Comm/Off**	**Comments**
Agr & Business	AB	Comm,Off	0.75	0/0/0/88/12/0	0/0/0/0	Six lots per Town recommendation
Commercial	C	Comm,Off	1	0/0/0/50/50/0	0/0/0/0	
Industrial	I	Ind	1	0/0/0/0/0/100		Six lots per Town recommendation
Mobile Home I & II	MH	MF	2	0/100/0/0/0/0		no growth
Recreational	R	SF,MF	2	96/4/0/0/0/0		
Resid & Agr	RA	SF,MF	2	100/0/0/0/0/0		
Rural lands	RL	SF,MF	2	100/0/0/0/0/0		
Town Center	TC	SF,MF	2	97/3/0/0/0/0		
Water Supply Conservation	WSC	SF	2	100/0/0/0/0/0		

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	**Delineation**	**Restrictions**	**comments**
Open Space Development	Subdivisions of 6 or more lots	40% set aside at lower densities, 50% set aside at higher densities - Will use 50% set aside for buildout	0.50 factor (1 acre lot size)
Auqifer Protection	Stratified Drift	Some Use Restrictions	Not used in model
Wetland Conservation Overlay	Surface Water & Wetland	100 foot buffer	Added in Absolute Constraints
Flood Overlay Zone	Absloute Constraint		

Moderate Slope Calculator:

If >1.0 then =1 or if <.75 then = .75

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percent-age	Ratio
Moderate Slopes	**0.75**	1,567	584	983	0.373	13,380	7,930	5,450	0.593	0.629

Hollis cont:

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
AB			0	0	88	12	0
C			0	0	50	50	0
I			0	0	0	0	100
MH			0	100	0	0	0
R			96	4	0	0	0
RA			100	0	0	0	0
RL			100	0	0	0	0
TC			97	3	0	0	0
WSC			100	0	0	0	0

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
AB	15	6	0	0	5	1	0
C		0	0	0	0	0	0
I	17	6	0	0	0	0	6
MH		0	0	0	0	0	0
R	79	48	46	2	0	0	0
RA	1,071	985	985	0	0	0	0
RL	615	530	530	0	0	0	0
TC	21	14	14	0	0	0	0
WSC	5	2	2	0	0	0	0
	1,823	**1,591**	**1,577**	**2**	**5**	**1**	**6**

Hudson:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	**Minimum lot size (acres)**	**Use Ratio (percentages) - SF/MF/ MU/Comm/Off/Ind**	**Mixed Use ratio SF/MF/ Comm/Off**	**Comments**
Residential - One	R1	SF	0.69	100/0/0/0/0/0	0/0/0/0	30,000 sqft
Residential - Two	R2	SF/MF	0.69	86/14/0/0/0/0	0/0/0/0	based on 30,000 sqft min for SF use (1 acre for MF use)
Town Residence	TR	SF	0.23	100/0/0/0/0/0	0/0/0/0	this zone has its own min lot size
Business	B	MF/Comm/Off/Ind	0.69	0/31/0/51/7/11	0/0/0/0	based on 30,000 sqft min for business use (1 acre for MF use)
Industrial	I	Off/Ind	0.69	0/0/0/0/5/95	0/0/0/0	30,000 sqft
General	G	SF/MF/Comm/Off/ Ind	0.69	88/11/0/1/0/0	0/0/0/0	based on 30,000 sqft min for SF use (1 acre for MF use)
General - One	G1	SF/MF/Comm/Off/ Ind	2	76/20/0/2/0/2	0/0/0/0	this zone has its own min lot size

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	**Delineation**	**Restrictions**	**comments**
Open Space Development	may be located in any zone	Not required...50% of land may be set aside, with wetlands and 25% or greater slopes not part of the calculation. Floodplain not to exceed 25% of land area	Not used in model
Wetland Conservation District	all wetlands as determined in GIS layer plus 50 foot buffer	only agricultural uses allowed	

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percentage	Ratio
Moderate Slopes	1.00	1,458	943	515	0.647	13,013	8,428	4,585	0.648	0.999

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
R1			100				
R2			86	14			
TR			100				
B				31	51	7	11
I						5	95
G			88	11	1		
G1			76	20	2		2

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
R1	28	41	41	0	0	0	0
R2	655	950	817	133	0	0	0
TR	28	124	124	0	0	0	0
B	30	43	0	13	22	3	5
I	110	159	0	0	0	8	151
G	497	720	634	79	7	0	0
G1	2,000	998	758	200	20	0	20
Total:	3,348	3,035	2,374	425	49	11	176

Litchfield:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/MU/Comm/ Off/Ind	Mixed Use ratio SF/MF/ Comm/ Off	Comments
Residential	R	SF,MF	1	97/3/0/0/0/0	0/0/0/0	Min. Lot size for MF is 1.5 ac
Highway Commercial	HC	MU,Comm,Off	1	0/0/11/78/11/0	0/0/100/0	SF and MF occupied prior to '89 allowed
Southwestern Commercial	SWC	MU,Comm,Off	1	0/0/5/50/45/0	0/0/100/0	no current commercial or industrial use, future use ratios are estimated
Northern Commercial	NC	MU,Comm,Off	1	0/0/31/65/4/0	0/0/100/0	SF and MF occupied prior to '89 allowed, no commercial uses currently exist, ratio is estimated.
Transitional	T	MU,Comm,Off	1	0/0/25/75/0/0	0/0/100/0	SF and MF occupied prior to '89 allowed,only 4 parcels currently match allowable uses
Southern Commercial/Industrial Service	SCI	Comm,Off,Ind	1	0/0/0/0/0/100	0/0/0/0	only 3 parcels currently match allowable uses
Northern Commercial/Industrial Service	NCI	Comm,Off,Ind	1	0/0/0/0/0/100	0/0/0/0	no current commercial or industrial use, future use to be predominantly industrial

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Wetlands Conservation District	2000+ sq ft water bodies, any contiguous streams and rivers, plus 50-foot buffers	only agriculture, park and recreation, and refuge uses allowed	75-Foot buffer used per town request
Floodplain Conservation District	within FEMA designated floodplain area		
Aquifer Protection District	all areas with transmissivity, as calculated in CALCULATOR tab		
Shoreland Protection	along Merrimack River	75 foot setback applied as part wetlands conservation	

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percentage	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percentage	Ratio
Moderate Slopes	**1.00**	186	155	31	0.833	7,433	4,296	3,137	0.578	1.442

Litchfield cont:

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
R			97	3			
HC			5		84	11	
SWC			3		52	45	
NC			16		80	4	
T					25	75	
SCI							100
NCI							100

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
R	1,028	1,028	997	31	0	0	0
HC	16	15	1	0	12	1	0
SWC	231	232	7	0	120	104	0
NC	93	95	15	0	76	3	0
T	72	70	0	0	17	52	0
SCI	330	329	0	0	0	0	329
NCI	0	0	0	0	0	0	0
Total:	1,770	1,769	1,020	31	225	160	329

Lyndeborough:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/MU/Comm/ Off/Ind	Mixed Use ratio SF/ MF/Comm/ Off	Comments
Light Industrial	LI	Comm/Off/Ind	5	0/0/0/33/33/34	0/0/0/0	Lot sizes per Town Officials
Rural Lands 1	RL1	SF	10	100/0/0/0/0/0	0/0/0/0	
Rural Lands 2	RL2	SF	25	100/0/0/0/0/0		
Rural Lands 3	RL3	SF	40	100/0/0/0/0/0		
Village	V	SF/Comm/Off	1000	95/0/0/3/2/0		Built to zoning - Per Town Officials

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Wetlands	Water & Wetlands	Use Restrictions - No Buffer	

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percent-age	Ratio
Moderate Slopes	1.00	5,914	2,585	3,329	0.437	10,382	4,212	6,170	0.406	1.077

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
LI			0	0	33	33	34
RL1			100	0	0	0	0
RL2			100	0	0	0	0
RL3			100	0	0	0	0
V			95	0	3	2	0

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
LI	81	16	0	0	5	5	5
RL1	5,061	505	505	0	0	0	0
RL2	784	33	33	0	0	0	0
RL3	159	4	4	0	0	0	0
V	0	0	0	0	0	0	0
Total:	6,085	558	542	0	5	5	5

APPENDIX B

Merrimack:

Zoning Designations:

Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	**Minimum lot size (acres)**	**Use Ratio (percentages) - SF/MF/MU/Comm/ Off/Ind**	**Mixed Use ratio SF/ MF/Comm/ Off**	**Comments**
R	SF/MF	1.8	83/17/0/0/0/0	0/0/0/0	Used 80,000 sq feet as average
C-1	SF/MF/Comm/Off	0.69	45/11/0/31/13/0	0/0/0/0	Used 30,000 sq feet as average
C-2	Comm/Off	0.46	0/0/0/68/32/0		20,000 sq feet
I-1	Comm/Off/Ind	5	0/0/0/22/54/24		average existing lot size
I-2	Comm/Off/Ind	23	0/0/0/0/0/100		Using I-3
I-3	Off/Ind	23	0/0/0/0/0/100		1,000,000 sq feet

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	**Delineation**	**Restrictions**	**comments**
Wetlands Conservation	wetlands, water	25 foot buffer	
Elderly Zoning District		Specialty use - not germane to buildout	
Planned Residential		Specialty use - not germane to buildout	
Aquifer Conservation District	Statified Drift areas and Wellhead zones	Restricts uses, no spatial restrictions	
Shoreland Protection District	Certain main bodies of water	Resticts uses within 250 feet	
Town Center Overlay	Delineated on Zoning Map	Restricts certain uses, but allows for the same density	

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percent-age	Ratio
Moderate Slopes	0.85	1,941	1,186	755	0.611	13,558	9,761	3,797	0.720	0.849

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
R			83	17	0	0	0
C-1			45	11	31	13	0
C-2			0	0	68	32	0
I-1			0	0	22	54	24
I-2			0	0	0	0	100
I-3			0	0	0	0	100

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
R	2,185	1,213	1,007	206	0	0	0
C-1	3	4	2	0	1	1	0
C-2	23	49	0	0	33	16	0
I-1	260	52	0	0	11	28	12
I-2	107	5	0	0	0	0	5
I-3	0	0	0	0	0	0	0
Total:	2,578	1,323	1,009	206	45	45	17

Milford:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/MU/Comm/ Off/Ind	Mixed Use ratio SF/MF/ Comm/ Off	Comments
Residence A	A	SF	0.34	100/0/0/0/0/0		Using utility serviced lot size
Residence B	B	SF/MF	0.46	62/38/0/0/0/0		Using utility serviced lot size
Residence R	R	SF	2	100/0/0/0/0/0		
Commercial	C	SF/MF/Comm/Off	0.46	32/28/0/30/10/0		Using utility serviced lot size
Industrial	I	Off/Ind	0.92	0/0/0/0/14/86		Using 40,000 sq ft lot size
Limited Commercial	LC	Off	0.34	0/0/0/0/100/0		Using utility serviced lot size
Integrated Commercial-Industrial	ICI	Comm/Off/Ind	0.34	0/0/0/54/24/22		Using utility serviced lot size

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Open Space Development	Developments of 5 lots or greater	30% set aside of non-constraint land	Density Neutral - not used in model
Ground Water Protection Overlay	Level I & Level II protection areas on overlay	Use Restrictions	
Wetlands Conservation	Wetlands, water	100 foot buffer used	

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percentage	Ratio
Moderate Slopes	0.75	2,511	1,179	1,332	0.470	10,924	6,924	4,000	0.634	0.741

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
A			100	0	0	0	0
B			62	38	0	0	0
R			100	0	0	0	0
C			32	28	30	10	0
I			0	0	0	14	86
LC			0	0	0	100	0
ICI			0	0	54	24	22

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
A	260	765	765	0	0	0	0
B	93	205	127	78	0	0	0
R	2,616	1,306	1,306	0	0	0	0
C	9	20	6	6	6	2	0
I	141	151	0	0	0	21	130
LC	2	5	0	0	0	5	0
ICI	47	137	0	0	74	33	30
Total:	3,168	2,589	2,204	84	80	61	160

Mont Vernon:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/MU/Comm/ Off/Ind	Mixed Use ratio SF/MF/ Comm/ Off	Comments
Watershed Rural Residential	WRR	SF	5	100/0/0/0/0/0	0/0/0/0	
Watershed Residential	WR	SF	5	100/0/0/0/0/0	0/0/0/0	
Residential	R	SF	2	100/0/0/0/0/0		
Rural Residential	RR	SF	2	100/0/0/0/0/0		
Limited Commercial District	LC	Comm, Off	2	0/0/0/100/0/0		
Managed Commercial and Conservation Zone	MCC	Comm,Off,Ind	5	0/0/0/0/0/0		

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Open Space Development	Allowed anywhere - choice of developer	30% of Net Tract area must be Open Space	Developers choice to do Open Space development, therefore not used in model.

Moderate Slope Calculator:

If >1.0 then =1 or if <.75 the = .75

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percentage	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percentage	Ratio
Moderate Slopes	**0.75**	1,124	409	715	0.364	7,855	4,649	3,206	0.592	0.615

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
WRR			100	0	0	0	0
WR			100	0	0	0	0
R			100	0	0	0	0
RR			100	0	0	0	0
LC			0	0	100	0	0
MCC			0	0	0	0	0

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
WRR	830	168	168	0	0	0	0
WR	0	0	0	0	0	0	0
R	0	0	0	0	0	0	0
RR	1,549	775	775	0	0	0	0
LC	38	19	0	0	19	0	0
MCC	0	0	0	0	0	0	0
Total:	2,417	962	943	0	19	0	0

Nashua:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	**Minimum lot size (acres)**	**Use Ratio (percentages) - SF/MF/ MU/Comm/Off/Ind**	**Mixed Use ratio SF/MF/ Comm/Off**	**Comments**
Rural Residence	R-40	SF	0.92	100/0/0/0/0/0	0/0/0/0	40,000 sq feet min lot
A - Suburban Residence	R-30	SF	0.69	100/0/0/0/0/0	0/0/0/0	30,000 sq feet min lot
B - Suburban Residence	R-18	SF	0.41	100/0/0/0/0/0		18,000 sq feet min lot
C - Suburban Residence	R-9	SF	0.21	100/0/0/0/0/0		9,000 sq feet min lot
A - Urban Residence	R-A	SF	0.17	100/0/0/0/0/0		7,500 sq feet min lot
B - Urban Residence	R-B	SF/MF	0.2	60/40/0/0/0/0		8,500 sq feet average min lot
C - Urban Residence	R-C	SF/MF	0.17	30/70/0/0/0/0		7,500 sq feet average min lot
Local Business	LB	Comm/Off	0.11	0/0/0/84/16/0		5,000 sq feet min lot
General Business	GB	Comm/Off	0.23	0/0/0/84/16/0		10,000 sq feet min lot
Central Business	CB	MF/Comm/Off	0.23	0/23/0/20/52/0		10,000 sq feet min lot
Highway Business	HB	Comm/Off	0.46	0/0/0/87/13/0		20,000 sq feet min lot
Park Industrial	PI	Ind	0.69	0/20/0/40/20/20		30,000 sq feet min lot - Uses adjusted to account for special exception development
General Industrial	GI	Ind	0.11	0/10/0/40/20/30		5,000 sq feet min lot - Uses adjusted to account for special exception development
Airport Industrial	AI	Ind	0.92	0/20/0/40/20/20		40,000 sq feet min lot - Uses adjusted to account for special exception development
Planned Residential	PRD	SF	1000*	100/0/0/0/0/0		In accordance with R-9,18,30,40
						*This is a single already built-out parcel

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	**Delineation**	**Restrictions**	**comments**
Historic Districts	Designated Historic Districts - North Nashua	Use & Design Restrictions only	not used in model
Mixed Use Overlay	In CB,GB, GI, RC zones	Encourages mixed-use but does not change what's allowed or dimensional requirements	not used in model
Flexible Use District		Similar to Mixed Use overlay	not used in model
Wetlands	Wetlands, water	Special exception required for uses inside 75 foot buffer	use 75 foot buffer for model

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percent-age	Ratio
Moderate Slopes	0.91	1,262	991	271	0.785	12,130	10,450	1,680	0.862	0.912

Nashua cont:

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
R-40			100	0	0	0	0
R-30			100	0	0	0	0
R-18			100	0	0	0	0
R-9			100	0	0	0	0
R-A			100	0	0	0	0
R-B			60	40	0	0	0
R-C			30	70	0	0	0
LB			0	0	84	16	0
GB			0	0	84	16	0
CB			0	23	25	52	0
HB			0	0	87	13	0
PI			0	20	40	20	20
GI			0	10	40	20	30
AI			0	0	0	0	100
PRD			100	0	0	0	0

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
R-40	317	344	344	0	0	0	0
R-30	152	218	218	0	0	0	0
R-18	206	503	503	0	0	0	0
R-9	85	402	402	0	0	0	0
R-A	30	174	174	0	0	0	0
R-B	16	78	47	31	0	0	0
R-C	23	138	41	97	0	0	0
LB	0	0	0	0	0	0	0
GB	2	6	0	0	5	1	0
CB	0	0	0	0	0	0	0
HB	0	1	0	0	1	0	0
PI	181	262	0	52	105	52	52
GI	18	165	0	17	66	33	50
AI	40	43	0	0	0	0	43
PRD	0	0	0	0	0	0	0
Total:	1,070	2,334	1,729	197	177	86	145

Pelham:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/ MU/Comm/Off/Ind	Mixed Use ratio SF/MF/ Comm/ Off	Comments
Business	B	SF,MF,MU,Comm,Off	1	0/0/0/60/40/0		ordinance lists B-1 - B-4
Industrial	I	Comm,Off,Ind	1.37	0/0/0/21/7/72	0/0/0/0	ordinance lists I-1 - I-3
Residential	R	SF,MF	1	96/4/0/0/0/0	0/0/0/0	
Recreation-Conservation-Agricultural	RCA	NONE	N/A	0/0/0/0/0/0	0/0/0/0	bo_use = null
Rural	RU	SF,MF,MU,Comm,Off	1	96/4/0/0/0/0	0/0/0/0	
Elderly Housing Ordinance*	EH	SF(Adult)	0.13	100/0/0/0/0/0		30% open space
*False Zoning district requested by the Town to account for expected 55+ housing - 10% of Residential 5 acres plus vacant parcels						

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Aquifer Conservation District			ACD
Wetlands Conservation District	wetlands > 2,000 ft and buffers	50 feet	WCD
Floodplain Conservation District			FCD

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percent-age	Ratio
Moderate Slopes	0.83	2,149	1,110	1,039	0.517	12,570	7,787	4,783	0.619	0.834

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
B			0	0	60	40	
I					21	7	72
R			96	4			
RCA							
RU			96	4			
EH			100	0	0	0	0

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
B	22	22	-	-	13	9	-
I	91	65	0	0	14	5	47
R	2,023	2,023	1,942	81	0	0	0
RCA	0	0	0	0	0	0	0
RU	1	1	1	0	0	0	0
EH	239	1,840	1,840	0	0	0	0
Total:	2,376	3,951	3,783	81	27	14	47

APPENDIX B

Wilton:

Zoning Designations:

Zoning	Code	**Allowable Uses** (Based on Buildout Uses: SF, MF, Comm, Off, Ind) - May be multiple such as SF/MF	Minimum lot size (acres)	Use Ratio (percentages) - SF/MF/ MU/Comm/Off/Ind	Mixed Use ratio SF/MF/ Comm/ Off	Comments
Residential	RD	SF,MF	0.5	98/2/0/0/0/0	0/0/0/0	
General Residence and Agricultural	R&A	SF,MF	2	99/1/0/0/0/0	0/0/0/0	
Commercial	C	SF, Comm	2	39/0/0/61/0/0	0/0/0/0	
Industrial	I	Comm,Ind	2	0/0/0/57/0/43	0/0/0/0	
Office Park	OPD	Off	2	0/0/0/0/100/0	0/0/0/0	

Regulatory Constraints (Overlay districts, buffers, etc.) Note: Floodplains & Wetland Buffers are included in absolute constraints

Overlay/Constraint name	Delineation	Restrictions	comments
Open Space Development	Residence and Agricultural District	50% must be set aside for open space, use .5	
Wetlands Conservation District	Wetlands or Water	50 foot Buffer	
Aquifer Protection District	Stratified Drift Aquifers	Restrict certain uses, no spacial restrictions	
Elderly Housing District	By special exception	Not used in model	

Moderate Slope Calculator:

If >1.0 then =1

Constraint	Constrain Factor	Constraint acres-total	Constraint acres-built	Constraint acres-vacant	Constraint Built Percent-age	Non-Constraint acres-total	Non-Constraint acres-built	Non-Constraint acres-vacant	Non-Constraint Built Percent-age	Ratio
Moderate Slopes	1.00	4875	2916	1959	0.598	11573	5589	5984	0.483	1.239

Use Ratios

Zoning			SF	MF	Comm	Off	Ind
RD			98	2			
R&A			99	1			
C			39		61		
IN					57		43
OP						100	

New Buildout units

Zoning	dev acres	lots	SF	MF	Comm	Off	Ind
RD	9	16	16	0	0	0	0
R&A	1,658	819	811	8	0	0	0
C	0	0	0	0	0	0	0
IN	47	24	0	0	14	0	10
OPD	56	28	0	0	0	28	0
Totals:	1,770	887	827	8	14	28	10