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**(COMMUNITY INFRASTRUCTURE AND
FACILITIES)**

MOVING SOUTHERN NH FORWARD

VOLUME 2:
Community
Infrastructure and
Facilities



2015-2035

Regional Comprehensive Plan 2015



Southern New Hampshire Planning Commission works to make our region better by facilitating cooperative and long term decision making. We believe a promising future can be achieved through fiscally sound and responsible planning and development decisions that improve the economy, efficiency and health of our region.

June, 2014

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COMMUNITY INFRASTRUCTURE AND FACILITIES

PURPOSE

The purpose this chapter is to provide an overview of range of public infrastructure, community facilities and public utilities, both existing conditions and future projects planned within the region. Also included is the identification of the region's most important public facility issues and needs as recognized through the Granite State Future public outreach process and the project Leadership Team; as well as key goals and recommendations to improve the region's community infrastructure and facilities in the future. This chapter is not meant to serve as a comprehensive community facilities plan. Rather it is a strategic integration and evaluation considering the sustainability themes and livability principles as outlined in Volume 1 of the plan. Examples of public infrastructure, utilities and community facilities include: education, police and fire protection, EMS services, library services, community and senior centers, government offices and services, public water and sewer systems, solid waste, septage disposal, stormwater, hazardous waste, electricity, natural gas, and communication networks such as telephone and broadband.

VISION

This chapter is founded upon the following value statements:



Traditional Settlement Patterns & Development Design

Historical settlement patterns vary from city to county and regional values reflect appreciation for this diversity; residents want future development to largely occur in areas that are already developed.

Local

Residents believe that equity is found in local decision-value being involved in their communities as well as regionally.



Decision-Making

making and strongly collaborating

PUBLIC INPUT AND SURVEY RESULTS

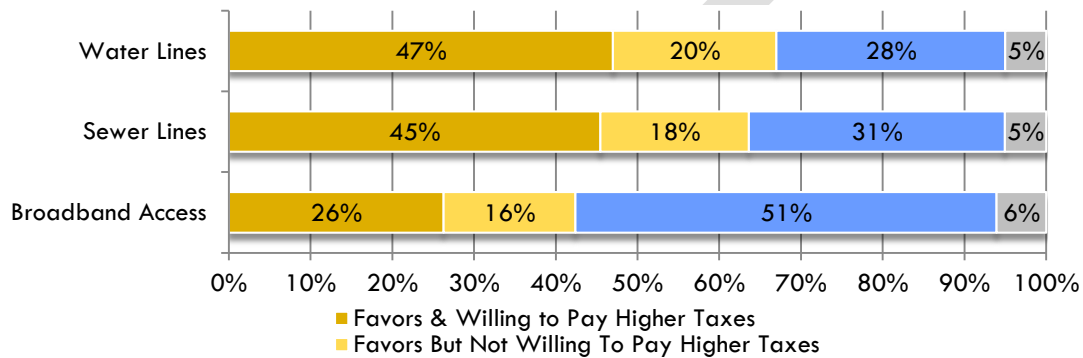
The public input collected via the GSF public outreach efforts through the regional visioning workshops, public comments submitted online, and a telephone survey conducted by the University of New Hampshire as related to public infrastructure and facilities are identified here. The public input received indicates there is widespread support for public facilities within the region. As captured in SNHPC's Public Outreach Report, community facilities are highly valued among residents in the region. Specifically community infrastructure and facilities involving community

development, environmental protection, energy policies, emergency preparedness, and priorities in investment of public dollars are among the categories targeted by the outreach report.

COMMUNITY DEVELOPMENT

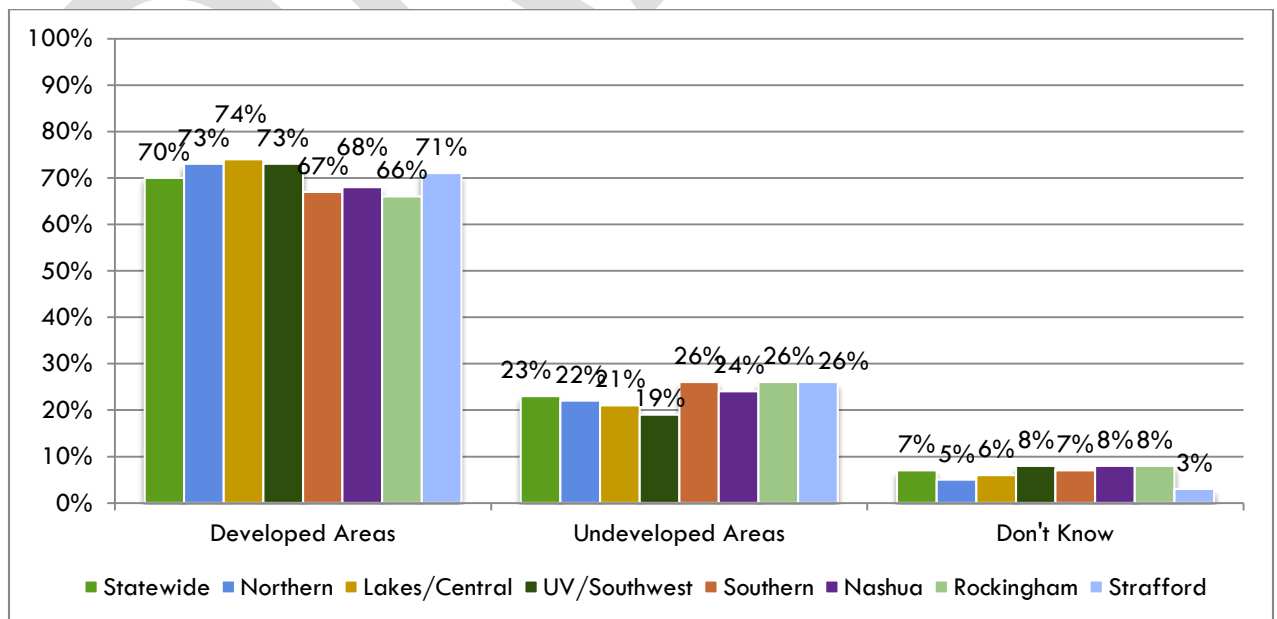
Over two thirds (67%) of residents favor using municipal funds to provide water lines to existing and potential development (although just 47 percent would be willing to pay more in taxes for it), followed by sewer lines (63%) and broadband access (42%).

FIGURE 4-1: USING MUNICIPAL FUNDS TO PROVIDE UTILITIES FOR DEVELOPMENT



More than two-thirds (70%) or residents think that future development should occur in areas that are already developed while only 23 percent support development in undeveloped areas and 7 percent did not know.

FIGURE 4-2: WHERE SHOULD FUTURE DEVELOPMENT OCCUR IN YOUR PART OF THE STATE?

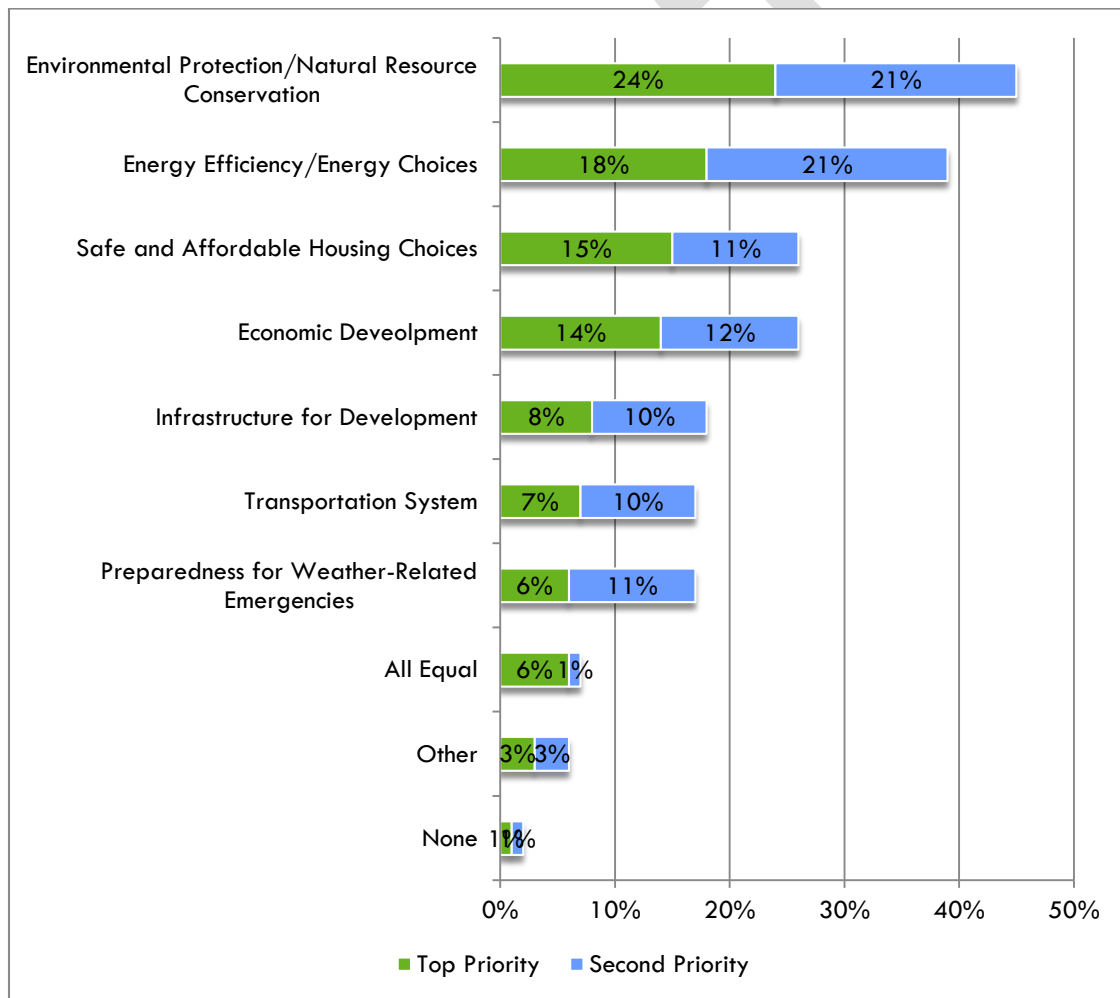


PRIORITIES FOR INVESTING PUBLIC DOLLARS

Residents' top priority for investing public dollars is environmental protection (24%), followed by energy efficiency (18%), safe and affordable housing (15%), economic development (14%), infrastructure for development (8%), transportation system (7%), preparedness for weather-related or other emergencies (6%), all priorities are equal (6%), something else (3%) and none of the above (1%).

While investing public dollars in infrastructure was not within the top three categories, economic development and infrastructure is still identified as a high priority among residents in the region.

FIGURE 4-3: PRIORITIES FOR INVESTING PUBLIC DOLLARS



KEY ISSUES AND CONCERNS

Based on discussions with the Project Leadership Team and the public input and survey results received through the public outreach efforts conducted for this plan, the most important public infrastructure, utility and community service/facility issues facing the SNHPC Region today and in the future include:

Public Infrastructure:

1. Financing municipal water and sewer projects is a top priority for many municipalities and requires significant local and state investment.
2. Broadband internet infrastructure and connectivity offers many communities enhanced economic development opportunities but how to pay for broadband improvements remains an issue.
3. Stormwater facilities and maintenance is an increasing cost and burden on municipalities.
4. Recycling, solid waste and septage disposal is an important but costly public service.
5. Installing and maintaining community sidewalk infrastructure is an ongoing issue in many communities both urban and rural.

Utilities:

1. New England is experiencing significant energy/utility supply challenges – natural gas prices have skyrocketed and electricity costs are expected to continue to increase as gas supplies remains tight.
2. Existing natural gas pipelines in New Hampshire are limited and no expansion is imminent.
3. Major public utilities such as water and sewer are not available within many parts of the region.

Public Facilities and Services:

1. School funding continues to be an ongoing local issue and regional challenge.
2. School enrollment and capacity issues continue to be a problem in Manchester.
3. Local Capital Improvement Programs (CIPs) continue to go unfunded among many towns.
4. Volunteer Fire and EMS departments in smaller departments are experiencing shortages as population ages.
5. Despite increasing department budgets, police staffing ratios (officers to population) remain low.
6. Local property taxes, user fees and licenses continue to be the primary source of funding for municipal, county and local school systems. This source of funding is limited and many communities face continuing local funding issues when paying for basic services and programs.

PUBLIC FACILITIES AND SERVICES

This section provides an overview of the various public facilities and services available within the Southern New Hampshire Planning Commission (SNHPC) Region. These facilities and services include education, police and fire protection, emergency services, library services, community and senior centers, and government offices. Other public facilities such as water, sewer, solid waste, and stormwater utilities are addressed in the Public Infrastructure and Utilities section of this chapter. Much of the information collected for this chapter is based upon data obtained from the most current Town Report, Master Plan and CIP of each community, as well as information provided by School Administrative Offices, and the New Hampshire Departments of Education and Revenue Administration.

EDUCATION

The SNHPC Region contains numerous public and private schools of various sizes and purposes (see **Map 4-1**). Based upon New Hampshire Department of Education data, there are currently a total of 88 schools located within the region as of the 2010-2011 academic year. These include 62 public schools and 26 private schools. A complete list of these schools is provided in **Table 4-1**.

Every public school in the State belongs to a School Administrative Unit (SAU). SAUs are comprised of school districts located within either one or several communities. They are responsible for administrative and financial services, including regular meetings with school boards and preparing annual reports on the status of each school district. There are a total of 11 different SAUs covering the SNHPC Region (see **Table 4-2**).

Currently there are only two SAUs set up to cover multiple municipalities located within the SNHPC Region. SAU 15 handles the towns of Auburn, Candia and Hooksett, while SAU 19 handles the towns of Goffstown and New Boston. All other municipalities located in the region either have their own SAU, or share an SAU with municipalities that lie outside of SNHPC's jurisdiction. Even Pinkerton Academy, which is located in the Town of Derry, has its own SAU (SAU 82) that is separate from the Town of Derry. Also noteworthy is in March 2006, each of the three municipalities comprising SAU 14 (Chester, Epping and Fremont) all voted to withdraw from its SAU. In July 2006, Chester officially formed and became a member of SAU 82.

At the March 2014 Town Meeting, residents in the Town of Hooksett voted to reject SAU 15's proposed 10-year contract with Pinkerton Academy. As a result, the town must now decide whether to stay with the City of Manchester school system or consider building a new high school in the future.

In respond to increasing population growth in the region, four new public schools in the towns of Bedford, Weare and Windham have been constructed in the past decade, and an existing school in the Town of Raymond was completely rebuilt and enlarged. The Town of Bedford constructed a combined Middle and High School campus in September of 2007. This combined new facility has a capacity of 1,900 students. Bedford's existing McKelvie Middle School was able to become an intermediate level school serving grades 5 and 6. Before the transition, McKelvie Middle School hosted 6th, 7th and 8th grade, and was over capacity by 226 students.

TABLE 4-1: PUBLIC/PRIVATE SCHOOLS IN SNHPC REGION

Municipality	School Name	Grade Span	Type
Auburn	Auburn Village School	K, 1-8	Public
Bedford	Bedford High School	9-12	Public
	McKelvie Intermediate School	5-6	Public
	Memorial School	P, K, 1-4	Public
	Peter Woodbury School	K, 1-4	Public
	Riddle Brook School	K, 1-4	Public
	Ross A. Lurgio Middle School	7-8	Public
Candia	Henry W. Moore School	K, 1-8	Public
Chester	Chester Academy	P, K, 1-8	Public
Deerfield	Deerfield Community School	P, K, 1-8	Public
Derry	Derry Village School	K, 1-5	Public
	East Derry Memorial Elementary School	K, 1-5	Public
	Ernest P. Barka Elementary School	K, 1-5	Public
	Gilbert H. Hood Middle School	6-8	Public
	Grinnell School	P, K, 1-5	Public
	South Range Elementary School	K, 1-5	Public
	West Running Brook Middle School	6-8	Public
	Next Charter School	9-12	Charter
	Pinkerton Academy	9-12	Public
Goffstown	Glen Lake School	P, K	Public
	Goffstown High School	9-12	Public
	Maple Avenue School	1-4	Public
	Mountain View Middle School	5-8	Public
Hooksett	David R. Cawley Middle School	6-8	Public
	Fred C. Underhill School	P, K, 1-2	Public
	Hooksett Memorial School	3-5	Public
Londonderry	Londonderry Middle School	6-8	Public
	Londonderry Senior High School	9-12	Public
	Matthew Thornton Elementary School	1-5	Public
	Moose Hill School	P, K	Public
	North Londonderry Elementary School	1-5	Public
	South Londonderry Elementary School	1-5	Public
Manchester	Bakersville School	P, K, 1-5	Public
	Beech Street School	K, 1-5	Public
	Gossler Park School	K, 1-5	Public
	Green Acres School	P, K, 1-5	Public
	Hallsville School	K, 1-5	Public
	Henry J. McLaughlin Middle School	6-8	Public

Moving Southern New Hampshire Forward

	Highland-Goffes Falls School	K, 1-5	Public
	Hillside Middle School	6-8	Public
	Jewett School	P, K, 1-5	Public
	Manchester Central High School	9-12	Public
	Manchester Memorial High School	9-12	Public
	Manchester School of Technology	9-12	Public
	Manchester West High School	9-12	Public
	McDonough School	K, 1-5	Public
	Middle School at Parkside	6-8	Public
	Northwest Elementary School	K, 1-5	Public
	Parker-Varney School	P, K, 1-5	Public
	Smyth Road School	P, K, 1-5	Public
	Southside Middle School	6-8	Public
	Webster School	K, 1-5	Public
	Weston School	K, 1-5	Public
	Wilson School	K, 1-5	Public
	Mill Falls Charter School	K, 1-4	Charter
	Making Community Connections Charter School	6-12	Charter
	Polaris Charter School	K, 1-6	Charter
	Bartlett Elementary School	1-4	Public
New Boston	New Boston Central School	P, K, R, 1-6	Public
Raymond	Iber Holmes Gove Middle School	5-8	Public
	Lamprey River Elementary School	P, K, 1-4	Public
	Raymond High School	9-12	Public
Weare	Center Woods School	P, K, 1-4	Public
	Weare Middle School	5-8	Public
	John Stark Regional High School	9-12	Public
Windham	Golden Brook Elementary School	K, R, 1-3	Public
	Windham Center School	3-5	Public
	Windham High School	9-12	Public
	Windham Middle School	6-8	Public
	Windham Preschool	P	Public

Source: NH Department of Education,
<http://my.doe.nh.gov/Profiles/PublicReports/PublicReports.aspx?ReportName=SchoolList>
 (accessed April 7, 2014).

TABLE 4-2: SCHOOL ADMINISTRATIVE UNITS IN SNHPC REGION

SAU Name	School Administrative Unit
Auburn	15
Bedford	25
Candia	15
Chester	82
Deerfield	53
Derry	10
Goffstown	19
Hooksett	15
Londonderry	12
Manchester	37
New Boston	19
Pinkerton Academy	202
Raymond	33
Weare	24
Windham	95

Source: NH Department of Education

In addition, the Town of Windham constructed two new school buildings in 2009, a new high school and a kindergarten to accommodate the town's growth and in 2007 the Town of Weare constructed a new Middle School with a student capacity of 930 students. The Town of Weare's new middle school has helped to relieve overcrowding within the town's older school buildings. In a similar fashion, the Town of Raymond rebuilt the Iber Holmes Gore Middle School in December of 2006. This newly rebuilt school now supports a capacity of 823 pupils.

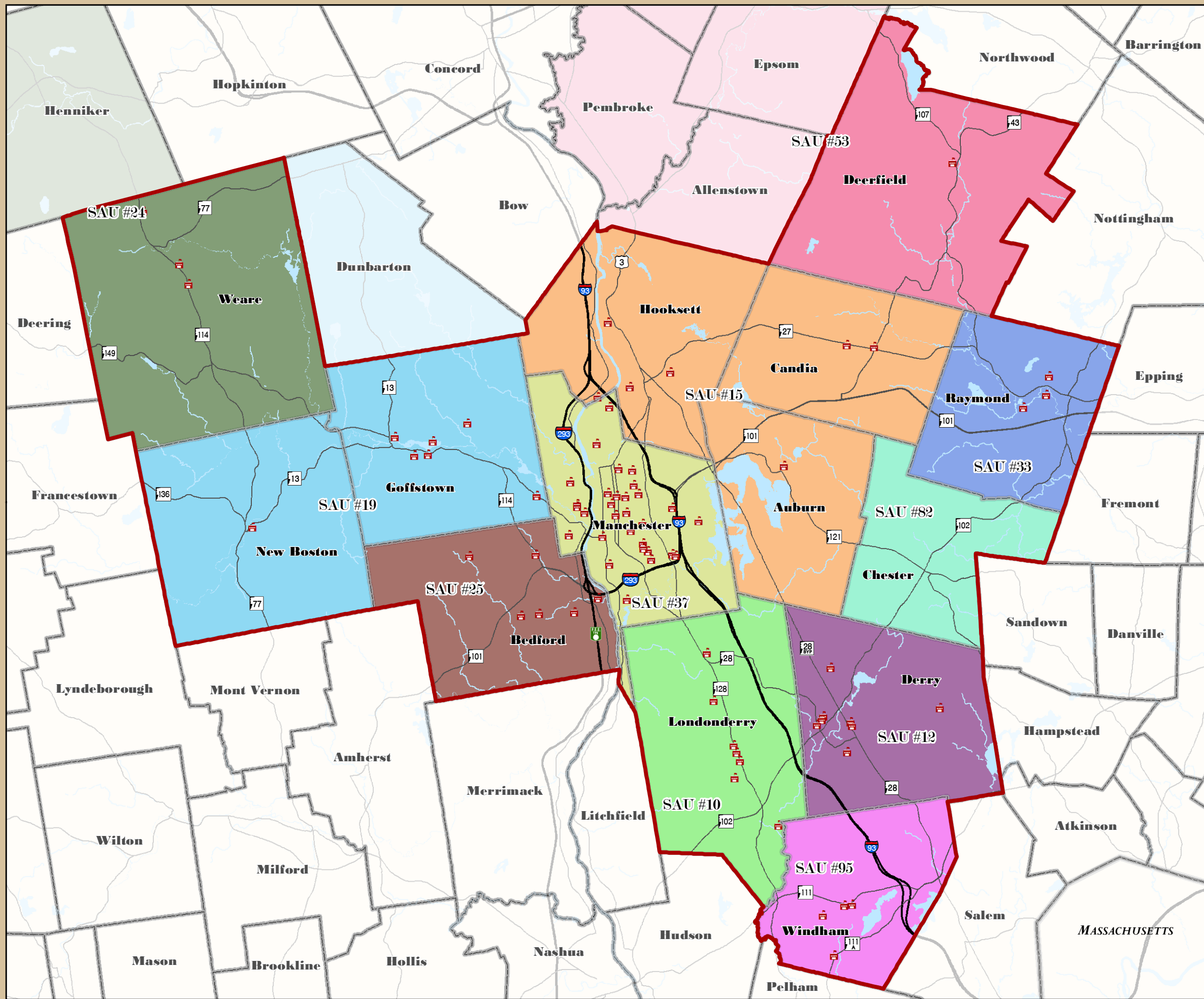
According to the New Hampshire Department of Education, there are a total of ten public high schools that support the region, nine of which are located within the region (Concord Senior High takes Deerfield students, but is located in the City of Concord). Seven of these schools are regional schools (**Table 4-3**). Together these schools had a total enrollment of 16,492 students during the 2010-2011 academic year and a combined total capacity of 19,412 pupils.

Londonderry Senior High School, Raymond High School and the newly built Bedford and Windham High Schools are the only public high schools within the region not serving multiple communities. Raymond's 2012-2013 total student population of 445 has plenty of room for growth. However, during the 2012-2013 academic year, Londonderry's Senior High School had a student population of 1,663, which is 537 students under the school's capacity of 2,200 students, and Bedford's total middle/high school enrollment of 1,328 is very close to the building's maximum capacity of 1,400 students. The City of Manchester's three high schools also continue to experience capacity issues. While West High School has improved somewhat with the completion of the new high school in Bedford; capacity at Memorial High School is growing worse and the High School is over capacity. These high school enrollment numbers indicate that continued improvements and local high school decisions will likely be needed in the future.

TABLE 4-3: HIGH SCHOOLS

High School	Communities Served	2012-2013 Total Enrollment	Municipal Enrollment
Bedford High School	Bedford	1,328	1,328
Concord Senior High School	Deerfield, Concord [^]	2,190	202
Goffstown High School	Goffstown, New Boston, Dunbarton [^]	1,169	1,169
John Stark Regional High School	Weare, Henniker [^]	792	552
Londonderry Senior High School	Londonderry	1,663	1,663
Manchester Central High School	Candia, Deerfield, Hooksett, Manchester	2,232	1,667
Manchester Memorial High School	Auburn, Deerfield, Manchester	2,030	1,796
Manchester West High School	Hooksett, Manchester	1,358	1,192
Pinkerton Academy	Auburn, Chester, Derry, Hampstead [^]	3,169	3,169
Raymond High School	Raymond	445	445

[^] indicates community resides outside of SNHPC region
Source: NH Department of Education



Granite State Future Community Infrastructure & Facilities Schools

- SNHPC Region
- Existing Schools - Public K through 12

School Administration Units

- SAU #10
- SAU #12
- SAU #15
- SAU #19
- SAU #24
- SAU #25
- SAU #33
- SAU #37
- SAU #53
- SAU #82
- SAU #95

- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities

The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2014.
Contact: SNHPC, gis@snhpc.org or (603) 669-4664

0 1.25 2.5 5
Miles



School capacity is based upon the State of New Hampshire's recommended minimum square footage per pupil and minimum total square footage per general-purpose classroom, including laboratories and other special purpose classroom space. These standards are specified in the NH Code of Administrative Rules Ed 321.

While high school capacity is continuing to be an issue within the region, the cost of providing educational services and programs is an ongoing and increasing expense for many of the region's municipalities.

Total educational budgets for each community within the region for fiscal year 2012-13 are shown in **Table 4-4**. As can be seen by this data, just about every municipality within the region struggles with increasing education costs and it is likely these costs will continue to increase in the future.

TABLE 4-4: EDUCATION BUDGETS BY MUNICIPALITY

Municipality	FY 00-01	FY 05-06	FY 10-11	FY 12-13
Auburn	\$5,918,807	\$9,471,705	\$11,352,309	\$11,410,271
Bedford	\$27,297,645	\$42,820,682	\$58,566,290	\$61,032,604
Candia	\$5,118,074	\$6,880,382	\$7,985,018	\$8,599,794
Chester	\$5,648,671	\$9,521,870	\$11,785,871	\$11,801,518
Deerfield	\$5,955,132	\$9,992,540	\$12,273,007	\$11,818,352
Derry	\$43,917,786	\$68,336,008	\$80,442,145	\$79,824,924
Goffstown	\$19,795,236	\$30,079,459	\$35,842,392	\$36,182,164
Hooksett	\$12,262,084	\$21,663,139	\$27,239,497	\$27,379,741
Londonderry	\$39,868,279	\$62,105,142	\$67,902,340	\$69,009,440
Manchester	\$106,372,292	\$147,716,169	\$154,564,785	\$158,013,000
New Boston	\$5,724,795	\$8,220,277	\$11,188,379	\$12,142,486
Raymond	\$14,388,914	\$19,564,627	\$22,060,620	\$21,899,316
Weare	\$7,002,366	\$9,835,200	\$12,947,669	\$13,649,856
Windham	\$17,862,757	\$68,679,275	\$41,027,674	\$43,591,380

*Education budgets shown reflect total voted appropriations by each municipality

Source: MS-22 Reports filed with the NH Department of Revenue

POLICE PROTECTION

Police protection is a necessary element for the safety and well-being of everyone. Municipalities within the region have a broad range of police departments, and each department employs various numbers of police officers and staff. Most of the police officers in the region are full-time or part-time; however the towns of Bedford and Derry also have civilian officers who perform minor duties. Police officers are trained to handle numerous situations and calls for service. Calls for assistance can range from incidents such as motor vehicle accidents and speeding violations, to family and domestic disputes, and criminal offenses.

The region's police departments utilize a variety of methods to dispatch their officers. Eight departments use their own dispatcher, while the others use either the Goffstown dispatcher or the Rockingham County Dispatcher. Auburn uses its own dispatcher from 8:00 AM until 4:00 PM and then converts to Rockingham County Dispatch for the evening and overnight hours.

Each department also faces an annual replacement of equipment and vehicles. Police vehicles, especially cruisers, rapidly accumulate miles due to the heavy amount of travel they endure. For example, the Town of Weare expects to place an annual request for replacement of two police cruisers each year as a direct result of high mileage. Vehicles that are replaced typically are sold at auction or donated to a department in need of a newer vehicle. With this annual routine comes an increased budget concern.

The City of Manchester has the largest police budget in the region. For FY 2012-13, the budget was **\$21,304,548** (see **Table 4-5**). The smallest police department budget belongs to the Town of Chester, whose budget for fiscal year 2012-13 was **\$478,395**.

Nearly every community in the region experienced a small increase in their police budget from fiscal year 2000-01 to FY 2012-13. These budget increases allow for small upgrades to be made by each department in needed areas, and help reduce the strain of unforeseen police expenditures.

In order to assist with police response and combine efforts for budget reductions, a police department may contract their services to neighboring communities. This allows for better response times in certain areas, and helps to take the strain off of a single department. The only department within the region currently practicing this is the Goffstown Police Department, which responds to dispatch calls in both New Boston and Weare. These contractual agreements are in addition to mutual aid agreements that communities may share. Mutual aid agreements allow for police from one community to lawfully enter into another community to assist in the resolution of an emergency situation.

Officer-to-population ratios can serve as good indicators of demand for law enforcement services.¹ While these averages will vary depending upon local economic conditions, perceived crime problems and community values, they represent benchmarks that can be used as a general level to assess adequacy of service and police staffing within the region. As shown in **Table 4-6**, every municipality in the region has less than 2.2 and 2.7 full-time staff per 1,000 population, which is less than the FBI benchmarks suggest.

¹ Municipal Benchmarks, David N. Ammons, 2nd Edition, 2001, page 301.

TABLE 4-5: POLICE BUDGETS BY MUNICIPALITY

Municipality	FY 2000-01	FY 05-06	FY 10-11	FY 12-13
Auburn	\$547,476	\$780,053	\$914,830	\$1,031,614
Bedford	\$2,024,533	\$2,714,029	\$3,550,787	\$4,025,899
Candia	\$425,693	\$620,027	\$638,845	\$659,385
Chester	\$254,601	\$347,345	\$434,742	\$478,395
Deerfield	\$325,292	\$542,826	\$609,650	\$628,779
Derry	\$3,703,993	\$6,710,922	\$7,841,692	\$8,409,081
Goffstown	\$2,020,644	\$3,377,061	\$4,257,734	\$3,882,635
Hooksett	\$1,418,241	\$2,382,714	\$3,498,460	\$3,644,358
Londonderry	\$3,887,986	\$5,736,562	\$6,723,366	\$7,865,866
Manchester	\$16,357,345	\$21,297,533	\$19,084,658	\$21,304,548
New Boston	\$281,237	\$403,420	\$649,340	\$656,281
Raymond	\$853,077	\$1,499,820	\$1,558,092	\$1,629,704
Weare	\$503,474	\$859,609	\$1,214,034	\$1,446,262
Windham	\$1,182,120	\$1,859,690	\$2,333,745	\$2,423,325
SNHPC Regional Average	\$2,413,265	\$3,509,401	\$3,807,855	\$4,149,009

Source: NH Department of Revenue

TABLE 4-6: POLICE EMPLOYEES BY MUNICIPALITY

Municipality	Police Employees*			2010 Population	Full-time staff/1,000 Population ratio
	2005	2010	2012		
Auburn	9	9	7	4,953	1.8
Bedford	41	47	32	21,203	1.5
Candia	7	7	7	3,909	2.3
Chester	2	6	5	4,768	1.3
Deerfield	10	7	7	4,280	1.8
Derry	73	70	56	33,109	1.7
Goffstown	37	29	29	17,651	1.7
Hooksett	34	45	29	13,451	2.2
Londonderry	73	75	58	24,129	2.4
Manchester	277	220	207	109,565	1.9
New Boston	5	7	6	5,321	1.2
Raymond	28	24	16	10,138	1.6
Weare	10	10	12	8,785	1.5
Windham	19	19	19	13,592	1.5

Source: Annual Municipal Reports, Municipal websites, Correspondence with PD staff

FIRE PROTECTION

Similar to police protection, fire protection and fire suppression encompasses multiple areas. Fire protection calls are handled by both full and part-time staff as well as volunteers in smaller communities. Calls range from the obvious fire rescue and hazardous material calls to the more sporadic downed power line and animal rescue calls. Mutual Aid agreements are a common method for handling emergency situations among communities. As with police mutual aid agreements, one municipality can call upon another municipality during an emergency when in need of assistance. Mutual aid agreements are used throughout the state, and are a beneficial tactic for fire departments to use when handling an emergency situation.

In terms of budgets, the largest fire department in the region is in the City of Manchester, which has a FY 2012-13 budget of **\$19,268,316** (see **Table 4-7**). The second-largest department is in the Town of Derry, which has a budget of \$9,868,078. The smallest budget in the region in FY 2012-13 is the Town of Candia at \$137,750. It should be noted that fire budgets in the towns of Bedford, New Boston, Londonderry and the City of Manchester may appear larger than they really are. This is because these communities do not break out their ambulance and emergency budgets from their fire budgets. The same applies to the Town of Goffstown, which stopped separating their fire and emergency budgets after fiscal year 2002-03.

It is important to note all of the municipal fire budgets across the region substantially increased between FY 2000-01 and FY 2012-13 (see **Table 4-7**). The largest fire budget increase was in the Town of Derry, which increased by \$6,538,579 followed by the City of Manchester. These budget increases generally take into account necessary service, facility and staffing upgrades. There is also a growing need to replace aging volunteer firefighters when they retire, and this will place increased demands on smaller communities to hire full and part-time staff.

Similar to police, fire departments are also constantly in need of new equipment and vehicles. Replacement fire trucks and tankers are critical for public safety. Without updated and new equipment, the risk for breakdown and inadequate utilities could potentially lead to severe problems during an emergency. Many departments are using equipment and vehicles that are quite old and in need of replacement. These needs are typically reflected within the CIPs. Fire departments can also contract out their service to neighboring communities. This method could prove effective in cutting response time and help to save costs for the smaller communities taking advantage of this service. Recently, the Town of Chester prepared impact fees to address the town's need for purchasing new police and fire vehicles in the future. This is the first time a municipality in the SNHPC Region has considered impact fees for police and fire vehicles.

Staffing statistics compiled by the National Fire Protection Association (NFPA) reveal different lengths of workweeks and ratios of career firefighters per 1,000-population for various sizes of communities. These staffing statistics or norms differ by region. Northeastern municipalities tend to employ higher ratios of career firefighters than do other regions. The average ratio for communities with populations of 25,000 to 49,999 is 1.76; a population of 50,000 to 99,999 is 2.07; and a population of 100,000 to 249,999 is 2.46. No ratios are available for municipalities smaller than 25,000 people.² For the purpose of this chapter, the NFPA benchmarks can be compared to the existing ratios as shown in Table 11.7. The ratios indicate that full-time firefighting staffing levels vary significantly throughout the region, and most of the three municipalities greater than 25,000 people in size have less than 2.46 full-time staff per 1,000-population, which the NFPA benchmarks suggest.

² Municipal Benchmarks, David N. Ammons, 2nd Edition, 2001, Table 11.3, page 144.

TABLE 4-7: FIRE PROTECTION BUDGET BY MUNICIPALITY

Municipality	FY 00-01	FY 05-06	FY 10-11	FY 12-13
Auburn	\$134,754	\$143,447	\$346,412	\$392,504
Bedford	\$1,109,374	\$1,799,670	\$3,111,971	\$4,353,509
Candia	\$87,500	\$102,000	\$124,050	\$137,750
Chester	\$41,084	\$202,569	\$953,954	\$288,501
Deerfield	\$39,160	\$54,963	\$93,863	\$226,904
Derry	\$3,329,499	\$6,779,871	\$9,437,105	\$9,868,078
Goffstown	\$1,320,379	\$2,030,096	\$2,376,811	\$2,494,494
Hooksett	\$1,174,738	\$1,979,051	\$3,371,835	\$3,901,101
Londonderry	\$2,849,815	\$4,450,910	\$5,187,692	\$5,866,776
Manchester	\$15,446,252	\$21,515,501	\$18,486,979	\$19,268,316
New Boston	\$91,550	\$123,860	\$211,492	\$211,358
Raymond	\$247,894	\$367,385	\$400,715	\$439,293
Weare	\$144,035	\$250,988	\$267,828	\$312,972
Windham	\$1,056,030	\$1,971,070	\$2,699,245	\$2,896,430
SNHPC Regional Average	\$1,933,719	\$2,983,670	\$3,362,139	\$3,618,428

Source: NH Department of Revenue

TABLE 4-8: FIRE EMPLOYEES BY MUNICIPALITY

Municipality	Fire Employees (Full Time)			2010 Population	Full-time Fire Employee/1,000 Population Ratio
	2005	2010	2012		
Auburn	2	2	3	4,953	0.8
Bedford	25	29	32	21,203	1.5
Candia	0	0	0	3,909	n/a
Chester	1	1	2	4,768	0.5
Deerfield	0	11	10	4,280	2.5
Derry	77	73	88	33,109	2.7
Goffstown	14	17	16	17,651	0.9
Hooksett	29	35	27	13,451	2.1
Londonderry	42	47	40	24,129	1.7
Manchester	258	258	258	109,565	2.4
New Boston	0	0	0	5,321	n/a
Raymond	4	4	4	10,138	0.4
Weare	0	0	0	8,785	n/a
Windham	19	23	23	13,592	1.8

n/a – no NFPA benchmark is available for communities with less than 25,000 population

Sources: Municipal Offices and Local Government Center, Municipal Annual Reports, Correspondence with FD

Generally, these ratios should not be taken as absolute prescriptions or requirements for determining staffing needs. Each community needs to determine its own standards considering local factors, such as the use of volunteers, the population density of the community, and other factors that influence fire risk. There is no “one size fits all” standard for every community within the region.

AMBULANCE AND EMERGENCY SERVICES

Another key public safety element is the provision of ambulance and emergency services. Emergency rescue services are often a joined unit of fire protection services, but these services can be a separate entity as well. As with some police and fire departments, emergency rescue services can be contracted out to neighboring communities, or they can be provided through a private emergency rescue company.

As discussed earlier, there are several communities that do not separate their fire and emergency service budgets, and therefore no ambulance budget information is available. Of the municipalities not separating their fire and emergency budgets, the largest FY 2012-2013 emergency budget in the region belongs to the Town of Londonderry at \$410,078 (see **Table 4-9**). The smallest emergency service budget within the region in FY 12-13 belongs to the Town of Candia at \$3,052 which was a decrease of \$2,182 from FY 10-11.

TABLE 4-9: AMBULANCE AND EMERGENCY MANAGEMENT BUDGETS BY MUNICIPALITY

Municipality	FY 00-01	FY 05-06	FY 10-11	FY 12-13
Auburn	\$45,000	\$45,000	\$46,000	\$54,595
Bedford	NBO	NBO	NBO	NBO
Candia	\$16,000	\$6,000	\$5,700	\$3,052
Chester	\$25,000	\$32,000	\$48,300	\$63,942
Deerfield	\$4,500	\$6,000	\$8,000	\$15,134
Derry	\$1,081,931	\$1,956,935	NBO	\$55,214
Goffstown	\$20,350	NBO	NBO	\$2,801
Hooksett	\$47,796	\$66,507	\$79,986	\$16,161
Londonderry	\$244,249	\$358,334	\$406,237	\$410,078
Manchester	NBO	NBO	NBO	NBO
New Boston	NBO	NBO	NBO	\$13,680
Raymond	\$41,905	\$42,905	\$39,300	\$47,190
Weare	NBO	NBO	\$9,900	\$12,756
Windham	NBO	NBO	NBO	\$6,400

*NBO indicates that the Emergency Budget is not broken out from the Fire Budget
Source: NH Department of Revenue

There are a total of seven communities in the region that contract their emergency rescue service out to a neighboring community or have their service provided by a private entity. These municipalities include: Auburn, Candia, Chester, Deerfield, Hooksett, Raymond and the City of Manchester. The towns of Auburn and Chester contract with the Town of Derry's Fire Department for emergency services. Candia and Manchester contract with Rockingham Ambulance. The Town of Hooksett contracts with Tri-Town Ambulance service and the Town of Deerfield contracts service with Raymond Ambulance Service.

Generally, measurements of adequacy and performance of a municipality's emergency management services are not based on population standards or ratios. Among the many key aspects of emergency management service (EMS) performance is speed of response. According to a 1989 study of emergency management service in Washington, D.C., the national medical community and the EMS industry have defined a two-part standard for EMS responsiveness: "90 percent of EMT responses should be within 4 minutes, and 90 percent of paramedic responses should be within 8 minutes."³ However, as noted in Municipal Benchmarks, reported performance targets, as well as the experience of the cities examined, skews the data. An 8-minute standard might be more realistic, but a 4-minute standard would be difficult for most municipalities to reach.⁴

Determining response times is a difficult task because this data is heavily dependent upon the proximity of EMS stations to the population centers being served. Many communities within the region have old fire stations that were built when population densities were focused around the center of town. Today, with increased growth and development, the population is more spread out and EMS stations are not able to provide adequate response times to the rural areas of town.

As depicted in the CIPs, many of the region's communities are only now beginning to build new stations at proper locations to enable broader coverage. The Town of Raymond's new station is an example. The Town of Londonderry opened two new replacement fire stations in 2006 and 2011 serving the South and North areas of Town.

Volunteer EMT staff that is not always ready or available to respond further complicates the response time issue. Response times can be greatly improved when community stations are staffed with part-time or full-time help. Some communities such as the Town of Deerfield have addressed this issue by allowing the fire department to send out an engine on every call along with the ambulance.

In addition to these issues, the overall aging of the region's population as well as aging of local volunteer EMS staff in many smaller communities is also an emerging staffing concern. With more senior citizens and senior housing projects, including age restricted housing, the need and demand for ambulance service has increased. Because of these issues, the State of New Hampshire has recently instituted a tracking system to begin to monitor EMS calls throughout the state. While this is an important function, response times are not requested or monitored.

³ Municipal Benchmarks, David N. Ammons, 2nd Edition, 2001, pg. 105.

⁴ *Ibid.* pg. 105.

LIBRARY SERVICES

Libraries offer a valuable service to the general public. Currently, there are a combined total of **16** libraries located throughout the region's 14 communities. The Town of Derry and the City of Manchester each have two libraries, while all the other municipalities each have one.

The region's largest library system belongs to the City of Manchester. The City's library budget is also the highest in the region, at approximately **\$1,984,814** in FY 2012-13 (see **Table 4-10**). The next largest library belongs to the Town of Derry with a budget of \$1,349,661.

The smallest libraries within the region are located in the towns of Auburn, Candia, Chester and Deerfield. All four of these municipalities' library budgets are less than \$140,000 each. Except for the City of Manchester and the towns of Londonderry and Raymond, all library budgets increased slightly between FY 2010-11 and FY 2012-13.

In David N. Ammons's Municipal Benchmarks, 2nd Edition, it is noted that persons wishing to judge the adequacy of local public library facilities, collection, staff, and performance can utilize the selected standards for public libraries developed by the International Federation of Library Associations and Institutions (IFLA) and statistics compiled by the U.S. Department of Education.⁵ There are also numerous facility standards including the standards of accessibility prescribed by the federal Americans with Disabilities Act of 1990 (ADA, 42, U.S.C./12100), which allow persons with physical disabilities to enjoy library facilities.

For the purpose of this chapter, it is suggested that the IFLA standards be utilized. These standards suggest that in small libraries there should be at least three volumes per capita, and in medium to large libraries two volumes per inhabitant. Also, in the smallest libraries there should be one full-time qualified librarian with clerical assistance, and in medium and larger libraries one qualified librarian per 2,000 population.⁶

In comparing these benchmarks, the following can be observed. Generally, the overall standard of one qualified librarian per 2,000-population in all the medium and large libraries throughout the region has not been met. However, many of the region's larger libraries also have part-time staff to make up for the number of qualified librarian staff. In addition, all the smallest libraries within the region have adequately addressed the standard of one full-time qualified librarian with clerical assistance.

With regard to the number of volumes at each library, only the Town of Goffstown has less than the suggested benchmark of two volumes per inhabitant. All of the other libraries in the region have an adequate number of volumes per the recommended benchmarks.

In terms of public use or visitation of library facilities, the U.S. Department of Education provides a breakdown of annual visits per capita based on population size. These per capita rates vary from 4.7 for populations less than 4,999, 5.0 for populations less than 24,999, 4.6 for populations less than 49,999, 4.0 for populations less than 99,999, and 3.7 for populations less than 249,999.⁷

Based upon these per capita numbers, only the Towns of Bedford, Derry and Londonderry equal or exceed the suggested annual visitation benchmark numbers. Datum for the Town of Chester is unavailable as a door counter is not in place at the library.

⁵ Municipal Benchmarks, David N. Ammons, 2nd Edition, 2001, pg. 217.

⁶ Ibid. pg. 216.

⁷ Ibid. Table 16.15, pg. 230.

TABLE 4-10: LIBRARY BUDGETS BY MUNICIPALITY

Municipality	FY 00-01	FY 05-06	FY 10-11	FY 12-13
Auburn	\$51,357	\$82,896	\$117,260	\$136,192
Bedford	\$425,170	\$659,940	\$973,652	\$1,004,724
Candia	\$76,920	\$125,600	\$125,955	\$127,990
Chester	\$73,935	\$94,500	\$95,400	\$133,660
Deerfield	\$42,205	\$64,605	\$81,778	\$90,322
Derry	\$932,040	\$1,043,754	\$1,272,046	\$1,349,661
Goffstown	\$358,929	\$541,884	\$664,114	\$703,121
Hooksett	\$269,395	\$346,056	\$528,232	\$547,164
Londonderry	\$715,804	\$1,114,573	\$1,314,204	\$1,195,776
Manchester	\$2,302,570	\$2,701,475	\$2,070,609	\$1,984,814
New Boston	\$94,971	\$135,405	\$226,240	\$225,441
Raymond	\$127,880	\$178,381	\$210,196	\$207,455
Weare	\$100,601	\$157,892	\$174,194	\$195,020
Windham	\$418,540	\$812,870	\$975,260	\$994,345
SNHPC Regional Average	\$427,880	\$575,702	\$630,653	\$635,406

Source: NH Department of Revenue

COMMUNITY AND SENIOR CENTERS

According to the New Hampshire Association of Senior Centers, only six communities in the SNHPC Region provide activity centers for senior citizens.⁸ These facilities provide an important space for older residents to remain physically and socially active. With the overall aging population in the region, communities should explore what they can do to cater to this growing demographic.

TABLE 4-11: SENIOR CENTERS

Municipality	Senior Center
Derry	Derry Recreational Senior Programming
Londonderry	Londonderry Senior Center
Windham	Windham Senior Center
Chester	Chester Senior Citizens
Manchester	William B. Cashin Senior Activity Center
Raymond	Ray-Fre Senior Center

⁸ New Hampshire Association of Senior Centers, Members and Non-Members.
<http://www.nhasc.org/seniorcenters.html> (accessed April 7, 2014).

GOVERNMENT OFFICES & SERVICES

Most municipalities include the following common government offices and services:

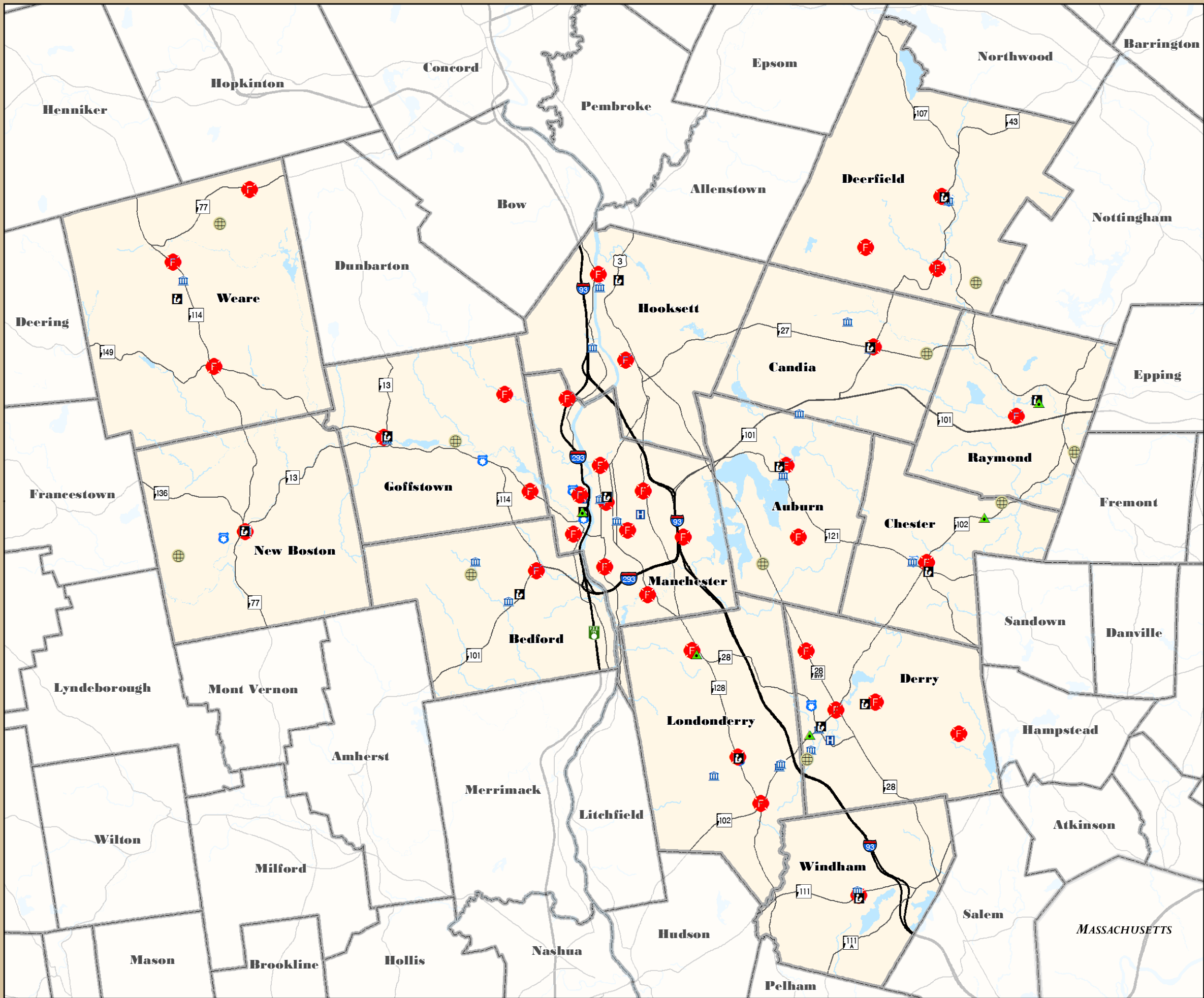
Town Administrator/Manager	Building Inspection/Code Enforcement
Tax Assessor	Finance/Human Resources
Tax Collector	Town Clerk
Planning/Zoning	Legal
Public Works	Town Council/Board of Selectmen
Parks & Recreation	Human Services/Welfare
Community/Economic Development	

These services are generally housed within one municipal office building or town hall, making public access to government functions much easier for residents (see **Map 4-2: Public Facilities**). Presently, there are no comprehensive space or facility standards for government offices or municipal office buildings within New Hampshire, except for federal and state ADA requirements for public access. The size and use of most government office buildings is generally determined based upon the local needs of each municipality as well as the functions and size of each department, including public access considerations.

Improvements to government offices are typically included in the CIP and the municipality's budget requests year to year. The City of Manchester has the largest overall governmental budget within the SNHPC Region, with just over \$55.8 million during fiscal year 2012-13 (see **Table 4-12**). The next-largest budget for government services belongs to the Town of Derry, which has approximately \$5.4 million. Conversely, the smallest operating government budget belongs to the Town of Candia, which had roughly \$564,597 appropriated; the only community in the region under \$1 million for these services.

Overall, all 14 municipalities within the region experienced a substantial decrease in their general government operating budgets between fiscal year 2000-01 and fiscal year 2012-13. No municipality experienced an increase in general government operating funding during this time period, although most budgets increased between FY 2000-01 and FY 2010-11 and then experienced a sharp decline after FY 2010. This can be contributed mostly to the great recession and declines in state and federal funding, as well as voter dissatisfaction with government spending and taxes in general during this time period.

Table 4-13 shows the approximate number of employees within each municipality who work in the general government services categories. It is obvious that the larger cities like Manchester and the towns of Londonderry and Derry would have the largest number of employees in these services. Currently there are no real standards or benchmarks available to suggest appropriate number of staff within these categories as a size of the municipality.



Map # 4 - 2



Granite State Future

Community Infrastructure & Facilities

Public Facilities

- Hospitals
- Police Stations
- Fire Stations
- Public Works & Town Halls
- Senior & Community Centers
- Public Libraries
- Transfer Stations & Recycling Centers
- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities

The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2014.
Contact: SNHPC, gis@snhpc.org or (603) 669-4664

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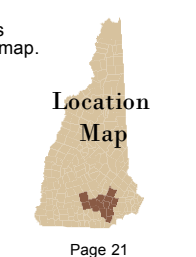


TABLE 4-12: GENERAL GOVERNMENT BUDGETS BY MUNICIPALITY

Municipality	FY 00-01	FY 05-06	FY 10-11	FY 12-13
Auburn	\$473,069	\$667,580	\$1,049,192	\$1,196,755
Bedford	\$2,282,152	\$3,878,177	\$5,684,707	\$4,956,892
Candia	\$243,899	\$388,745	\$594,874	\$564,597
Chester	\$446,954	\$768,154	\$1,342,770	\$1,499,843
Deerfield	\$645,480	\$981,256	\$1,266,292	\$1,237,533
Derry	\$5,436,597	\$4,524,673	\$5,080,364	\$5,427,666
Goffstown	\$1,057,900	\$1,584,831	\$2,049,044	\$2,229,808
Hooksett	\$2,194,262	\$3,893,687	\$2,393,779	\$2,277,808
Londonderry	\$1,973,140	\$2,931,549	\$3,240,172	\$3,208,683
Manchester	\$23,067,912	\$23,831,192	\$53,053,587	\$55,850,607
New Boston	\$597,519	\$839,033	\$1,185,396	\$1,243,291
Raymond	\$1,228,716	\$1,490,713	\$1,896,003	\$2,080,562
Weare	\$825,365	\$771,019	\$912,906	\$983,804
Windham	\$1,528,561	\$1,758,650	\$2,118,250	\$2,528,225
SNHPC Regional Average	\$3,000,109	\$3,450,661	\$5,847,667	\$6,091,862

Source: NH Department of Revenue⁹**TABLE 4-13: GENERAL GOVERNMENT EMPLOYEES BY MUNICIPALITY**

Municipality	Government Employees						Average Number of Employees 2005-2010
	2005	2006	2007	2008	2009	2010	
Auburn	8	8	8	8	8	8	8
Bedford	45	46	45	43	43	44	44
Candia	6	6	6	6	6	6	6
Chester	4	4	5	6	6	6	5
Deerfield	7	8	12	13	13	13	11
Derry	84	87	89	89	87	88	87
Goffstown	48	43	49	49	54	57	50
Hooksett	52	45	44	42	48	51	47
Londonderry	81	95	105	113	117	113	104
Manchester	700	692	697	736	714	719	710
New Boston	20	20	21	21	21	23	21
Raymond	23	23	25	25	26	25	25

⁹ General Governments are budgeted by generating the combined amount of the following categories in the MS-2 reports: Executive; Election, Registration & Vital Statistics; Financial Administration; Revaluation of Property; Legal Expense; Personnel Administration; Planning & Zoning; General Government Buildings; Cemeteries; Insurance; Advertising & Regional Association; and Other General Government.

Weare	25	26	24	25	27	28	26
Windham	82	86	87	87	91	86	87

Source: SNHPC

PROPERTY VALUES AND TAX RATES

Local property taxes, bonds and other state and federal aid provide the bulk of funding for most governmental services and facility improvements. The tax rate is set each year by the New Hampshire Department of Revenue. Tax rates are based upon municipal reports submitted to the state identifying the municipal budget adopted by the community, and the total assessed valuation of property within the community, including the amount of taxes levied and collected in prior years.¹⁰

The value of property and the tax rate plays an important factor in a municipality's ability to fund capital improvements. As a result, it is important for municipalities to maintain a high equalization ratio, which reflects how the assessed value of property equates to full market value. Generally, an equalization rate approaching 100 percent is desired. However, this is not always possible and cannot be achieved unless a community-wide property revaluation takes place on a regular basis.

There are also local tax districts, which affect how tax rates are set and levied. The Town of Derry had previously been divided into two separate tax districts: Derry and East Derry. This division was the result of there being two separate fire rates for each district. The East Derry Fire Precinct consolidated with the Derry Fire Department effective July 1, 2005, and it formally closed and ceased operations as of January 1, 2006. Therefore, Derry now has only one tax district.

In 2013, the highest total and equalized tax rate in the SNHPC Region belonged to the Town of Derry at \$31.49 and \$29.04 (see **Table 4-14** and **Table 4-15**). The Town of Candia has the lowest total rate of \$19.50 and the Town of Auburn had the lowest equalized rate of \$18.03.

¹⁰ See <http://www.nh.gov/revenue/git-rev.htm> for more information.

TABLE 4-14: TOTAL TAX RATES PER MUNICIPALITY*

Municipality	2005	2010	2013
Auburn	\$15.19	\$19.39	\$19.59
Bedford	\$15.44	\$19.62	\$22.17
Candia	\$17.83	\$19.90	\$19.50
Chester	\$30.96	\$18.79	\$25.17
Deerfield	\$17.51	\$22.96	\$22.65
Derry	\$27.03	\$28.48	\$31.49
Goffstown	\$23.61	\$22.91	\$27.11
Hooksett	\$22.10	\$21.68	\$23.48
Londonderry	\$19.85	\$20.33	\$21.10
Manchester	\$28.36	\$17.81	\$22.67
New Boston	\$28.90	\$17.25	\$24.24
Raymond	\$34.56	\$18.14	\$23.64
Weare	\$28.96	\$17.33	\$21.75
Windham	\$19.46	\$21.98	\$23.60

* "Total Tax" includes municipal, local education, state education, and county taxes

Source: NH Department of Revenue

TABLE 4-15: PROPERTY TAX RATES (EQUALIZED)

Municipalities	2000	2005	2010	2011	2012
Auburn	\$15.05	\$11.30	\$18.08	\$17.56	\$18.03
Bedford	\$16.50	\$13.78	\$20.23	\$20.45	\$21.43
Candia	\$16.88	\$14.62	\$21.48	\$19.19	\$21.30
Chester	\$18.08	\$16.40	\$22.30	\$24.54	\$24.48
Deerfield	\$19.98	\$17.95	\$23.81	\$24.12	\$24.57
Derry	\$23.32	\$19.07	\$28.05	\$26.86	\$29.04
Goffstown	\$22.14	\$18.37	\$23.66	\$24.16	\$25.09
Hooksett	\$18.76	\$17.06	\$22.34	\$23.37	\$24.44
Londonderry	\$22.30	\$16.82	\$21.07	\$22.96	\$23.62
Manchester	\$22.70	\$14.55	\$20.58	\$21.30	\$22.51
New Boston	\$20.25	\$14.27	\$20.58	\$23.55	\$23.64
Raymond	\$21.64	\$18.28	\$20.91	\$22.72	\$24.27
Weare	\$20.47	\$14.29	\$20.75	\$21.25	\$21.80
Windham	\$16.15	\$13.20	\$20.93	\$22.57	\$22.85
SNHPC Regional Average	\$19.59	\$15.71	\$21.77	\$22.47	\$23.36

Source: New Hampshire Center for Public Policy Studies

CAPITAL FACILITIES IMPROVEMENT PROGRAM (CIP)

Many new facilities are needed in the SNHPC Region due to the region's recent past, current and projected future growth. In addition, there are many basic needs to update and replace obsolete and inadequate current facilities which continue to be priorities for many communities.

This section provides a brief description of some of the major planned capital facility projects found within many of the municipality's CIPs. **Table 4-16** provides a summary and approval status of each municipality's CIP and timeframe. One of the Town of Bedford's major capital projects is to conduct a needs assessment of the Town Offices in order to evaluate the need for a new Town Office Building. Bedford has identified the need for a larger facility due to the insufficient space that the current building provides. The Town also hopes to build a new fire station to assist service needs in the South River Road area.

One of the Town of Candia's major capital projects is to construct a Public Safety Complex and restore the town's old library building. Currently, the Library Restoration project is only in its planning stages, and no date for work has been scheduled. Due to economic conditions and the downturn in the economy, the Public Safety Complex has been placed on hold.

The Town of Deerfield has also identified the need for a new Town Office building, Police Station and Fire Station. The problem, however, is none of these projects have passed at recent Town Meetings, and therefore will have to be placed on hold until the economy improves and funding is made available.

TABLE 4-16: CAPITAL IMPROVEMENT PLANS BY MUNICIPALITY

Municipality	Time Frame	Adoption
Auburn	2008-2014	2008
Bedford	2012-2021	2011
Candia	2006-2011	2006
Chester	2008-2014	2007
Deerfield	2005-2010	2004
Derry	2014-2019	2014
Goffstown	2013-2018	2012
Hooksett	2013-2019	2012
Londonderry	2015-2020	2013
Manchester	2013-2019	2012
New Boston	2012-2017	2011
Raymond	2005-2010	2005
Weare	2013-2019	2013
Windham	2014-2021	2013

Source: SNHPC

The Town of Derry is planning to construct a new fire station to replace their older, inadequate facility. In addition, the Town would like to build an addition onto the Taylor Library. This addition would help to reduce the space crunch currently facing the library.

The Town of Goffstown is looking to expand the Goffstown Public Library with a proposed addition in 2016. The Goffstown Fire Department is looking to renovate and expand each of their three fire stations under their Fire Station Improvement Program. This project has been proposed for two years in a row now, however it has not received enough support from the voters to pass. It will continue to be proposed in the future. The School District is looking to do major renovations/additions to the Bartlett Elementary and Maple Avenue Elementary Schools. This project was proposed two years ago to the voters and was also not supported by the public at the polls. The town expects it to be proposed again in 2015 to the voters. The Parks and Recreation department is looking to build a new recreation facility near the Goffstown Transfer Station in Grasmere. The department was approved for some funding to get started in 2014 on phase 1 of the project using fund-balance monies.

A possible school addition and new fire station building are currently included in New Boston's CIP Plan, slated to begin in 2015. School enrollments and lack of funding have delayed the school addition for a couple of years. Lack of land availability has caused the Fire Wards to look into utilizing the current site and replacing the current building thereon.

The Town of Londonderry has adopted a 2015-2020 Capital Improvements Plan that identifies six "Priority 1" (Urgent) projects. An additional 10 projects have lesser priorities. The Priority 1 projects include:

- District Wide Renovations to the Londonderry Schools. This project received funding at the 2014 School District Warrant for \$4.5M to address concerns such as paving, roofing and boiler replacements.
- Plaza 28 Sewer Pump Station Replacement. This project would replace the existing sewer pump station to enhance services in an area with a mix of commercial and industrial uses, consistent with the Town's Sewer Facilities Plan. The Town is working to identify a suitable location for replace infrastructure.
- Senior Center Expansion to expand and improve upon the safety of the structure. Roofing repairs were completed in 2013. An expansion and funding plan is pending.
- David A. Hicks Central Fire Station Expansion. The Fire Department plans to seek warrant article funding for a plan to expand and improve the existing station to resolve space, safety and mechanical issues.
- Highway Garage Improvements. The Town's Highway Department received funding in 2013 to improve the existing facility.
- Recycling Drop-Off Center Improvements. The Town is seeking money from the General Fund to improve the existing facility to facilitate more efficient operation. This will be the final phase of improvements to the drop-off center.

The Town of Hooksett will lease purchase a portion of the Manchester Hackett Hill Fire Station to protect their new growth in this area of town where response times need to be improved. This fire station would not only protect exit 10, but all areas west of the Merrimack River along with the south end of Hooksett. The ten year old Master Plan will be updated in the near future. Town Hall is scheduled for a roof replacement and the Highway Department Garage will upgrade their lighting and address ventilation issues. School upgrades will include HVAC upgrades, roof replacement, a new generator at Underhill School, and Sports Field expansion at Cawley Middle School.

The Town of Raymond is planning to construct a new Town Office building in the future and reuse the old building by relocating the adjacent library into it. In addition, Raymond would like to construct a new Police Complex. The town completed major renovations and reconstruction of Iber Holmes Gove Middle School in 2006/07. Also, Raymond Ambulance Service is planning to build a new facility to be located adjacent to the Raymond Fire Department when the Granite Meadows development proposed at Exit 4 on Route 101 is started.

The City of Manchester is continuing to explore options for West High School, now that Bedford's new Middle and High School are open and the city recently completed the construction of a new public works facility and police headquarters.

The most important critical issue and need facing all municipalities in the region is how to fund and pay for increasing cost of services and public facilities and at the same time set aside funding for capital improvement projects. In response to common needs and opportunities, many communities are working together cooperatively to share resources, facilities, programs, staff and equipment to keep costs down and improve government efficiency.

PUBLIC UTILITIES AND INFRASTRUCTURE

PUBLIC WATER SUPPLY AND SERVICES

The SNHPC Region, as a whole, exemplifies a combination of public water supply systems including small individual wells, municipal systems for town-wide operations, and large systems run by private companies and large cities covering multiple towns. Manchester Water Works (MWW) is by far the largest water provider in the region and the state, providing over 5.9 billion gallons of water a year and 16 million gallons of drinking water every day, to 31,023 domestic services covering more than 495.5 miles of water mains. Water is pumped through various cast iron, ductile iron, copper, cement, and plastic pipes to more than 159,000 people in the region. MWW provides service to the City of Manchester and parts of six surrounding communities including towns of Auburn, Derry, Londonderry, Bedford, Goffstown, and Hooksett. While some of these towns have their own water departments, most of their drinking water supply is purchased from MWW directly (see **Table 4-17**).

The primary water source is Lake Massabesic which has a gross storage capacity of nearly 15 billion gallons and is located approximately three and a half miles east of the Manchester's downtown business district, bordering and within the Town of Auburn. The MWW treatment plant has a maximum hydraulic capacity of 50 million gallons per day and presently delivers in excess of 16.9 million gallons per day to approximately 159,000 consumers in the greater Manchester area. The water supply is also supplemented by Tower Hill Pond, located in Auburn and Candia, which has a gross storage capacity of 1.3 billion gallons. Water is treated at the Manchester Water Treatment Facility, also known as the Lake Shore Road Treatment Plant, adjacent to Lake Massabesic by a state-of-the-art system which is routinely updated to improve water quality and operational efficiency (Source: City of Manchester).

Fire protection within the MWW system is provided through over 3,000 hydrants. Although MWW is not regulated by the NH Public Utilities Commission, they are required to submit their tariffs annually and NH DES continuously monitors the watershed that encompasses the Greater Manchester area to protect public and environmental interests alike.

The second largest water provider is Pennichuck, Inc. and its subsidiary companies Pennichuck Water Works and Pennichuck East Utility, Inc. Pennichuck provides drinking water to the City of Nashua and ten surrounding communities consisting of an estimated population of 110,000 people. Within the SNHPC Region these towns include Bedford and Derry, while Pennichuck East provides service to the towns of Derry, Hooksett, Londonderry, and Raymond.

While these two companies have a very large presence in the region, still many property owners, residents and communities in the region rely on private wells or smaller sized municipal water supply systems. The towns of Candia, Chester, Deerfield, New Boston, and Windham currently do not have municipal water systems and rely instead upon private wells or small-scale community water systems. While it may be difficult to create a centralized system for towns on the periphery of the region; the benefits of doing so would be significant. Region-wide, centralized/public water systems generally have much lower levels of contamination in their water due to the extensive amount of testing that is done and creating less overall impact to the environment. Owners of private wells and ground water/aquifer feed water supply wells, meanwhile, are more susceptible to groundwater contamination.

In 2012, the Drinking Water and Groundwater Bureau of NH DES conducted a Water Rate Survey to collect data about water rates and fees for the various water systems found throughout the state. According to NHDES, “The information is very important to the industry and various stakeholders and is also used in the Drinking Water State Revolving Fund loan program for determining project ranking and subsidy level for disadvantaged communities.”¹¹

The survey found the statewide average annual water rate is \$423.02. Four major findings were discovered from this survey. First, three-quarters of the water system providers in NH reported they have increased rates in the last five years.

Second, this average annual rate means NH communities are typically charging about 0.65% of the median household income for water service. “If this figure equates to the amount invested into the water system, and if a 1 percent investment represents a sustainable level for funding replacement of aging infrastructure, this adds up to communities underinvesting, deferring projects that could be saving money in the long-term if done now, and may even imply that **communities are counting on their infrastructure assets to last about 150 years**” (emphasis NH DES).

Third, about two-thirds of water system providers indicated they either have, or are working on an asset management and capital improvement plan. Fourth, more than half of water system providers responded they do not yet have a funding strategy that identifies how capital projects will be paid for. As a result of the water rate survey findings, NH DES suggests that many communities may be able to increase rates to more appropriate levels while remaining affordable to customers.

¹¹ 2012 Water Rate Survey. NHDES.

<http://des.nh.gov/organization/divisions/water/dwgb/documents/2012-water-rate-survey.pdf>.
Accessed December, 23, 2013.

TABLE 4-17: UTILITIES BY TOWN

Town	Telephone	Electric	Gas	Water	Sewer	Treatment Plant	Recycling
Auburn	GST	PSNH	National Grid	Manchester WW	Private	No	Mandatory
	FairPoint	NHEC		Wells			
Bedford	FairPoint	PSNH	National Grid	Pennichuck	Bedford Waste	No	Voluntary
		NHEC		Manchester WW	Private		
Candia	FairPoint	PSNH	N/A	Wells	Private	No	Mandatory
		NHEC					
Chester	FairPoint	NHEC	N/A	Hampstead	Private	No	Mandatory
	GST	PSNH		Pennichuck			
				Wells			
Deerfield	FairPoint	PSNH	N/A	Wells	Private	No	None
		NHEC					
Derry	FairPoint	National Grid	National Grid	Pennichuck	Municipal	Yes	Mandatory
		NHEC		Derry	Private		
		PSNH		Wells			
Goffstown	FairPoint	PSNH	National Grid	Manchester WW	Municipal	Yes	Mandatory
				Grasmere Village Water Precinct			
				Goffstown Village Water Precinct			
Hooksett	FairPoint	PSNH	National Grid	Manchester WW	Municipal	Yes	Voluntary
				Central Hooksett Water Precinct			
				Hooksett Village Water Precinct			
Londonderry	FairPoint	PSNH	National Grid	Pennichuck	Bodwell Waste	No	Yes
		NHEC		Manchester WW	Municipal		
		UNITIL		Derry	Lorden Commons		
				Wells			
Manchester	FairPoint	PSNH	National Grid	Manchester WW	Municipal	Yes	Yard - Mandatory
							Other - Voluntary
New Boston	GST	PSNH	N/A	Wells	Private	No	Mandatory
	FairPoint						
Raymond	FairPoint	NHEC	N/A	Pennichuck	Private	No	Voluntary
		PSNH		Raymond WD			
Weare	GST	PSNH	N/A	Pennichuck	Private	Yes	Mandatory
	FairPoint			Wells			
Windham	FairPoint	PSNH	N/A	Wells	Private	No	Mandatory
		Liberty Utilities		Pennichuck			

*GST = Granite State Telephone; PSNH = Public Service of NH; NHEC = NH Electric Cooperative; WW = Water Works; WD = Water Department; (Sources: 2009 data from the NH Public Utilities Commission and 2008 NH Community Profiles)

TABLE 4-18: NH DES WATER RATE SURVEY RESULTS

Water System	Annual Water Rate Single-Family Home (184.5 GPD) (1)	General Taxation is Part of Overall Rate	Elderly or Low-Income Assistance Program	Last Rate Change /Result	System Connection Fee	Fire Hydrant Fee	Backflow Device Test Fee
Goffstown Village Precinct	\$316.00	No	No	2009	Yes, \$1,800	Yes, \$400.00	Yes, \$55.00
Hampstead Area Water	\$546.00	No	No	2010	No (no residential fee, commercial fee varies)	Yes, \$2,000/yr, +\$200/hydrant	Yes, \$50.00
Hooksett Village Water	\$290.40	No	No	2010	Yes, \$900 per bedroom/\$2,000 minimum	Yes, Town: \$350, Private: \$540	No
Manchester Water Works	\$204.93	No	Yes	2006	Yes, \$230.00	No	Yes, \$40.00
Pennichuck Core Water System	\$541.08	No	No	2010	No (no residential fee, commercial fee varies)	Yes, \$229.20	Yes, \$52.00
Raymond Water Department	\$436.00	No	No	2005	Yes, \$1,825.00	Yes, \$700.00	No

Source: NH DES

MUNICIPAL WATER SERVICE INVENTORY & FUTURE PLANS

The following inventory provides a current and up-to-date summary of existing municipal and public water supply infrastructure conditions and future service plans and projects. **Map 4-3** shows the current public water service coverage within the SNHPC Region. It is important to note that the NH Water Sustainability Commission prepared a Final Report in 2012 which identifies water quality and quantity as a critical issue and advantage for the state's existing public health and future growth.¹² In addition to the following municipal public water systems, there are many smaller individual subdivision and condominium or apartment size water treatment package plants in the region. These smaller privately owned package treatment systems are not included in this inventory.

¹² New Hampshire Water Sustainability Commission – Final Report. December 2012
<http://www.nh.gov/water-sustainability>. Accessed January 3, 2014.

TOWN OF AUBURN

Service Area - MWW currently provides franchised service to the northwest corner of Auburn, with extensions granted to users who pay the costs associated with the extension. The service area extends along Candia Road, Rockingham Road, and Dartmouth Drive. The rest of Auburn is served by on-site water systems from local aquifers.

Expansion and Improvements since 2010 – None reported.

Water Source/Plant(s) Used – Manchester Water Works.

Number of Domestic Services – 96, including 78 residential and 18 commercial/industrial connections.

Future Plans and Projects – None reported.

TOWN OF BEDFORD

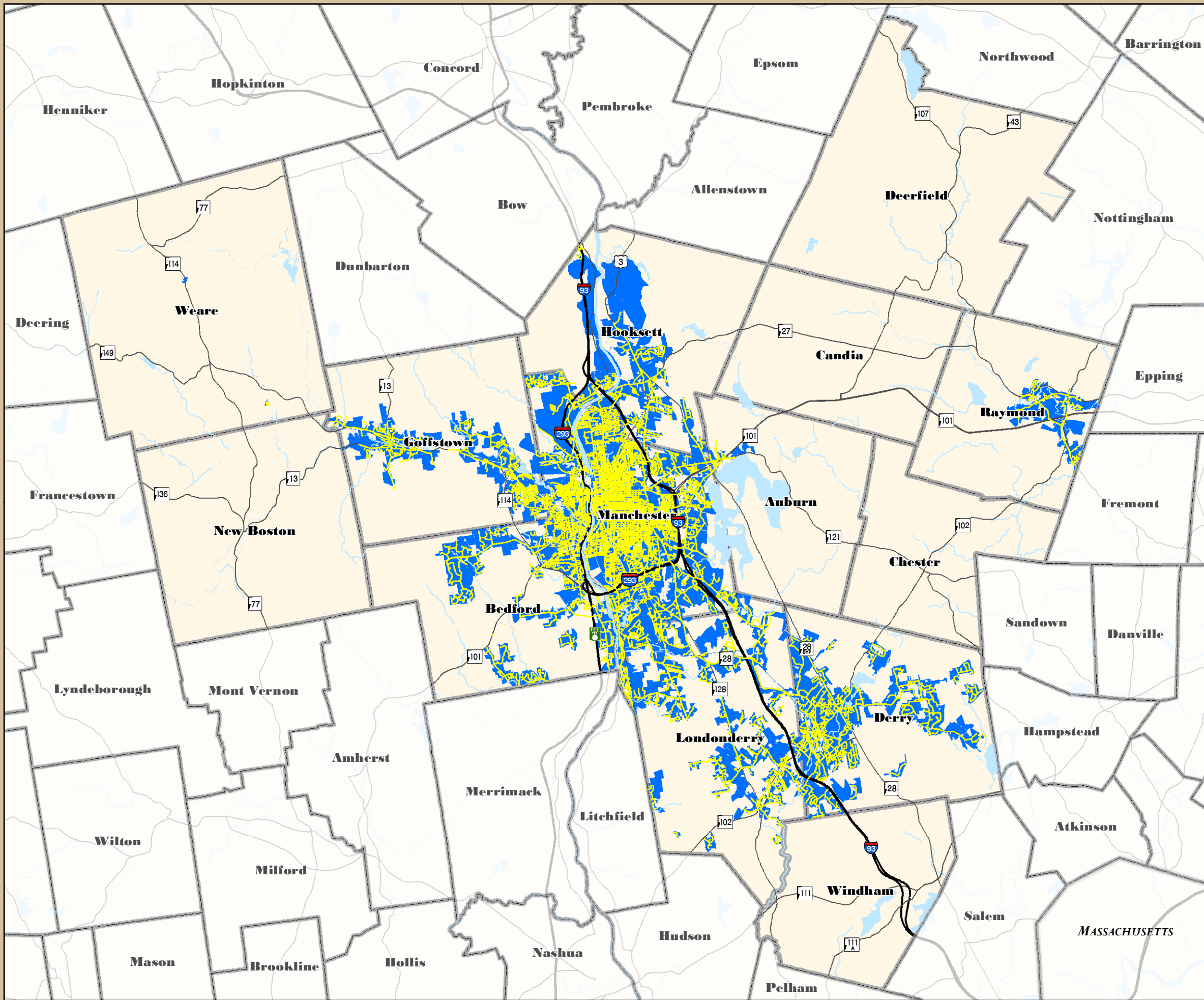
Service Area – The portions of the Town of Bedford that are served by MWW include the eastern section of town, bordered to the west by Rte. 101, Rte. 114, and the F.E. Everett Turnpike. Bedford's principal commercial corridor Route 3 is also served by MWW. Pennichuck Water Works purchases water from MWW and serves areas of New Boston and County Road. Most residents in Bedford obtain water from individual wells or small community suppliers, such as in a cluster subdivision.

Expansion and Improvements since 2010 – None reported.

Water Source/Plant(s) Used – Manchester Water Works. See Service Area Map.

Number of Domestic Services – 1,381 services: 1,146 residential, 229 commercial, 4 industrial, and 2 municipal.

Future Plans and Projects – None reported.



Map # 4 - 3

Granite State Future Community Infrastructure & Facilities Public Water Services



- Water Line Network
- Water Service Areas
- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Manchester Water Works
Pennichuck Water Works
All SNHPC Communities



The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2014.
Contact: SNHPC, gis@snhpc.org or (603) 669-4664

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Miles



TOWN OF CHESTER

Service Area – Not reported.

Expansion and Improvements since 2010 – Pennichuck now serves the development on Shaker Heights Lane off Rte. 102. Hampstead Area Water Company operates the “Oakhill Small Community Water System” and services the following connecting roads: Lincoln Lane, Sandown Road (Rte. 121A), Red Squirrel Lane, Muskrat Circle and Opossum Drive.

Water Source/Plant(s) Used – Not reported.

Number of Domestic Services – Not reported.

Future Plans and Projects – Not reported.

TOWN OF DERRY

Service Area – Approximately 1/3 of the land area of Derry and 50 percent of its population is served with public water by the Derry Municipal Water System. Derry’s municipal water is supplied by Manchester Water Works through a wholesale agreement. Most of the Derry municipal water service area is concentrated west of Route 28 By-Pass.

Pennichuck Corp. owns and operates ten (10) community water systems in Derry. Five of these systems representing 830 service connections or an estimated 2,100 persons are interconnected with the Derry core system. Another 290 connections, or an estimated 670 persons, are serviced by Pennichuck wells. These systems are located primarily in the central and eastern part of Derry.

The Town of Derry also owns and operates four (4) standalone community-water systems serviced by individual community wells. These neighborhoods include Willow Bend, Woodlands, Randi/Shepard Hill and Autumn Woods.

There are another seven (7) private homeowners association community water systems in Derry which represents 234 homes or 566 persons.

The remainder of Derry is serviced by private individual wells.

Expansion and Improvements since 2010 – In 2010 Derry and Pennichuck Corp. completed a joint municipal water extension in Derry’s high service Zone 3 in East Derry along East Derry/Hampstead Road and interconnected Derry’s Meadowbrook Community Water System (60 residences) and Pennichuck’s Drew Woods system (507 residences). Pennichuck also extended a seasonal connection to its Drew Woods system to their Hi Lo system near the Island Pond area.

In 2011, a 1,400 ft. extension of 12 inch main was installed along Route 28 By-Pass from Old Coach Road to an interconnection with the existing main on Linlew Drive.

Water Source/Plant(s) Used – Manchester WW, See Service Area Map.

Number of Domestic Services – The Derry municipal Water Works System has 4,050 direct domestic connections plus another 830 indirect connections to the Pennichuck system and in 2012 the average annual municipal usage per day was 1.42 million gallons. In 2012, the largest non-residential customer is Parkland Medical Center which uses just under 18,000 GPD (gallons per day) or less than 2 percent of all water consumed.

Future Plans and Projects – In 2013/2014 the Derry water system will extend approximately 7,000 feet of new water main to existing commercially zoned properties along Route 28 and Route 28 By-Pass. This work also includes new sewer lines as well.

The Derry water system Capital Improvement Plan also includes a 2016 municipal water system expansion in its high service zone 3 by constructing a 3.25 MGD groundwater storage tank off Warner Hill. Derry's 20-year plan also includes future expansion in its high service zone 2 including a 1.5 MGD (million gallons per day) groundwater storage tank off English Range Road and expanded service to the Pingree Hill area.

TOWN OF GOFFSTOWN

Service Area – Goffstown has three different water systems: Goffstown Village, Grasmere, and Pinardville. The Pinardville section extends along Mast Road, to the Hillsborough County facility, forming a triangle with Plummer Road and St. Anslem Drive with an eastern border of the Piscataquog River. The Grasmere system extends down Mast Road from Henry Bridge Road to the Shell Station one mile to the west, and includes Center Street, Mountain View School, Juniper Drive, Condo on Locust Hill, and Goffstown Back Road to the Village of Glens Falls. The Goffstown Village Precinct encompasses the downtown area and surrounding residential developments.

Expansion and Improvements since 2010 – The Village Precinct replaces 1,000 to 2,000 feet of water pipes annually. MWW has added 16,847 feet of water main and 187 service connections primarily in the Lynchville and Danis Park areas along the Piscataquog River.

Water Source/Plant(s) Used – The Goffstown Village Water Precinct obtains water from two water impoundments 1.5 miles south of the Village on Whittle Brook. Goffstown also has established several wellhead protection areas in which the dumping or disposal of solid waste, chemical waste, or wastewater is prohibited. MWW supplies the Pinardville area on a franchise basis and the Grasmere area on a wholesale basis. See Service Area Map.

Number of Domestic Services – Pinardville accounts for 1,506 domestic, while the Grasmere Village Water Precinct approximates 500 connections. The Village Precinct has 1,100 connections, with six municipal connections and the majority of the rest being residential.

Future Plans and Projects – Grasmere: If a proposed development of 270 homes and a mobile home park on Carroll Hill Road is approved, the system will expand down Goffstown Back Road to serve another 400 customers; Village: None. MWW have growth areas along the Route 114 and Mast Road commercial corridors.

TOWN OF HOOKSETT

Service Area – Hooksett has three independent water systems. The Hooksett Village system encompasses the area surrounding Hooksett Village and surrounding area around Route 3 and 3A toward Exit 10. Southern Hooksett is serviced by MWW and covers the 3A corridor to I-93. The Central Hooksett Precinct goes from Zapora Road to Shannon Road along Route 3. See Service Area Map.

Expansion and Improvements since 2010 – The Village Precinct added the Webster Woods development along Route 3 with 40 condos, as well as University Heights Apartments along Princeton Drive with 240 units. MWW has added 1,784 feet of water main.

Water Source/Plant(s) Used – Southern Hooksett is served by a MWW franchise, Central Hooksett purchases water from MWW, and the Hooksett Village obtains water from four wells by Pinnacle Pond.

Number of Domestic Services – MWW: 785; Central Hooksett: 1,700; Hooksett Village: 1,000.

Future Plans and Projects – None reported.

TOWN OF LONDONDERRY

Service Area – Londonderry has three water systems served by Manchester Water Works, Pennichuck, and Derry Municipal Water System. MWW serves the northern third of the town, encompassing the area south of the airport through Harvey Road, Mammoth Road, Rockingham Road, Auburn Road, and Old Derry Road to the east. Pennichuck serves most of the central and southern developed portions of town, and Derry Municipal Water System services a small area on the Derry-Londonderry line east of Route 93.

Expansion and Improvements since 2010 – None reported.

Water Source/Plant(s) Used – The northern portion franchises water from MWW, the southern portion of town franchises water from Pennichuck, which obtains water from MWW in a wholesale agreement, and the area along the Derry-Londonderry town line is served by Derry Municipal Water System which obtains water from MWW.

Number of Domestic Services – MWW: 504 domestic services; Pennichuck: 1480, and Derry Municipal Water System: 12.

Future Plans and Projects – None reported.

CITY OF MANCHESTER

Service Area – Manchester Water Works (MWW) serves the City of Manchester and abutting areas of five surrounding Towns of Auburn, Bedford, Goffstown, Hooksett, and Londonderry.

Expansion and Improvements since 2010 – MWW has added 15,153 feet of water main, 171 new domestic services, 65 fire services, and 47 public fire hydrants between 2009 and 2012 in the City of Manchester.

In 2011, MWW completed a 1.6 million dollar project associated with a new main across the Merrimack River in north Manchester connecting to Kimball Drive in Hooksett. An additional 1 million gallons of distribution water storage was constructed in 2009 off Countryside Boulevard in west Manchester.

Water Source/Plant(s) Used – The source of water supply for the city is Massabesic Lake in Manchester and Auburn. It is expected that water demand will exceed the safe yield from the

lake by 2015-2020. This water is currently treated at the Lake Shore Road Treatment Plant in Manchester which was fully renovated in 2006.

Number of Domestic Services – Manchester Water Works provides 31,194 domestic services and 1,648 fire services to Manchester and the other communities it serves. There are a total of 26,895 domestic services provided in Manchester alone.

Future Plans and Projects – The Manchester Water Works is currently conducting a study to develop the Merrimack River as a supplemental water source with proper treatment. A plan will go forward with a system of radial collector wells is planned for years 2014-2016 with treatment and pumping facilities to follow.

Other infrastructure improvements include annual replacement and upgrades of water mains, pump stations, and the planned addition of storage reservoirs in south Manchester and Londonderry to provide added capacity and to enable planned expansion of the current service area to address new developments over the next ten years. These projects anticipate commercial development near the new Airport Access Road in Londonderry, condominiums off Hackett Hill Road, and residential development in the Crystal Lake and Wellington Road areas.

TOWN OF RAYMOND

Service Area – Raymond Water Department is a municipal system encompassing the village center and surrounding developed areas. Other small, private systems are served by Pennichuck or individual wells in developed areas. The largest of these include Green Hills Estates on Route 107 and Leisure Village Mobile Home Park on Route 27.

Expansion and Improvements since 2010 – 2.5 miles of water main have been installed along Route 102 to Blueberry Hill Road.

Water Source/Plant(s) Used – The Raymond water system obtains water from three wells along the Lamprey River. Raymond also has a Groundwater Protection District, which serves as an overlay district and includes the areas around the wells as part of the Town's Wellhead Protection Program. This district exists around the well near the Lamprey School and around the well at the end of Cider Ferry Road. Pennichuck provides service to small, private systems in which developers pay the cost of an extension, but not the overall capital costs.

Number of Domestic Services – 1,200 domestic services, the majority of which are residential, serve 3,300 individuals.

Future Plans and Projects – The Town is currently investigating a number of potential well sites with the intent to have a new well(s) connected to the system within the next few years.

TOWN OF WEAKE

Service Area – A small portion of the town center.

Expansion and Improvements since 2010 – None reported.

Water Source/Plant(s) Used – The town has six town-owned wells and four privately-owned community systems for cluster homes or mobile homes. Most residents depend on individual wells.

Number of Domestic Services – Five municipal connections and one residential connection.

Future Plans and Projects – None reported.

MUNICIPAL SEWER SYSTEM INVENTORY AND FUTURE PLANS

The following inventory provides a current and up to date summary of existing municipal and public sewer infrastructure conditions and future service plans and projects. Map 3 shows the current public sewer service coverage within the SNHPC Region.

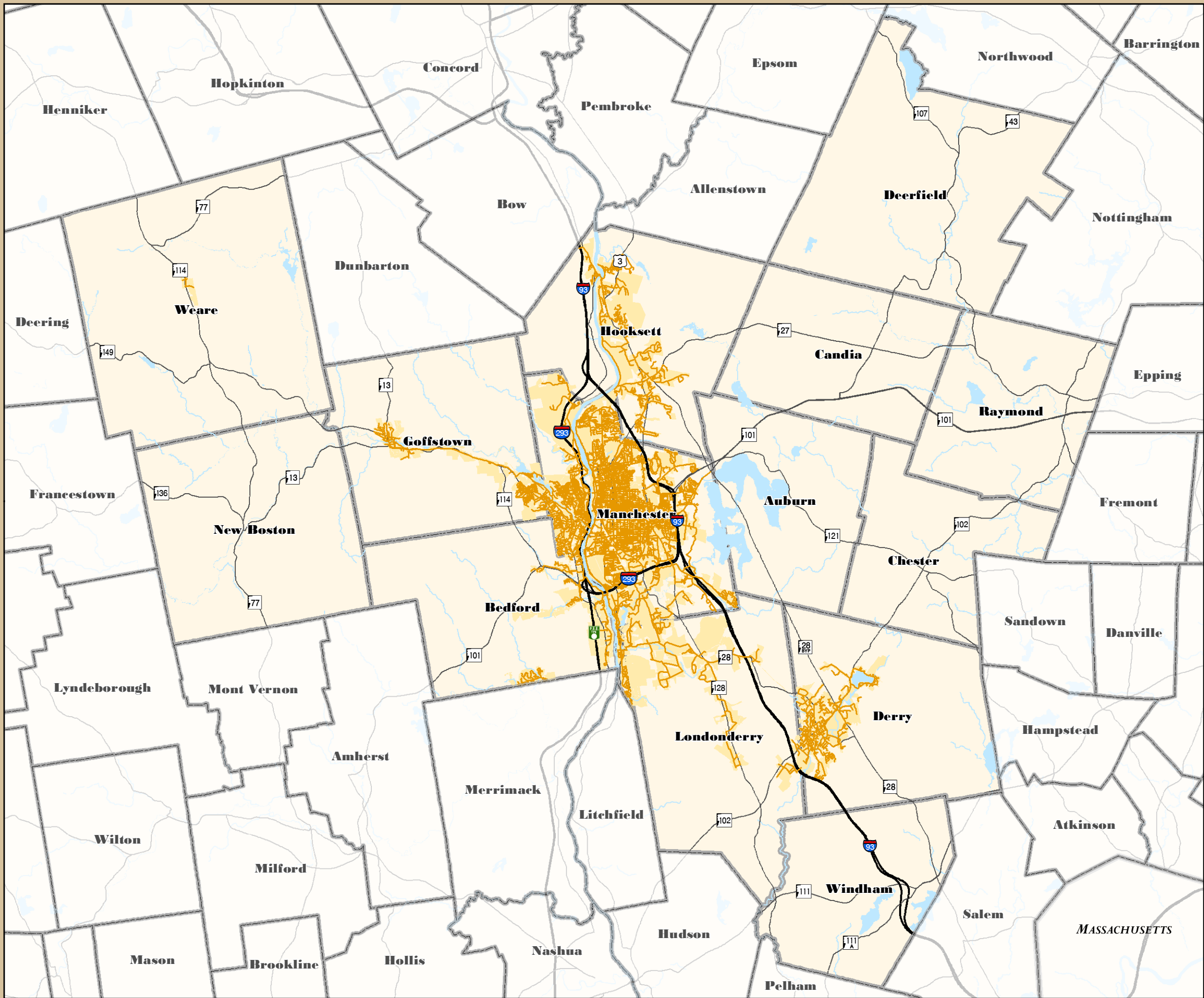
Proper waste collection and disposal is a high priority for many municipalities within the SNHPC Region from both an environmental and economic perspective. Strategic placement of sewer service is a significant driver of growth and economic development. It is also important to protect the environment and local drinking water supplies and recreation areas.

Businesses and home owners are aware that septic tanks, whether individual or shared, require large plots of land and regular maintenance (pumping every three years). Low Impact Development (LID) and Best Management Practices (BMPs) can help reduce the negative impacts associated with leaking septic systems, but it more practical to look at small scale sewer systems or linking to larger systems in order to protect the environment and reduce the amount of resources needed to sustain population growth.

By far the largest municipal sewer system in the region is provided by the City of Manchester. Manchester provides sewer services at a cost to the towns of Bedford, Londonderry, Goffstown, and Hooksett.

Currently the towns of Auburn, Candia, Chester, Deerfield, New Boston, Raymond and Windham do not have municipal sewer systems in place and are not connected to the City of Manchester's wastewater treatment system. All buildings and dwellings within these towns must have state approved private or shared septic tanks for wastewater needs or be connected to state approved privately owned and maintained small scale sewer systems.

It is important to note for the purposes of this plan, the importance of managing these assets, promoting energy efficiency in creative ways, and preparing for the impacts of climate change by protecting these local assets. Wastewater treatment facilities both large and small are typically the largest user of energy in a community and they are very susceptible to impacts of climate change.



Map # 4 - 4

Granite State Future

Community Infrastructure & Facilities

Public Sewer Services



- Sewer Lines
- Sewer Service Areas
- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Manchester Water Works
All SNHPC Communities



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Contact: SNHPC, gis@snhpc.org or (603) 669-4664

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TOWN OF BEDFORD

Service Area – District I of the sewer system serves the Route 3 corridor, Constitution Drive and the Bedford Village Inn. District II serves a small area south of Worthley Road and along Constance Road and Garden Party Lane.

Expansion and Improvements since 2010 – Renegotiated contract with Manchester Sewer to increase capacity from 1 MGD to 1.5 MGD on 1/1/13. The Town currently is using 0.5 MGD and project deal to provide 30 years of capacity.

Treatment Plant(s) Used – The Manchester Wastewater Treatment Facility processes wastewater. Some of Bedford's sewer also goes to the Merrimack Wastewater Treatment Facility via a 1996 intermunicipal agreement with the town.

Number of Accounts – Bedford has 900 connections served by a municipal sewer system.

Future Plans and Projects – Town Council will vote on whether to establish a new sewer district to expand service.

TOWN OF DERRY

Service Area – The service area encompasses Derry Village and West Derry west of Route 28 By-Pass, including Beaver Lake as well as a segment of Route 102 and the area south of Route 102 in Londonderry. The Derry WWTP also services the Town of Londonderry primarily its southern area through their Action Blvd. and Gilcrest Pump Stations.

Expansion and Improvements since 2010 – There have been no municipal sewer extensions since 2010.

Treatment Plant(s) Used – The Derry WWTP is an aerated lagoon system located off Interstate 93 at the Derry-Londonderry Town line. The Plant provides secondary biological treatment for up to four (4) MGD. The plant is currently operating only 2 of the 3 treatment lagoons with a current effective treatment capacity of 3 MGD.

Number of Accounts – The system has 3,087 connections, serving approximately 1/3 of Derry's land area and an estimated 50 percent of its population.

Future Plans and Projects – In 2013/2014 the Derry sewer system will extend approximately 7,000 ft. of new sewer main to existing commercially zoned properties along Rte. 28 and Rte. 28 By-Pass. This work also includes new water lines as well.

The 20-year Capital Improvement Plan also proposes municipal sewer expansion to Barkland Acres north of Beaver Lake and to the Rainbow Lake area. Derry will also be assessing its available treatment plant capacity in light of Londonderry's Woodmont Commons Development proposal and possible Exit 4A construction. A future upgrade will likely be required.

Currently, the Derry wastewater treatment plant is using about 42 percent of their available treatment capacity, meaning they can support a significant amount of growth and economic development within the community and surrounding areas.

TOWN OF HOOKSETT

Service Area – The Hooksett municipal sewer system serves South Hooksett, Hooksett Village, and the central portion of town between the two.

Expansion and Improvements since 2010 – The town performed a major upgrade to the wastewater treatment facility to increase the design flows from 1.1 MGD to 2.2 MGD.

Treatment Plant(s) Used – The town's secondary wastewater treatment facility is located on the east bank of the Merrimack River near the center of town. Due to issues with the upgrade, the town has not yet been able to realize the additional capacity while the upgrade is corrected. Based on the 1.1 MGD design flow, the Hooksett facility is currently operating at approximately 68 percent capacity, still allowing some room for expansion.

Number of Accounts – The system serves approximately 3,350 connections with 7 industrial, 284 commercial, and 3,059 residential hook ups.

Future Plans and Projects – Considerations for the future include extending and expanding capacity serving Southern New Hampshire University (SNHU). Wal-Mart has recently agreed to pay for its own connection to the sewer system. Additionally, the Town of Hooksett is looking to extend service along Route 3/Kimball Drive and connect to the pumping station at Martin's Ferry.

TOWN OF GOFFSTOWN

Service Area – The service area extends from Goffstown Village to properties along Route 114 into Pinardville, the Riverview Park neighborhood on the west side of Manchester, Moose Club Park, the Knollcrest Drive/Pine Ridge Street neighborhood, and Mountain Road to Washington Street.

Expansion and Improvements since 2010 – The Mast Road Sewer Project, completed in 2012, replaced sewer lines from Rockland Avenue to Goffstown Plaza and corrected capacity issues limiting commercial development along the Mast Road corridor; Temple Court and Reed Street expansion.

Treatment Plant(s) Used – The municipal sewer system contains a pretreatment program, four pumping stations, and 30 miles of collection systems in town. The Goffstown sewers are connected to the Manchester wastewater treatment facility.

Number of Accounts – There is approximately 2,100 accounts, with most being residential.

Future Plans and Projects – Future expansion, which requires approval by a 60% majority of each neighborhood, includes Lynchville Park, Danis Park, Morgan Estates, the Hermsdorf Drive area, and Shirley Park area. The Glenridge Avenue area will be rehabbed in 2014 to enlarge and correct capacity and repair defective lines. The four pump stations will be rehabbed.

TOWN OF LONDONDERRY

Service Area – Londonderry has a municipal sewer system that encompasses the industrial area south of Manchester Airport, ending approximately at Burton Drive and Aviation Park Drive. Other areas of service include Mammoth Road, Grenier Road, Rockingham Road (Route 28), and the Route 28 extension from I-28 to I-93.

Expansion and Improvements since 2010 – A pump station has been upgraded serving commercial areas discharging wastewater to Derry.

Treatment Plant(s) Used – The system includes five pumping stations. The northern two – the Plaza 28 pumping station and the Mammoth Road pumping station (built in 1986 and 2002, respectively), transfer wastewater to the Manchester Wastewater Treatment Facility via the Cohas Brook Interceptor. The southern three stations – Charleston Avenue (built in 1995), Tokanel Drive (built in 2005), and Action Boulevard (upgraded in 2009) pump wastewater to the Derry Wastewater Treatment Facility.

Number of Accounts – There are approximately 1,436 connections.

Future Plans and Projects – The wastewater facility plan shows anticipated expansion on both sides of Route 102 east of Route 128 in the southern section of town. Update to wastewater facility plan intended for 2014. The Town also plans to expand sewer lines along Pettengill Road toward the new Airport Access Road.

CITY OF MANCHESTER

Service Area – The City of Manchester and portions of neighboring Bedford, Goffstown, and Londonderry; a metro area with a population of over 172,000.

Expansion and Improvements since 2010 – The City completed its Phase 1 CSO Abatement Program. This \$58 million ten-year program has eliminated almost all CSO discharges from the City's west side into the Piscataquog and Merrimack Rivers as well as the Crescent Road river basin. Phase II of the Cohas Interceptor was completed to extend the City's sewer system from the treatment plant northeast to the Manchester/Hooksett/Auburn town lines. Future connections are provided for both Auburn and Hooksett.

Sewer Infrastructure – The City of Manchester has over 385 miles of public sewers, ten pump stations, and a wastewater treatment plant (WWTP) that is rated to process 34 million gallons per day (MGD). About 50% of the city's sewer system is "combined" where the same pipes convey sewerage and stormwater. Effluent from the WWTP is discharged into the Merrimack River in accordance with the City's NPDES permit. Annual flows average around 20 MGD. A portion of the treated effluent, up to 5 MGD, is reused as cooling water at a nearby power plant. Biosolids are incinerated and the energy reused to heat portions of the WWTP.

Number of Accounts – The system serves approximately 24,600 customers in Manchester, representing about 50,000 units of residential, commercial, and industrial properties in the city. The total estimated population served is 160,000 with approximately 109,000 of these in Manchester.

Future Plans and Projects – Phase III of the Cohas Sewer Project is about 50% complete. This project will provide sewer services to about 800 properties in southeast Manchester over ten years. Contracts No. 1 and 2 have been constructed and Contracts No. 3 and 4 will be complete in 2018.

The City continues to work toward eliminating Combined Sewer Overflow (CSO) discharges to the Merrimack River. A Long-Term Control Plan was submitted to EPA proposing Phase II 20-year \$165 million CSO abatement program. The City has constructed the first contract under this program and the second will be constructed in 2014.

The City has implemented a 20-year sewer system capacity, management, operations, and maintenance program (CMOMs). This formal program is assisting with the systematic repair and rehabilitation of city sewers.

The City is investing about \$72 million into its wastewater treatment plant over a 15 year period. The City is about 50 percent through these upgrades. Recently, upgraded processes include: secondary clarifiers, incinerator, and grit removal. The plant's aeration system is currently being upgraded for nutrient removal. Future work will consist of solids train upgrades for further nutrient removal.

TOWN OF WEARE

Service Area – While the majority of residents and businesses use septic tanks serviced and treated by private companies, the Town of Weare has a small municipal system located in the town's center consisting of approximately 1/2 mile of cement-lined ductile iron 8-inch mains.

Expansion and Improvements since 2010 – None.

Treatment Plant(s) Used – Wastewater from this system goes to a treatment system consisting of a 14,000-gallon septic tank, a 9,000 gallon tank, a leach field, and an aeration chamber located east of the village center at the base of Mt. William. There is also a 6,000-gallon storage tank connected to the wet well which is used in the event of pump failure.

Number of Accounts – With 23 connections (five public, the remainder residential), the system is under its capacity of 22,000 gallons per day (GPD), but the system is also designed so that it could be expanded to 33,930 GPD.

Future Plans and Projects – None reported.

SEPTAGE DISPOSAL

Generally while the developed parts of the region have public water and sewer services, many municipalities within the region must rely on private wells for water supply and individually owned septic systems for wastewater treatment. Individual or community septic systems in the *short term* are the most efficient and cost-effective solution for wastewater treatment needs. Approximately every three years however these tanks must be pumped to dispose of the septage. Landowners as a result must contract private haulers to pump these tanks and remove the septage; yet there very few municipalities in the region that offer septage disposal as a public service.

Septage disposal is regulated by the state and NH DES. Municipalities must have in place agreements for the disposal of septage from their communities to state approved septage disposal facilities. Currently, the only state licensed facility in the SNHPC Region is the City of Manchester's wastewater treatment plan – septage receiving facility. Currently the following towns have agreements in place with the City of Manchester to allow private haulers to dispose septage at this treatment facility: Auburn, Bedford, Candia, Goffstown and Londonderry. According to the City of Manchester over six million gallons of septage is treated annually at the treatment facility.

Private haulers from the towns of Chester, New Boston, and Weare currently must arrange to dispose of septage, with haulers in Auburn, Candia and Chester often disposing of septage in Manchester. Haulers in Weare and New Boston also often dispose at a private facility in Weare or to the Allenstown facility.

Haulers in the Town of Deerfield dispose septage in Concord. Hooksett haulers have an agreement in place to dispose in Allenstown. The Town of Derry also has an Intermunicipal Agreement with Allenstown to receive its septage. Derry's haulers also dispose septage at the Greater Lawrence Treatment Plant under an informal agreement on a limited availability and first come first serve basis. Derry allows its local haulers who service Derry residents to use the town's WWTP area as a septage transfer station only. Smaller septage trucks pump out Derry tanks and dispose of the septage in larger tanker trucks at the WWTP. The local haulers hire contractors to run the larger tankers to other facilities. Currently haulers in the Town of Raymond dispose in Haverhill. The costs of these services, which can be in the hundreds of dollars, rest upon home and business owners.

TABLE 4-1 identifies the treatment plants municipalities control for septage treatment. Also provided is the current status of each municipal septage treatment ordinance. It appears that many of these ordinances have expired, or will expire soon; raising questions about where haulers will be able to dispose septage within or outside the region.

TABLE 4-1: SEPTAGE DISPOSAL SITES AND TOWN RESPONSIBILITY

Town	Treatment Plant(s) Used	Status/Expiration
Auburn	Manchester WWTF	Ordinance
	Allenstown WWTF	10/31/2012
Bedford	Manchester WWTF	Ordinance
Candia	Manchester WWTF	Ordinance
Chester	Allenstown WWTF	1/1/2012
Deerfield	Concord WWTP	6/30/2013
Derry	Allenstown WWTF	1/17/2017
Goffstown	Manchester WWTF	Ordinance
Hooksett	Allenstown WWTF	7/15/2010
Londonderry	Manchester WWTF	Ordinance
Manchester	Manchester WWTF	Ordinance
New Boston	Allenstown WWTF	1/1/2012
Raymond	Hampton WWTF	Ordinance
Weare	Allenstown WWTF	1/1/2012
Windham	No Service	N/A

WWTF = Wastewater Treatment Facility; WWTP = Wastewater Treatment Plant

Source: NH DES, Data One Stop, December 2009; Town Planner provided Windham information, January 2014; Derry updated by Town Official, November 2013

STORMWATER

As a result of increasing stormwater runoff and pollution from urban growth and tighter EPA regulations, the development and maintenance of stormwater facilities is becoming an increasing cost to municipalities and developers. According to a survey, stormwater runoff is identified as the most significant source of pollution among nearly 40 percent of all the US water bodies that do not meet water quality standards.¹³ While water supply in the SNHPC Region is currently safe, proper management of stormwater in the years ahead can prevent costly clean-up in the future for many municipalities. While almost all the region's municipalities have stormwater management regulations in place in one form, many of these regulations lack basic low impact development best management practices which are often the most effective and least costly solution in addressing this issue.

In response to the Clean Water Act (CWA) amended in 1987, the Environmental Protection Agency (EPA) developed the National Pollution Discharge Elimination System (NPDES) Stormwater Program in 1990. Phase I of the program addressed the most threatening sources of stormwater: large municipal separate storm sewer systems (MS4s) and industrial activities. Phase II, implemented in 1999 required permit coverage for stormwater discharge from small MS4s and construction activities of smaller scales than those covered by Phase I.

Within the SNHPC Region, the following towns are under MS4 regulations for medium or small municipal separate storm sewer systems: **Auburn, Bedford, Chester, Derry, Goffstown, Hooksett, Londonderry, Manchester, and Windham**. These towns must abide by stormwater ordinances and regulations as promulgated by the EPA. The following towns had been required to develop construction and post-construction stormwater programs to control construction site runoff by 2008: Auburn, Bedford, Derry, Goffstown, Hooksett, Londonderry, and Manchester. All of these systems qualified as small or regulated small MS4s under Phase II. Construction projects are subject to NPDES permits, with projects affecting more than five acres qualifying as Phase I and projects affecting one to five acres qualifying as Phase II. Phase II projects can claim exemption to the permits on conditions of low predicted rainfall on the site, an approved Total Maximum Daily Load, or an Equivalent Analysis that ensures that pollutants are being treated by alternate means. EPA serves as the permitting authority for all Phase I and Phase II permitting grants in New Hampshire, such that all questions and applications should be directed to the EPA.

All of the towns in the region have some form of site plan and subdivision regulations or zoning Overlay Districts with special performance standards or restrictions for stormwater management. Chester, Derry, and Hooksett also have Groundwater Protection Districts. Bedford also has adopted the Merrimack River Shoreland Protection Performance Standards within 250' of the river, and Goffstown and Londonderry have Wetland Conservation Districts that include the protection of groundwater and aquifers. The regulations for most of these districts are in accordance with the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire, published in 2002, and includes prohibitions against dumping wastewater, chemicals, or solid waste in these zones. In addition many of these towns have public education campaigns to encourage the safe disposal of hazardous materials to prevent their leakage into the MS4.

The City of Manchester has a Stormwater Ordinance accompanied by Rules and Regulations that stipulate all construction projects and industrial activities must have a Stormwater Pollution Prevention Plan registered and sealed by a professional engineer. Their ordinance prohibits

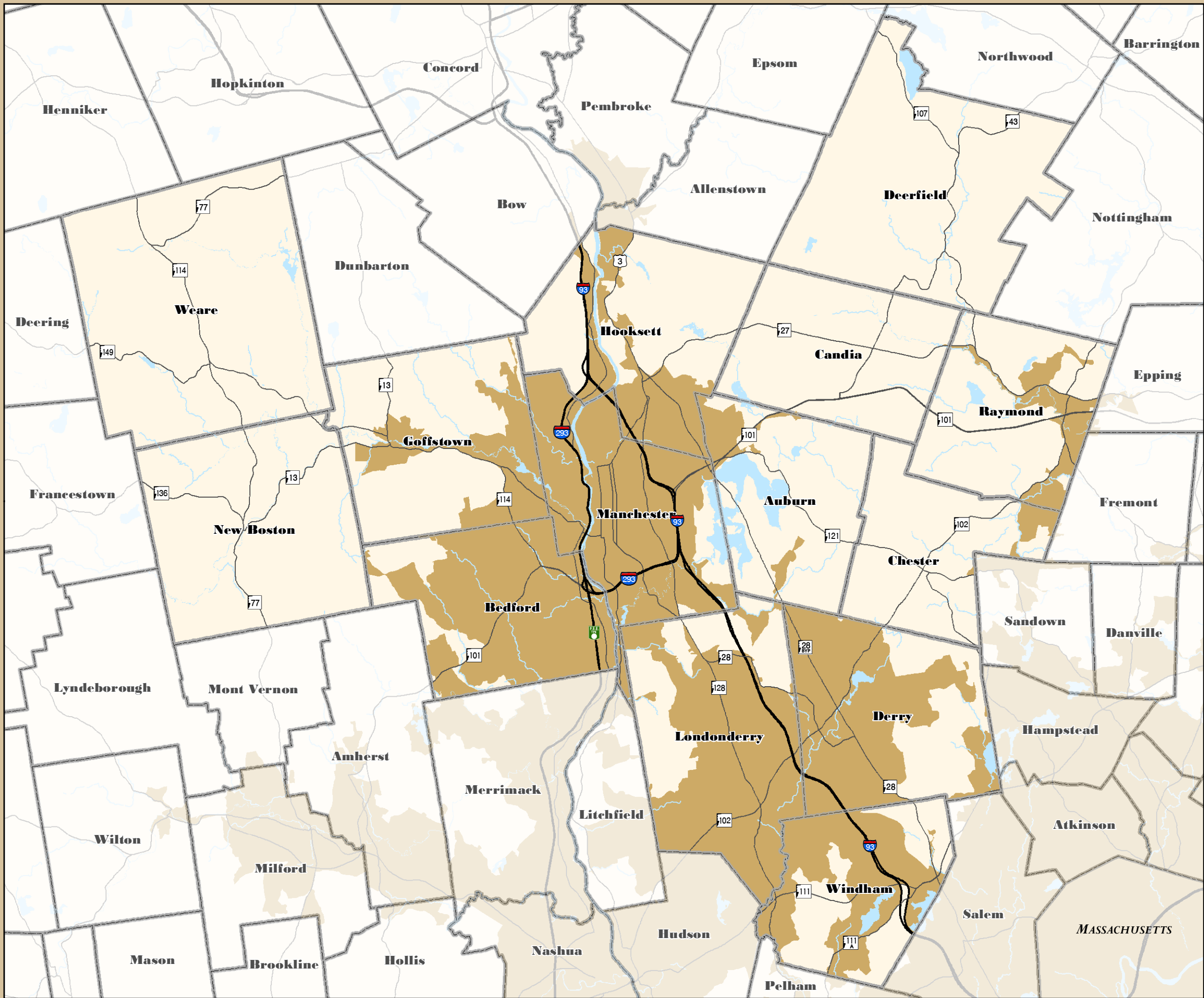
¹³ Environmental Protection Agency, Polluted Runoff, www.epa.gov/owow/NPS/Section319II/intro.html

dumping or storage of wastes and hazardous materials into the MS4, including the streets, curbsides, and drainage areas. The rules also prohibit pollution of buffer zones around surface waters and excavation of ground material near an MS4. New research on stormwater management can be easily integrated into new developments, regardless of whether or not the development requires a NPDES permit. Towns can adopt zoning regulations that mandate stormwater management methods for new developments or encourage these additions through incentives.

The New Hampshire Department of Environmental Services put together a new manual for Stormwater Management to be used as a planning and design tool for the communities, developers, designers and members of regulatory boards, commissions, and agencies involved in stormwater programs in New Hampshire. The manual presents antidegradation provision with respect to controlling water quality impacts due to stormwater discharges, and provides an introduction to the non-structural and structural measures for managing stormwater. It also moves in to post-construction best management practices applicable for use in New Hampshire for the prevention, control, and treatment of stormwater, and ways to prevent adverse impacts to water resources as a result of land-disturbance activities.

Another tactic is utilizing clustered subdivisions by employing techniques of low-impact development (LID) that can significantly reduce stormwater runoff pollution and thereby protect the region's valuable water supply. Through minimizing impervious surfaces, decentralizing stormwater runoff, preserving open space, and incorporating natural systems, LID stormwater management practices offer an effective and money-saving solution to stormwater management. Municipalities can add regulations that require new developments to minimize impervious surfaces and employ other LID techniques.

An example of a successful LID project located in the SNHPC Region is the reconstruction of NH Route 114 in Goffstown. In December 2010, the town installed, along this major thoroughfare, porous pavement, perforated drainage pipes, and natural stream channels. This project became the first to install such methods to mitigate flooding along a state highway. Other effective LID techniques in addition to porous pavement include: surface sand filters; retention ponds; bioretention ponds; aqua swirl and aqua filter systems; storm drift manhole refit; vegetated swale; and tree box filters. Uses of these methods vary depending on the volume, scale, location and type of road or parking lot.



Map # 4 - 5

Granite State Future

Community Infrastructure & Facilities

Regulated MS-4 Areas



- Regulated MS-4 Areas*
- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

*The regulated area is based on US Census Bureau 2010 Urbanized Areas.

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities



The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2014.
Contact: SNHPC, gis@snhpc.org or (603) 669-4664

0 1.25 2.5 5 Miles



SOLID WASTE

Most of all the municipalities in the SNHPC Region provide solid waste services composed of a combination of private hauling services and solid waste transfer systems, many of which also serve as recycling centers. (See **Table 4-20**). Due to overall increases in trash tonnage and pay-per-ton disposal fee charged by solid waste treatment centers, solid waste disposal costs for many municipalities continue to increase. While larger transfer stations serving multiple towns are generally more cost-efficient, there is only one example of a shared facility in the region, the transfer station located in the Town of Auburn, which is owned and operated by Waste Management Inc., a private contractor.

Municipalities in the region with private trash haulers include Bedford, Candia, Chester, Deerfield, Derry, New Boston, Weare and Windham. Hooksett, Londonderry, Manchester, and Raymond all provide municipal solid waste collection services. Solid waste is carried to local transfer stations, with a station located in each municipality. Most towns send their waste to private landfills or solid waste treatment facilities located outside of the region. Recyclables, metals, woods, and other sorted waste are distributed accordingly throughout the state and region.

Recycling has become an important component of municipal solid waste programs to defer the transfer costs for solid waste. The following towns have mandatory recycling programs: Auburn, Candia, Chester, Derry, Goffstown, New Boston, Weare and Windham. Due to its strengthening mandatory recycling program, Chester was able to achieve a net profit of \$36 in 2004 from recyclables, with 39 percent of its total solid waste being recycled. The remaining towns have voluntary recycling programs (Bedford, Raymond, Deerfield, Hooksett, Manchester, and Londonderry). The towns that do not currently have mandatory programs cite the costs of regulation and enforcement as impediments, or in the case of Raymond, give monetary incentive to residents to recycle.

In 2005, the Town of Raymond instituted a “pay as you throw” solid waste program that has reduced trash volume by 61 percent. Under this system, residents pay \$2 per bag of solid waste to a hauler contracted by the town that collects and sorts recyclables at no charge. Residents also have the option of paying private haulers, who charge for recyclables. Even at the start of this program, the town was saving thousands of dollars and bringing in enough revenue to almost match the costs of disposal, which results in tax reductions for residents. This type of program, where residents are financially rewarded for recycling solid waste, leads to economic and environmental benefits for the community.

Mandatory recycling programs can significantly curtail the amount of solid waste that a town has to pay to dispose of. Municipalities can also look into the benefits of curbside recycling pick up, which may end up saving money if the town can convert their percentages of waste recycled versus disposed through conventional means. Municipalities also can consider composting facilities at town or regional level, which will also decrease the total weight of solid waste. At a minimum, school cafeterias and local restaurants can start small-scale composting of food waste. Local agricultural operators can then use this compost to fertilize their crops.

NH RSA 53-B:7 allows for solid waste management districts (SWMD) to build and operate solid waste collection facilities that serve multiple cities and towns. Under this statute, solid waste management districts receive power delegated from member communities to enact solid waste regulations and charge expenses to member towns. Solid waste management districts are also permitted to make special contracts or agreements with the municipality in which the facility is located that may grant special privileges to the host community, thereby off-setting any negative consequences of hosting the site. SWMD may also accept solid waste generated outside the boundaries of the district and may contract solid waste services with private companies.

Municipalities in the SNHPC Region that participate in a SWMD could build upon successful solid waste programs at a regional level and thereby cut their infrastructure costs. New transfer stations that utilize careful solid waste planning on a regional level can also avoid problems of noise and pollution often associated with transfer stations. Regional facilities can be constructed in existing industrial areas or include mandatory buffer zones to reduce off-site impacts.

In April 2014, the City of Manchester proposed a pay-as-you-throw (PAYT) trash program, in which residents would need to purchase designated bags that will only be accepted by waste management employees.¹⁴ PAYT is estimated to yield, “up to \$3.5 million in revenue and savings, both through the sale of the \$1-\$2 bags and by driving up the recycling rate.” Residents of Manchester currently have a 14 percent rate of recycling. If PAYT is adopted, city officials estimate this rate would increase to 31 percent. At a public forum on the proposal, Manchester would reduce trash by an estimated 16,400 tons per year, saving \$1 million in tipping fees.

TABLE 4-20: OPERATING SOLID WASTE DISPOSAL SITES

Town	Facility Name	Ownership	Owner
Auburn	Auburn Transfer Station	Private	Waste Management of NH
Bedford	Bedford Transfer Station	Public	Town of Bedford
Candia	Candia Transfer Station	Public	Town of Candia
Chester	Chester Transfer Station	Public	Town of Chester
Deerfield	Deerfield Transfer Station	Public	Town of Deerfield
Derry	Derry Transfer Station	Public	Town of Derry
Goffstown	Goffstown Transfer Station	Public	Town of Goffstown
Hooksett	Allied Waste Recycling and Processing Center	Private	Allied Waste Recycling Services
	Hooksett Transfer Station and Recycling Center	Public	Town of Hooksett
Londonderry	Londonderry Drop Off Center	Public	N/A
	RMG Enterprise, Inc.	Private	Robert Gallinaro

¹⁴ Tim Buckland. “Few back proposal to pay-as-you-throw”. New Hampshire Union Leader (A8). Friday, April 4, 2014.

Manchester	Advanced Recycling TS	Private	Prolerized New England Company
	B. Rovner Company	Private	B. Rovner, Co, Inc.
	J. Schwartz Motor Transportation	Private	J. Schwartz Motor Transportation Inc.
	Manchester Drop off Facility	Public	City of Manchester
	New Cor Material Recovery Facility	Private	Corcoran Environmental Service, Inc.
New Boston	New Boston Transfer Station	Public	Town of New Boston
Raymond	Raymond Transfer Station	Public	Town of Raymond
Weare	Weare Transfer Station and Recycling	Public	Town of Weare
Windham	Windham Transfer Station	Public	Town of Windham

Source: NH DES and SNHPC

HAZARDOUS WASTE

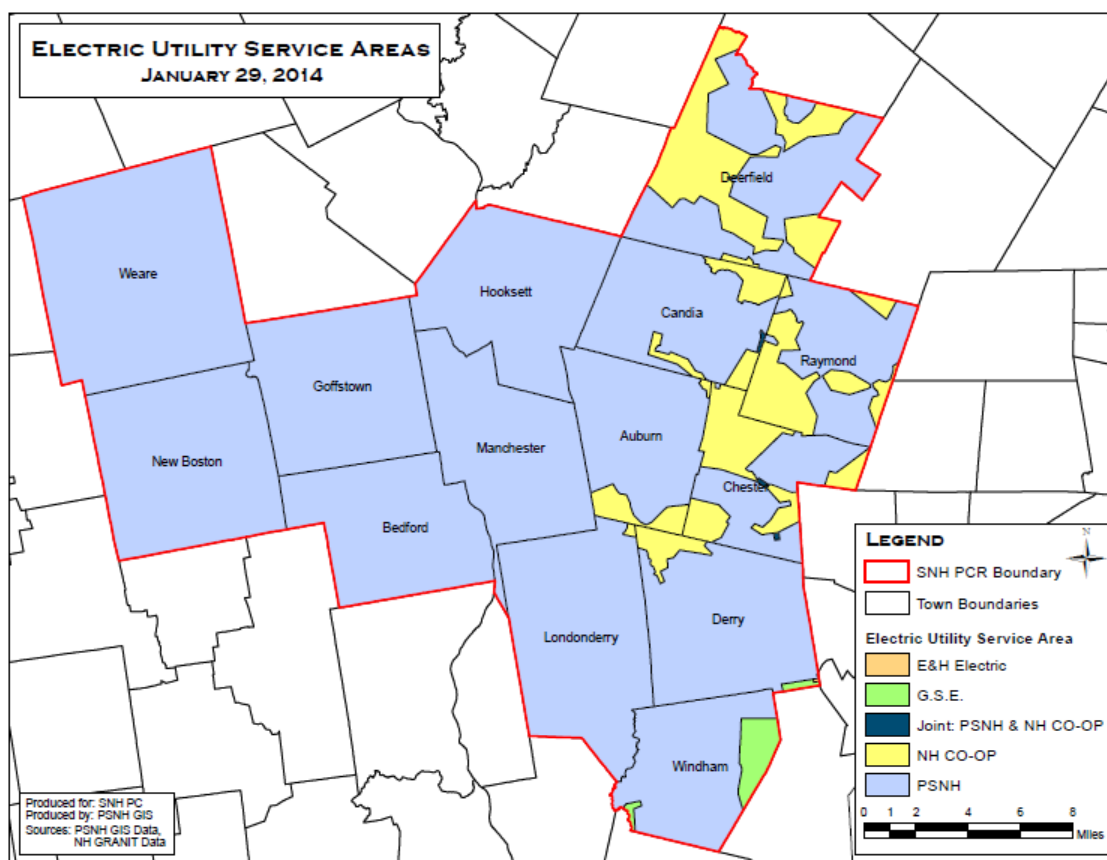
All the municipalities in the SNHPC Region except for the Town of Deerfield currently organize hazardous waste collections on a biennial, annual, or semi-annual basis, either individually or in collaboration with neighboring towns. Typical material selected includes paint (oil based), aerosols, resins and adhesives, pesticides, asbestos/coal tars, batteries, acids, bases, florescent bulbs, antifreeze, used oil, gasoline, TVs, mercury devices, and propane tanks.

ELECTRICITY

Public Service of New Hampshire (PSNH), New Hampshire Electric Cooperative (NHEC) and Granite State Electric Company are the primary electricity providers for the region. PSNH is the largest supplier with service in all 14 municipalities. PSNH serves 497,000 residential and commercial customers throughout the state, with headquarters in Manchester. PSNH also offers three-phase power for use in commercial and industrial operations within all the towns in the SNHPC region, with availability varying based on location. Parts of Deerfield, Raymond, Chester, Candia, Auburn, Derry, and Londonderry are also supplied by New Hampshire Electric Cooperative, a member-owned electricity cooperative serving 75,000 members across New Hampshire. NHEC maintains a district office in Raymond. The Town of Windham is served by both PSNH and Granite State Electric Company. **Map 4-6** shows the approximate coverage of all the electrical service providers within the region.

At present only a very small number of residents in the region use solar panels or other alternative energy sources for electricity (see Energy Chapter for more information on renewable energy sources). This could change in the future as the cost of fossil fuels to generate electricity continues to increase and energy conservation becomes more economical. Some towns, such as Windham, Raymond, Derry, and Auburn, require new developments to place electric utility lines underground.

MAP 4-6: ELECTRIC UTILITY SERVICE AREAS



Source: PSNH

IMPROVEMENTS AND EXPANSIONS

PSNH has made developments to improve service to customers in the SNHPC Region and across the state. The following are a few of the major improvements and expansions recently completed and currently in progress:

- The Tioga Power Project, completed in 2005, added new transmission and distribution lines and a new substation to serve Bedford and Merrimack and to add capacity for future growth.
- The East-West Energy Project, completed in 2008, involved the rebuild of a transmission line and added new distribution lines and a new substation in Weare to serve local demand for power with capacity for future growth. This new substation serves over 7,200 customers predominately in the Dunbarton, Goffstown, New Boston, and Weare region.
- PSNH has also added a number of substation power transformers at substations in Deerfield and Manchester as well as numerous upgrades to transmission facilities and lines, all of which are part of PSNH's continued commitment to meet New Hampshire's increasing need for additional and reliable energy capacity.
- PSNH is in the process of upgrading the electrical distribution system that serves the Derry/Londonderry region. This upgrade is needed to ensure that the local electric system can handle increased demand and future economic development in the region. It will include the complete rebuilding of PSNH's Scobie Pond Distribution Substation in Londonderry, as well as the construction of additional distribution power lines. The Scobie Pond Distribution Substation is intended to serve approximately 4,500 PSNH customers and 1,400 NHEC customers primarily in the town of Derry, but also feeds customers in Auburn and Windham. The rebuilt substation will replace a 1960s-era substation with state-of-the-art equipment and technology.

Rebuilding the substation will allow PSNH to improve reliability by:

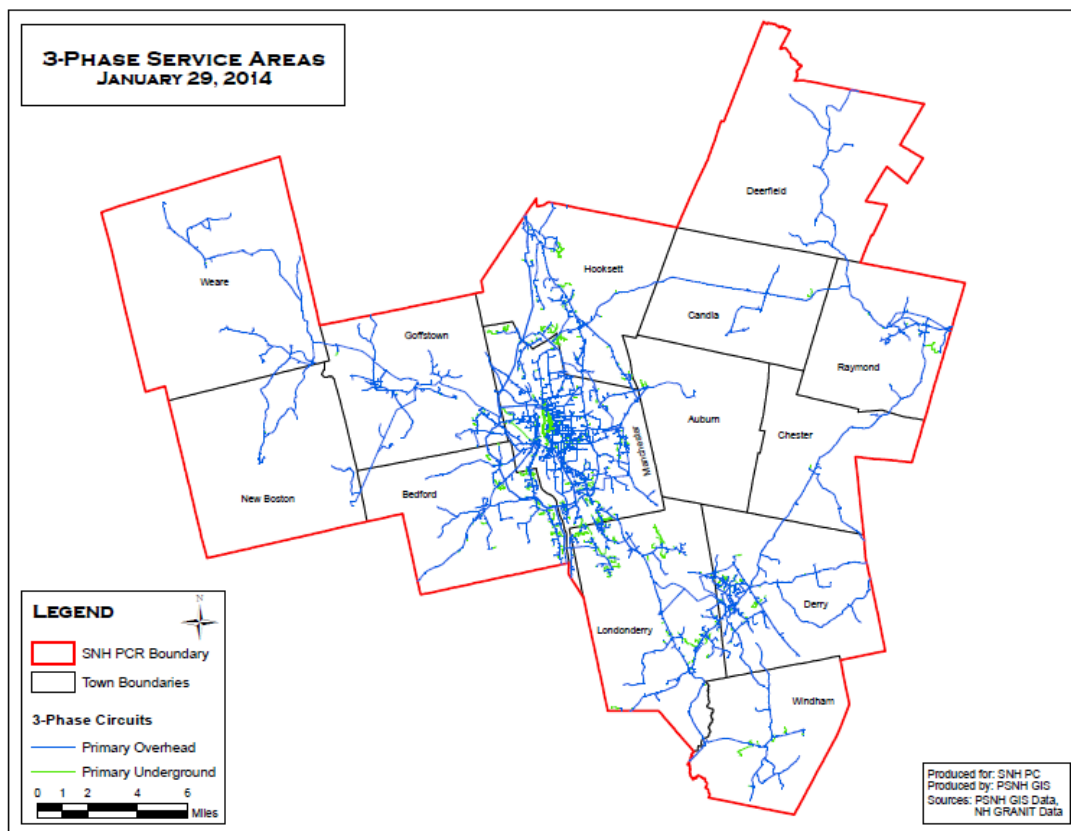
- Installing two new 30-megawatt transformers, to better support energy demand.
- Installing new equipment which will help to reduce animal-related outages.
- Increasing the capability of the substation to feed five distribution lines, with the ability to add a sixth line in order to better support customer load growth. The existing substation has only three lines.

PSNH expects to have the substation's first transformer in service in June of 2011, and the second in service by the end of 2011, contingent upon receiving approval for all applicable siting, permitting, and regulatory requirements.

- The Northern Pass transmission project aims to deliver competitively priced, low-carbon power that will help to reduce greenhouse gas emissions; mitigate price volatility in the region's energy market; and potentially help to avoid or defer the need to construct fossil fuel generation plants that would otherwise be required to produce an equivalent quantity of power. The construction and operation of The Northern Pass transmission project will create hundreds of quality, local jobs and provide significant tax benefits for the State and more than 30 New Hampshire communities.

The project is currently in the planning and permitting stages, with construction scheduled to be completed in 2015.

MAP 4-7: 3-PHASE SERVICE AREAS



Source: PSNH

NATURAL GAS

In early 2008, Keyspan changed its name to National Grid. Today, National Grid is the primary distributor of natural gas and propane to customers in southern and central New Hampshire, including the Greater Manchester area. The company has multiple rates and services as well as a service and dispatch center. In areas without natural gas systems, National Grid sells propane to over 10,000 customers at retail and wholesale prices and quantities. The City of Manchester and the towns of Bedford, Londonderry, Goffstown, Hooksett, Auburn, and Derry are all within the current natural gas service area and can purchase propane from National Grid.

CURRENTLY THERE ARE VERY FEW NATURAL GAS PIPELINES THAT SERVICE THE REGION (SEE

Map 4-8). If the cost of fossil fuels, oil and gas continue to increase in cost, extending natural gas infrastructure into New Hampshire will be an important statewide and regional energy and economic issue.

On April 7, 2014, Liberty Utilities announced it had reached a fifteen year agreement with Innovative Natural Gas, LLC and Advanced Vehicle Service Group for development of a large capacity Compressed Natural Gas (CNG) fueling and filling complex in Concord, New Hampshire.¹⁵ The complex will consist of a natural gas compressor station and private-access fast-fill vehicle fueling station, as well as private-access CNG truck transport filling terminal. Construction of this complex is meant to meet the growing regional demand for both compressed natural gas vehicle fueling and bulk transportation for heating markets. The heating market is said to be evolving rapidly, with “advances in compression, decompression and delivery technologies to support a virtual pipeline model which allows businesses to convert to clean burning natural gas while enjoying significant energy savings.” The CNG truck transport filling terminal will be available to transporters delivering CNG to nearby facilities in central, northern and western New Hampshire.

The press release by Liberty Utilities stated the CNG complex is scheduled to be operational during the fall or winter of 2014.

GDF Suez, the largest distributor of liquefied natural gas cites a document they commissioned entitled, “Options for Serving New England Natural Gas Demand” in which the analysis states that pipeline capacity into New England is sufficient except for an average of 30 days each year.¹⁶ During this short time of over capacity, the report claims “incremental LNG imports at District gas appear to be the most cost-effective solution.” District gas is the terminal in Everett, Massachusetts operated by GDF Suez. The report notes that a pipeline from New England to the Marcellus Shale area where natural gas is extracted would cost approximately \$2 billion dollars to construct.







The municipalities located within the SNHPC Region that are currently not served by natural gas include:

- Candia
- Chester
- Deerfield
- New Boston
- Raymond
- Weare
- Windham



¹⁵ Compressed Natural Gas Complex Coming to Concord, New Hampshire. Liberty Utilities Press Release. http://www.liberty-utilities.com/east/gas/about/documents/LU_NH_Gas_CNGFilling.pdf. Accessed April 9, 2014.

¹⁶ Dave Solomon. “LNG official: No need to build pipeline”. New Hampshire Union Leader (A8). Friday, April 4, 2014.

Natural Gas, Propane and Steam Utilities in NH

 Liberty Utilities
  Liberty Utilities and Concord Steam Corp
  NH Gas Corp
  Unittel
  Town Boundary
  Southern New Hampshire Planning Commission Region

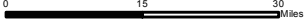
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 State of New Hampshire
 SNHPC

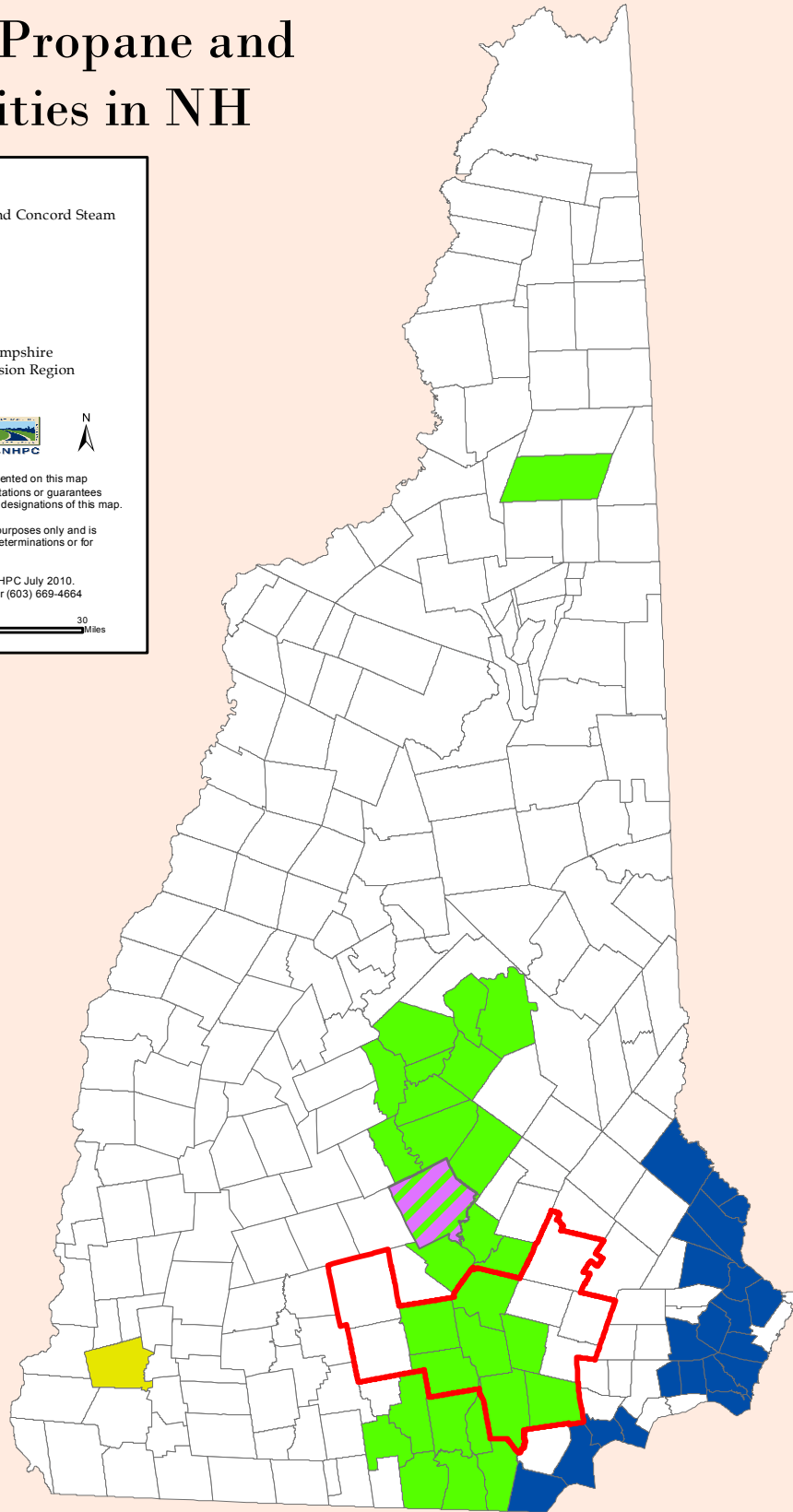



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Map Produced by GIS Service SNHPC July 2010.
 Contact: SNHPC, gis@snhpc.org or (603) 669-4664





Unittel (Natural Gas)				Liberty Utilities (Natural Gas) <small>* Southern New Hampshire Planning Commission Towns</small>				NH Gas Corp. (Propane)	Concord Steam Corp. (Steam)
Atkinson	Greenland	Newington	Salem	Allenstown	Boscawen	Gilford	Litchfield	Keene	Concord
Dover	Hampton	North Hampton	Seabrook	Amherst	Bow	Goffstown*	Londonderry*		
Durham	Hampton Beach	Plaistow	Somersworth	Auburn*	Canterbury	Hollis	Loudon		
East Kingston	Hampton Falls	Portsmouth	Stratham	Bedford*	Concord	Hooksett*	Manchester*		
Exeter	Kensington	Rochester		Belmont	Derry*	Hudson	Merrimack		
Gonic	Madbury	Rollinsford		Berlin	Franklin	Laconia	Milford		
							Nashua		
							Northfield		
							Pembroke		
							Sanborn		
							Tilton		

COMMUNICATION INFRASTRUCTURE

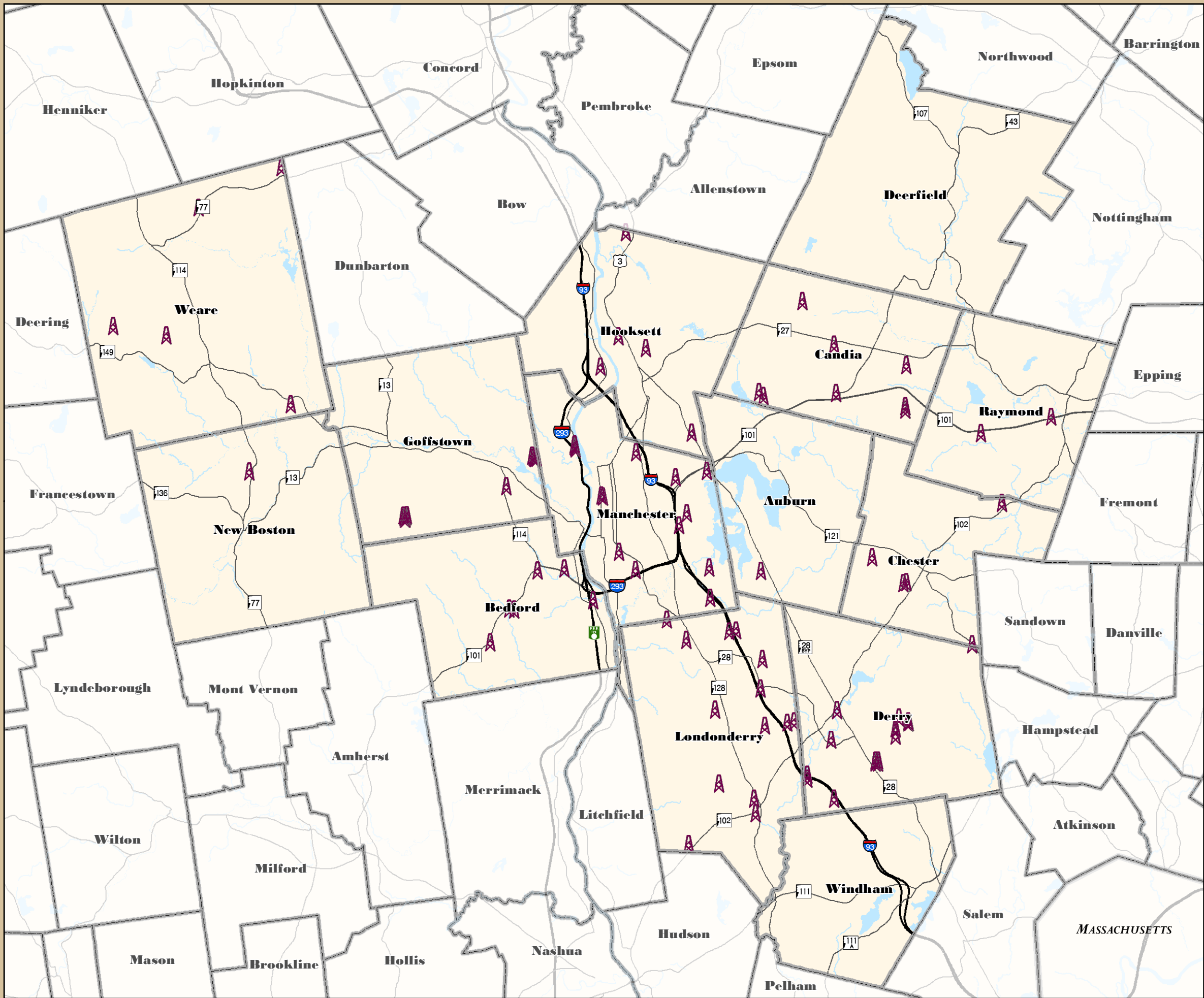
TELEPHONE

FairPoint Communications (formerly Verizon) is now the primary telephone service provider for the SNHPC Region. The company's state headquarters, accounting operations for New Hampshire and Vermont, and the market area center are all located in Manchester. FairPoint serves a segment of this market that is less densely populated and is responsible for assuring reliable, high-quality telecommunications and broadband services. Granite State also provides phone service within the towns of Auburn, Chester, New Boston and Weare.

The region is served by additional private long distance, cellular telephone, and voice mail services. All major carriers maintain service stations in Manchester, with availability and coverage in most parts of the region.

Wireless communications are served by cell towers, which are located in every municipality of the region except for Deerfield. Concentration is higher along major interstates and state highways, although the past few years have witnessed increasing service even in rural areas of the region.

The construction of new towers is a highly regulated issue for planning and zoning boards who mitigate between the increasing need for wireless services and the aesthetic preservation of the town. Chester, Derry, Weare and Windham already have Telecommunications Overlay Districts while the remaining towns in the region encourage or mandate companies to use existing tower facilities rather than constructing new ones. Towers have setback, design, and zoning regulations. All towns should adopt strict regulations that force competing companies to cooperate on the use of telecommunications infrastructure and transmission structures in order to minimize impact to town and increase the efficiency of communications systems.



Map # 4 - 9

Granite State Future Community Infrastructure & Facilities Telecommunications



- Wireless Communication Towers*
- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

*Wireless Communications Towers include active and inactive towers.

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities



The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2014.
Contact: SNHPC, gis@snhpc.org or (603) 669-4664

0 1.25 2.5 5
Miles



Location
Map

CABLE TELEVISION AND BROADBAND

Private companies provide cable television and internet services throughout the region. In Manchester, dozens of cable and Internet providers offer residents and businesses a range of services and prices. The region is remarkably well-wired for Internet coverage, with even the small rural towns of Deerfield, Candia, and Weare having 9, 11 and 12 options for high-speed Internet respectively.¹⁷

Often, only one company will be a primary server for cable and Internet for smaller towns. AT&T Broadband serves Cable TV to most of Auburn; MetroCast Cablevision currently provides cable for all of Deerfield; Comcast is the primary cable provider for Manchester; and Media One provides cable TV and Internet for Raymond.

The towns of Auburn, Bedford, Chester, Derry, Goffstown, Londonderry, Raymond, Weare and Windham along with the City of Manchester all have Public Access Channels, while the Towns of Candia, Deerfield, Hooksett, and New Boston do not.

The Southern New Hampshire Planning Commission is currently involved in the New Hampshire Broadband Mapping Program which aims to identify un-served and under-served areas in the state in terms of high speed internet. The program stems from the National Broadband Plan and utilizes the services of the nine regional planning commissions in the state, the University of New Hampshire, and GRANIT, the mapping agency for the state of New Hampshire, to obtain broadband information from the various locations.

After thorough research within our region the New Hampshire Broadband Mapping program has discovered that nearly 100 percent of the SNHPC Region (except for the Town of Deerfield which is underserved) is covered by broadband ("broadband" has been defined by the National Telecommunications and Information Administration as a minimum of 768 Kbps downstream and 200 Kbps upstream). **Map 4-10** shows the availability of high speed broadband in the region.

However, while the region is adequately covered by cable and wireless, the availability of higher internet speeds from fiber optics and other internet service providers vary between communities and there are many "end of the line" issues and isolated areas which do not have adequate service. While the Town of Deerfield has recently discovered the existence of high speed fiber optics buried with cable lines in the downtown area, the town has been part of a larger 12 municipality Consortium to negotiate a template cable TV franchise renewal agreement to replace the current cable TV franchises with MetroCast. This Consortium has allowed all 12 towns receive legal assistance and developing specific franchise agreement terms customized to each municipality. It offers a good success story for communities working together to achieve common goals, reduce costs and improve services to the public.

In February 2006, G4 Communications announced deployment of a highly sophisticated fiber optic internet network throughout Southern New Hampshire. The OptiX Metro 1600 OC48/192 is a compact SONET platform that is part of a network expansion integrating IP and TDM services within a single transport platform. The self-healing ring consists of OC-48 speeds and capable of delivering 80 wavelengths at 10 Gbps. The ring includes 7 sites and ensures full redundancy and connectivity through high-capacity fiber-optic cables, which connects to G4's Boston Ring in Massachusetts, and has the potential to increase the availability of bringing higher internet speeds to much of the SNHPC Region. Currently, Derry is the only community in the SNHPC Region with G4 fiber optics going directly to downtown Boston.

In March 2014, the SNHPC completed its first draft of a Broadband Plan for the region. This plan has identified the following issues and recommendations:

¹⁷ New Hampshire Broadband Mapping and Planning Program. "Town Broadband Profiles". http://iwantbroadbandnh.org/broadband_mapgallery.

Overall Findings:

- Town of Deerfield is only community identified as “underserved”;
- Most of region is well served with currently over 14 different service providers;
- Still many “end of the line” scattered/isolated pockets exist in almost every municipality lacking moderate/high speed Internet;
- Except for Bedford and Manchester – and work currently in Bedford – most of the municipalities do not have broadband plans in place;
- Many low income households in Manchester cannot afford Internet – (only 20% of households in the inner city have Internet access);
- Internet costs vary considerably \$20-\$50/month to well over \$100 with bundled services;
- Except for Manchester, very few towns have broadband connectivity between municipal buildings and key public facilities. and only Bedford is currently planning to make this investment in the future;
- Limited public funding available for broadband infrastructure/expansion at state and municipal levels. State legislature recently authorized towns can bond for improvements;
- Property owners/neighborhoods desiring Broadband currently have few choices but to work collaboratively with ISPs to pay for line extensions;
- Many municipal buildings, businesses and residential users do not have reliable or back up power when lights go out during emergencies;
- Many existing poles are owned by utility companies and it is often very time consuming and expensive to obtain approvals to “make ready” these poles for broadband;

What Your Community Can Do:

- Maintain a list of addresses/tax parcels “end of the line” areas where Broadband infrastructure is lacking in your community;
- Planning Boards, public officials, IT staff should work together to develop local Broadband plans for their communities – where and how infrastructure can/should be installed and where connectivity between public facilities/buildings could be enhanced;
- Continue to monitor availability of state/federal funding as well as potential future funding from ISP mergers/acquisitions/penalties, etc.
- Seek participation in future UNH Cooperative Extension Broadband Community Readiness Program; resources; toolkits, etc.

What SNHPC Can Do:

- Assist UNH, OEP, Cooperative Extension in developing these resources, providing tools and assistance to communities;
- Assist the City of Manchester in seeking funding and developing public/private partners in pursuing/implementing its public Wi-Fi program at designated facilities and locations in the city and possibly surrounding communities;
- Provide support to DRED, UNH, OEP in encouraging major ISPs to 1) continue to increase Internet speeds; and 2) offer and expand similar Broadband adoption/affordability programs as Comcast Essentials to more disadvantaged populations – senior citizens, unemployed veterans/students, disabled and handicapped residents, home-based businesses and employees who telecommute;

**Community
Infrastructure & Facilities
High Speed Broadband
Availability**

 \sim Interstates

State and US Routes

 Town Boundary

Rivers

 Lakes

*High speed broadband defined as:
Advertised Download Speed: Greater Than 10 Mbps
Advertised Upload Speed: Greater Than 6 Mbps

Uses that require high speed broadband:

- Sending/receiving large files and small to medium-sized databases
 - HD quality, codec-based, large frame videoconferencing; multiple (bridged) sites/users
 - Remote synchronous education, professional development, workshops, etc., facilitated simultaneously at multiple classrooms and/or other locations
 - Telehealth/telemedicine applications
 - High speed end to end network and business to business applications
 - Telemetry-based applications (rely critically on the ability of broadband to continuously monitor and multiplex data, i.e. remote patient monitoring, sensing systems, etc.)
 - "Internet 2" connectivity and applications
- The New Hampshire Broadband Mapping & Planning Program is

The New Hampshire Broadband Mapping & Planning Program is funded under grant #33-50-M0904 from the US Dept. of Commerce to the University of New Hampshire.



Map Notes:

Service providers submitted data to the NH Broadband Mapping & Planning Program (NHBMP) in a range of geographies, including addresses, road segments, census blocks, census tracts, etc. For mapping purposes, all data are aggregated and displayed at the census block level. A census block is mapped as "served" if service is delivered to any part of the block.

Note that satellite and cellular internet are excluded from this analysis and display.

The GRANIT System at the University of New Hampshire is responsible for the management of the inventory and conducts updates to these data every 6 months.

Data Sources:

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities



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Mode of Transport	Miles
Car	4.5
Plane	2.5
Boat	1.25
Train	0.5



Page 60

CONCLUSIONS & RECOMMENDATIONS

This section identifies the key goals and recommendations for this chapter. These goals and recommendations will be incorporated into the implementation section of Volume I of the plan and they are designed to help improve the region's public infrastructure, utilities and community facilities today and in the future.

KEY GOALS

1. Water quality and quantity is identified as a key goal of the NH Water Sustainability Commission and maintaining adequate water treatment facilities and public drinking water supplies is critical for public health as well as the future growth of the region.
2. Support and encourage continued capital improvement programming and community planning to identify critical infrastructure, utilities and public facilities and service needs and opportunities for all residences, businesses and government bodies.
3. Support and encourage adequate levels of funding both state and local to ensure the provision of adequate public facilities, services, utilities and infrastructure throughout the region to improve the region's quality of life, economic vitality and growth.
4. Support and encourage continued use of available financing tools such as TIFDs, impact fees and bonds to fund necessary infrastructure and capital facilities.
5. Promote the continued mutual sharing of local and state resources, facilities, staff, equipment and services including participating in group purchasing programs and opportunities to allow municipalities, counties and schools to save money and improve services.

OVERALL FINDINGS

The extent and adequacy of education, community facilities and services play an important role by contributing to the general welfare of residents and the quality of life of the community. Capital facility improvements are not easy to accomplish and require much community support and advanced planning.

To plan for the community facilities that are most needed in the future, an assessment and needs evaluation of existing facilities must be accomplished and included in Town Master Plans. It is critical that this information be evaluated, prioritized and included in a municipality's CIP. The Planning Board plays an important role in this process, particularly in identifying and sorting out the facility needs and priorities of the community.

With increasing education costs and municipal budgets, finding the tax dollars and other sources of funding for necessary capital improvements has become a difficult proposition for many communities. Long range planning and a strong financial commitment to specific public projects are necessary in today's economic environment.

Impact fees can be an important tool to help communities finance capital projects. However, impact fees alone will not build the schools, governmental office buildings, police and safety complexes, and libraries that will be needed in the future. Additional funding sources such as bonds and Tax Increment Financing (TIF) Districts must be considered, including state and federal grants.

In addition, and more importantly as cost continue to increase, municipalities can seek greater partnership with inter-municipal agreements and cost pools for the sharing of facilities and services under RSA Chapter 53-A. Through cooperation communities can relieve budget strains and begin to regionally sustainable.

With the continuing growth and development of the region, there will be greater demands placed on local resources stretching local services and the use of local facilities to the maximum extent and capacity. Ultimately, this could have negative consequences on public health, welfare and safety. Identifying capital facility needs early on and beginning to plan for and address those needs is an important planning function and responsibility.

Public utilities and communication are important lifelines for economic development in municipalities and the region. While to a certain extent residences can flourish with private wells and septic systems, businesses need larger-scale water, sewer, electricity, and communications systems to operate successfully. Furthermore, mixed-use development often requires community or municipal water and sewer services because of increased density. Currently, expanding the capacity of municipal water and sewer systems is costly and towns and cities in the region should evaluate their public utilities needs for the future.

In addition, many rural and even larger suburban towns within the SNHPC Region do not have municipal water and sewer systems, and developing these systems is not always economically feasible. Often, larger lot sizes are necessary to accommodate private well and septic systems based on underlying soil conditions. This pattern of large lot development often creates the need for additional transportation, public services and other infrastructure costs.

In addition, in many urban areas, where water and sewer infrastructure exists, it is often very expensive to expand these systems all with public funding. Recently, the Town of Hooksett developed a unique public/private partnership solution which allows a private entity, WalMart, to front the costs of installing sewer lines and other sewer facilities between Exits 10 and 11 to provide sewer service in this area. Upon completion, customers and new users will pay connection and service fees to the town which will eventually be returned over a certain number of years to pay off WalMart's initial capital investment costs. Community planning and public infrastructure expansion ideally should work together to promote and encourage compact development patterns and facilitate growth in areas which can be readily served.

In addition, the City of Manchester and the towns of Derry, Hooksett, and Londonderry all have fairly large municipal sewer systems designed to meet current and future community needs. While these treatment systems operate well, the existing treatment facilities are quickly approaching capacity and will need continuing improvements and expansion to address the future growth of the region. Paying for these improvements is expensive and typically requires federal and state funding to supplement local bonds and user fees.

While the region has a broad spectrum and market for communications, telephone, internet and wireless services, in order to attract businesses to the region and increase tax revenues, many municipalities still need to break down barriers and expand franchise agreements to continue to promote these markets and expand the service and availability of these private communications companies within the region. In addition, the costs associated with expanding broadband infrastructure and connecting municipal and public facilities are difficult obstacles to overcome.

Other ongoing public utility issues among the region's communities include installing and maintaining sidewalks throughout a community; and solid waste and septage collection and disposal. All of the region's communities have transfer stations in place to collect, recycle, condense, and transfer the solid waste of the town. However, with increasing trash tonnage and pay-per-bag disposal fees, solid waste disposal expenses in general continue to escalate.

KEY STRATEGIES AND RECOMMENDATIONS

1. Support and promote continued and improved funding for education at both the state and local levels. Maintaining a highly educated workforce is critical in advancing the economic growth and vitality of the region.
2. Support state and local efforts to improve and expand municipal water and sewer facilities.
3. Assist municipalities and school districts to develop local broadband plans and fund infrastructure improvements to enhance broadband connectivity.
4. Support and work with the Manchester Area Regional Stormwater Coalition to promote fiscally sound and responsible stormwater management programs, projects and solutions for the region and the region's municipalities. Several projects could involve LID techniques and encouraging green roofs or rooftop gardens which is an effective technique to reduce the amount of stormwater runoff, while contributing to cleaner air.
5. Encourage all local governments – municipalities, counties and schools to work together to continue to develop mutually supportive arrangements and agreements for the provision and sharing of essential services, facilities and equipment as a means to save costs and improve services. This also includes encouraging greater participation in group purchasing programs and opportunities.
6. Support local, regional and state efforts to extend natural gas infrastructure within New Hampshire and the SNHPC Region. This includes evaluating opportunities and seeking funding for natural gas line extensions to all municipalities in the region.
7. Support and promote continued recycling as a means to reduce solid waste disposal costs and encourage communities and the state to work together to find and maintain regional solutions and opportunities for septage disposal.
8. Support and promote increased state wide support for school funding and school construction.
9. Support continued Capital Improvement Programs (CIP) updates and the use of bonds, reserve funds, TIFDs and impact fees as means of securing necessary funding for capital facilities and improvements.
10. Support maintaining and improving existing levels of funding for public services and programs, including public safety, EMS, library, community centers, and general government services
11. Begin to evaluate and plan for fire and EMS department needs and staffing primarily in smaller communities as the population ages and volunteers decline in number.
12. Encourage all municipalities to prepare community-wide sidewalk plans and to build sidewalks as new development occurs and as road reconstruction projects commence to decrease future sidewalk installation costs.
13. In addition to requiring underground utilities in new subdivisions and commercial development, municipalities can also develop regulations that would require joint trenching techniques in utility corridors for all utilities, including electricity, water, sewer, natural gas, cable, and telephone. Joint trenching regulations will save everyone time and money for installation, and corridors can be easily accessible for repair.
14. Protect and expand local drinking water supplies. There are also many privately owned package water treatment systems operating in the region. To improve the operations of these systems, municipalities should encourage the home owners associations or the landowners to buy out the system and contract with larger water treatment plant operators such as Manchester Water Works and Pennichuck Water Service Company to improve management and operation responsibilities.

E

**(ENVIRONMENT, OPEN SPACE AND
AGRICULTURE)**

MOVING SOUTHERN NH FORWARD

VOLUME 2:
Environment, Open
Space and Agriculture



2015-2035

Regional Comprehensive Plan 2015



Southern New Hampshire Planning Commission works to make our region better by facilitating cooperative and long term decision making. We believe a promising future can be achieved through fiscally sound and responsible planning and development decisions that improve the economy, efficiency and health of our region.

June 2014

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THE ENVIRONMENT, OPEN SPACE, AND AGRICULTURE

PURPOSE

The purpose of this chapter is to identify and describe the significant natural resources of the Southern New Hampshire Region. Natural resources are significant because of their importance within the region, both in terms of their ecological functions and values as well as their capacity to sustain the region's overall environment and quality of life. Examples include the region's major rivers and streams; great ponds and lakes; natural shorelines; prime wetlands; aquifers; floodplains; steep slopes greater than 25 percent; forested or wooded lands in unfragmented blocks of 500 acres or more; significant wildlife habitat areas such as vernal pools; riparian corridors of 300 foot width; wetland clusters greater than five acres in size; existing agricultural lands and high quality agricultural soils. Each of these important resources has a significant role in defining the region's future growth and development.

Natural resources can, and often do, dictate the direction development takes. Water, slope conditions, soil types, and many other factors have either encouraged development, or pushed it away through a variety of reasons.

VISION

The following value statement was adopted by the Granite State Future Leadership Team for the Southern New Hampshire Region:



“Value for rural living is deeply rooted in enjoyment of the beautiful, quality environment; residents want to keep this way of life and protect the functions and quality of the environment and natural resources.”

PUBLIC INPUT FROM SNHPC OUTREACH

In June, 2012, the Southern New Hampshire Planning Commission (SNHPC) began the first stage of a two-year public outreach strategy designed to engage communities within the region and inform residents about the Granite State Future regional plan.

In relation to the environment and natural resources of Southern New Hampshire, the primary input received indicates the public enjoys the natural beauty of the outdoors that goes hand-in-hand with region's rural character.

Written Comment Cards: When asked "What's best about the Southern New Hampshire region?" Over 31 percent of respondents chose natural resource functions and quality. This comment was the most popular comment received. The woods, wilderness, and wildlife were also frequently named, as was appreciation for the quietness that comes from being in a rural area.

Water bodies, such as rivers, lakes and ponds were mentioned as a popular feature of the landscape, and one comment expressed support for water quality testing. Mountains received positive mention as well. Respondents reported enjoying outdoor recreational opportunities and the country feel of the area. The changing seasons and weather were also favorably commented upon (see following Table 1).

TABLE 5-1: NATURAL RESOURCE FUNCTIONS & QUALITY: WHAT'S BEST

Categories	Comments
1. Outdoors/ country setting/ natural beauty	I love the rural character – the mountains, ponds, and rivers
	The rural nature that hasn't been destroyed or urbanized
	The beauty of the area, recreational opportunities
	Rural – Woods, hunting, fishing
	The wide open spaces and wilderness. The cities are great too!
	Land, space, quiet, trees, wildlife
	The lakes and the care and testing they receive. The town does well on most things except plowing off main roads which are not made wide enough for two cars.
	The country feel
	Quiet, lots of green
	The local businesses and people along with the lovely scenery of the Merrimack River.
2. Seasons/ climate	Four-season climate. Cultural diversity. Proximity to Boston
	Scenery, fairs, food, and weather

Visual Preference Survey: From the Visual Public Space Preferences survey, forest (37 percent) was the overwhelming favorite among the six public space options, coming in with 9-14 percent more votes than the second most preferred option at every event. Wildlife preserve (24 percent) was the second overall preference.

UNH Telephone Public Survey Results: During May-July 2013, the University of New Hampshire Survey Center conducted a telephone survey for New Hampshire's nine Regional Planning Commissions, as part of the *Granite State Future* and *New Hampshire Broadband Mapping and Planning* initiatives.

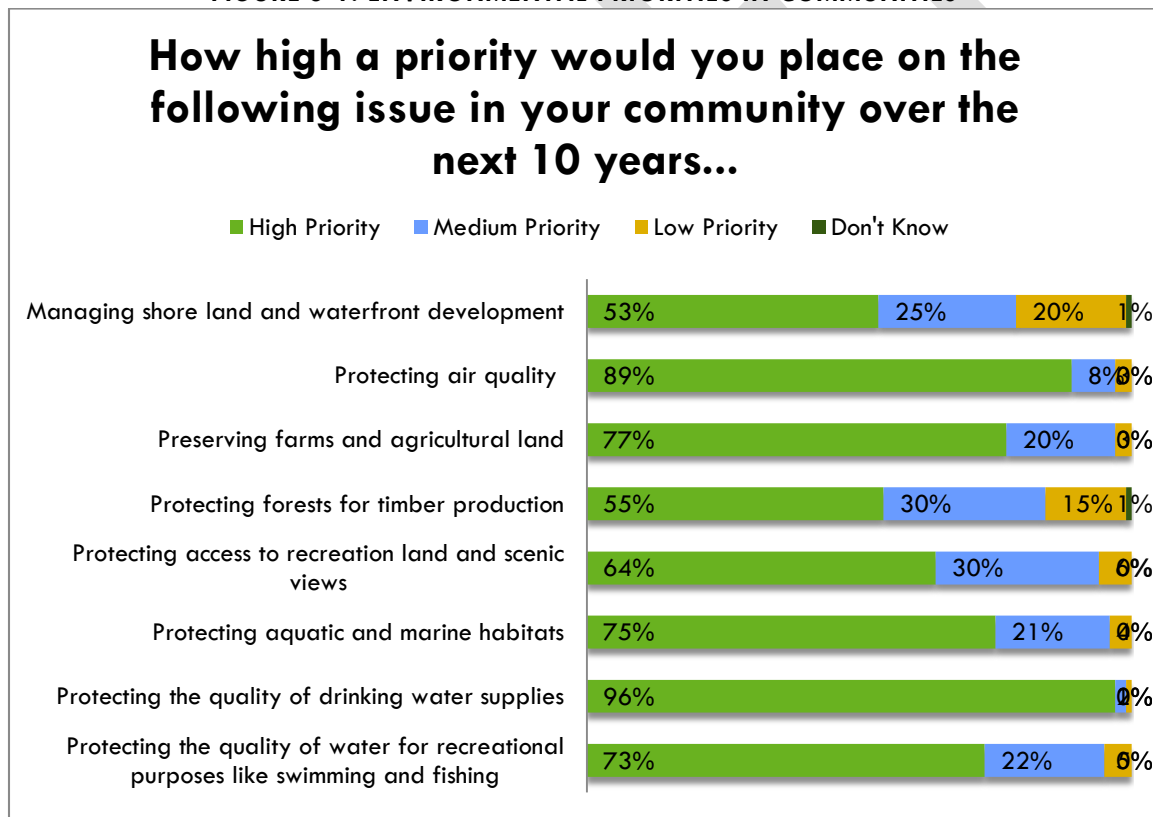
The specific areas of interest are New Hampshire resident's opinions on a range of issues facing communities around the State – transportation and broadband infrastructure, housing, economic

development, natural resource management, energy and natural hazard mitigation. A survey of two thousand nine hundred and thirty-five (2,935) New Hampshire adults was conducted by telephone between May 9 and July 21, 2013. The response rate was 33 percent and the margin of sampling error for the survey is +/- 2.2 percent.¹

The survey found that the SNHPC regional responses largely reflect statewide results. Several questions gauge the public's priorities in regard to natural resources, open space and recreation, and agriculture. There was overwhelming support (See Figure 5-1) for making clean air and clean water high priorities, 89 percent and 96 percent respectively. Local food sources and marine habitats are also issues that residents identified as important. 77 percent of respondents felt farms and agricultural land preservation should be prioritized in the next ten years while 75 percent said protecting aquatic and marine habitats are important issues in the near future. Slightly more than half of all respondents in the region cited managing shore land and waterfront development as a priority. 55 percent of respondents stated that protecting forests for timber production should be a priority.

Granite State Future Survey Results:

FIGURE 5-1: ENVIRONMENTAL PRIORITIES IN COMMUNITIES

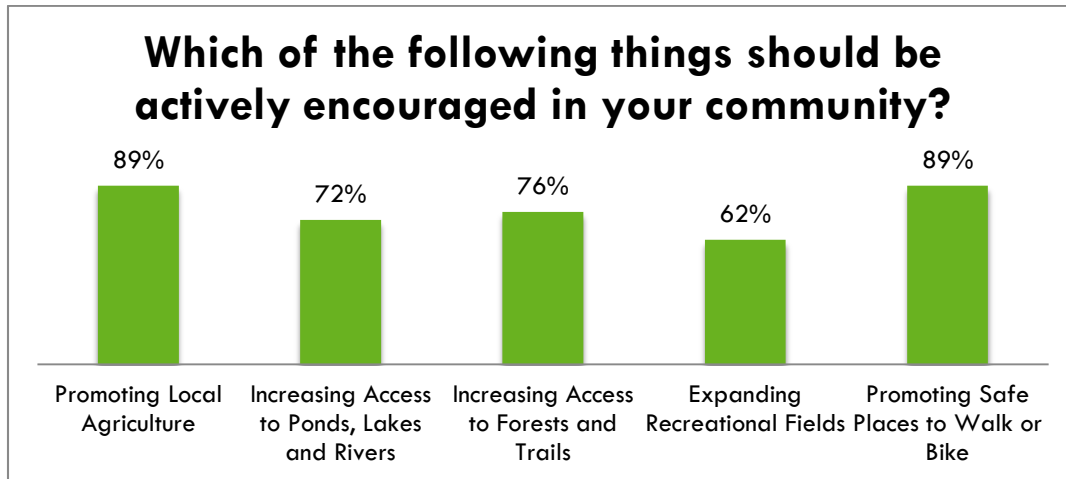


Source: UNH Survey Center

¹ "NH Regional Planning Commissions: A Granite State Future 2013 Statewide Survey." The Survey Center, UNH. September 2013.

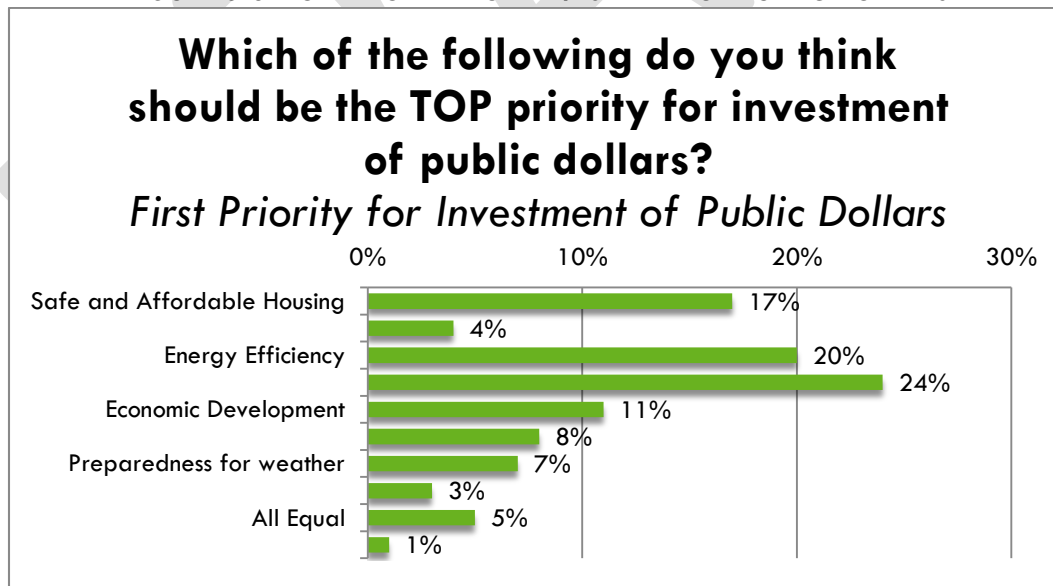
Of the 12 activities that were listed for priority consideration at the regional visioning workshops, five were environmentally related (See Figure 5-1). Tied for second place at 89 percent, many residents felt their communities should actively promote local agriculture and safe places to walk and bike (See Figure 5-2). Increasing access to forests and trails was the seventh most popular response.

FIGURE 5-2: ACTIVITIES TO ENCOURAGE IN COMMUNITIES



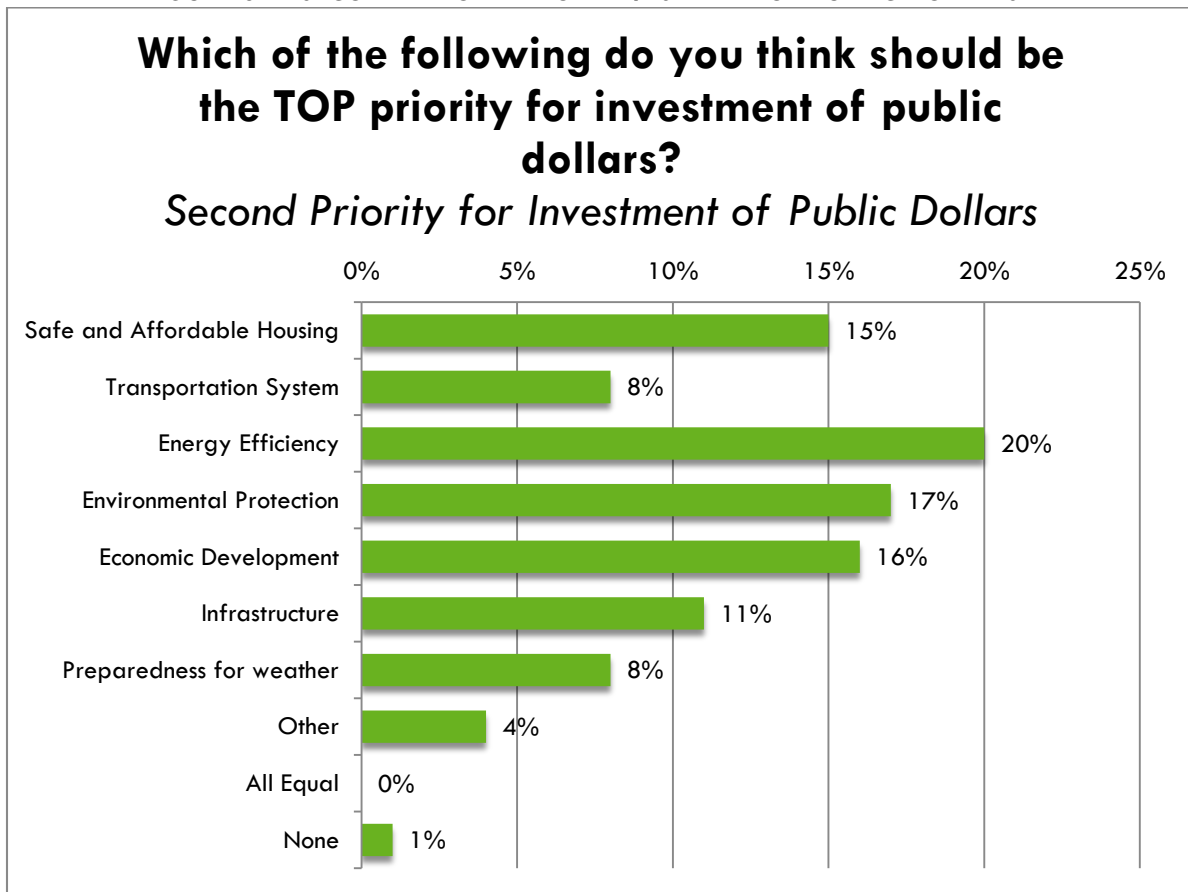
Source: UNH Survey Center

FIGURE 5-3: TOP PRIORITY FOR INVESTMENT OF PUBLIC DOLLARS



Source: UNH Survey Center

FIGURE 5-4: SECOND PRIORITY FOR INVESTMENT OF PUBLIC DOLLARS



Source: UNH Survey Center

Of particular importance to this chapter, the largest amount of respondents (24 percent) claimed that environmental protection should be the top priority for investment of public dollars in their communities (See

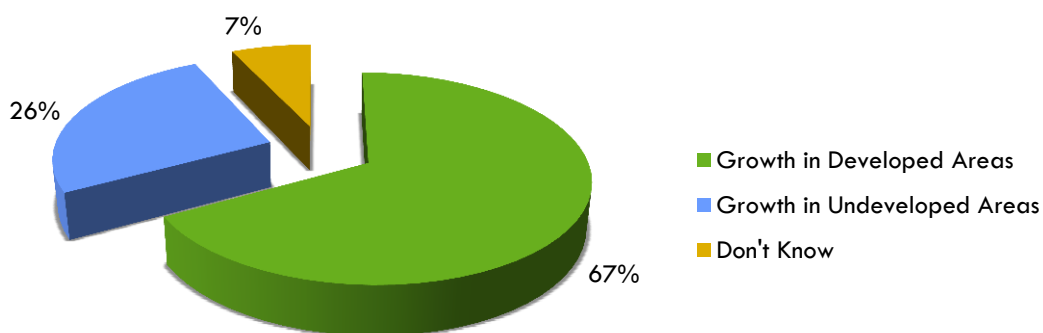
Figure 5-3). Even when asked what the second priority should be for where to invest public dollars, environmental protection came in second after Energy Efficiency.

Overall, an overwhelming majority of residents in the Southern New Hampshire Region feel that development should be restricted to areas already developed in order to preserve natural resources (See Figure 5-5).

By taking advantage of existing utilities in areas that are already developed, communities are able to both save money on existing services by increasing capacity and preserve natural resources for natural habitats, recreational areas or agriculture.

FIGURE 5-5: WHERE TO DIRECT GROWTH

Where should future development occur in your part of the state...In already developed areas of your region in order to preserve natural areas, and make use of existing utilities and services, OR in undeveloped areas in order to avoid higher densities?



Source: UNH Survey Center



ENVIRONMENT & NATURAL RESOURCES

EXISTING CONDITIONS

RIVERS, LAKES, AND SHORELINES

The Southern New Hampshire Region contains several major rivers, lakes, and shoreline areas. Two of the region's most important surface waters are the Merrimack River and Massabesic Lake. The Merrimack River runs south through the SNHPC communities of Hooksett, Goffstown, Bedford, and Manchester. Located in Auburn and Manchester, Massabesic Lake serves as the public water supply for Manchester and many of the surrounding towns (See Map 5-1: Surface Water).

These resources have numerous functions including wildlife habitat and erosion control, recreation, hydroelectricity production, and a source of drinking water. Protection of the region's surface waters is important for a variety of reasons. One of the most important concerns is the natural vegetation growing alongside riverbanks and shorelines. These natural shorelines not only serve as wildlife habitat, but also play a significant role in holding streams and riverbanks together and preventing erosion and siltation. Also, stream banks are natural conductors for runoff and therefore replenish surface water supply.

The New Hampshire Department of Environmental Services (NH DES) has compiled a list of great ponds in the State of New Hampshire. A great pond is defined as a natural body of water at least 10 acres in size. As a whole, the region has a total of 40 great ponds. The Town of Derry leads the region with six great ponds, and several other communities have at least four or five great ponds each. The complete list of all lakes and great ponds located within the region is provided in Appendix B (Massabesic Lake and Tower Hill Pond are also located in adjoining towns).

While all the rivers, lakes and ponds in the region are important, there are 12 great ponds that are especially significant. Several factors are taken into account when determining the regional significance of a great pond. The great pond has to first be greater than 50 acres in size. Second, the degree of urbanization and natural vegetation surrounding the lake or pond must be controlled and protected. Finally, the lake or pond itself must be of good water quality or be a public water supply source.

All of the great ponds identified on the NH DES official list of public water bodies are subject to the former Comprehensive Shoreland Protection Act (CSPA) (now referred to as the Shoreline Water Quality Protection Act – WQPA) requirements of the state. This act requires a 50-foot setback for primary buildings. In addition, a natural woodland buffer of 150 feet from the reference line is required as is a 75 to 125-foot setback for septic tanks, depending on soil type.

The reference line for natural lakes and ponds is the surface elevation listed on the Consolidated List of Waterbodies subject to the WQPA. In the WQPA there are also restrictions regarding impervious surfaces, unaltered land, vegetation clearance, and fertilizer use within the protected shoreland. A town may maintain or enact more stringent requirements than the WQPA prescribes if it wishes.

All 4th order and greater streams and rivers are also subject to the Shoreland Water Quality Protection Act. A 250-foot wide natural woodland buffer is required on both sides of the stream or river. Within this buffer, not more than 50 percent of the basal area of trees, and 50 percent of the saplings can be removed for any purpose in a 20-year period. Structures may be built and are allowed in the buffer only within a building envelope, which extends 25 feet beyond the footprint of the building. The building envelope is excluded when computing the basal area percentage limitations.

The communities of Auburn, Manchester, Weare and Windham have adopted Watershed Protection Ordinances, which are more restrictive than the State WQPA requirements. In order to establish improved and comprehensive surface water regulations, other communities in the region should consider adopting a similar ordinance.

RIPARIAN BUFFERS

Riparian buffers are those areas appearing along watercourses and water bodies. These areas are critically important to the protection of water resources. Buffer areas serve as filter areas for sediment and other debris in runoff waters, trapping it and preventing it from entering the main water body. The wider a buffer area is, the better the chance that any foreign substances will be caught and filtered.

In addition to trapping sediment and pollutants, buffers serve many other purposes. Buffer vegetation helps to regulate stream flow by allowing water to absorb into the soil and recharge the groundwater supply. As a result, groundwater takes longer to reach a river or stream, and thus controls flooding and maintains stream flow during dry periods of the year.

Riparian buffers also help to hold stream banks together. The root structures of the vegetation located in the buffers helps to prevent erosion of soil, and the stems assist in deflection of wave action, limiting ice damage and reducing erosion.

One of the most important functions of riparian buffers is the purpose they serve as wildlife habitats. Buffer areas are characterized by their additional water, which allows for a unique blend of plant and animal species not found as the buffer stretches away from the water body. Not only the land, but the water habitat is influenced by buffers as well. Water is shaded and cooled, as well as filtered, allowing for an increase in water quality for the aquatic species inhabiting the areas. In addition, continuous stretches of riparian buffers serve as important wildlife corridors, allowing for travel. In terms of human use, riparian areas can be used for recreational activities including hiking and camping.

There are two kinds of riparian buffers – shoreline and woodland. Shoreline buffers are areas of small grassy vegetation appearing along the water banks. Shoreline buffers are much smaller than woodland buffers and are generally less effective than their woodland counterparts at effectively removing sediment from runoff before it reaches the main water body.

Granite State Future



Natural Resources Surface Waters

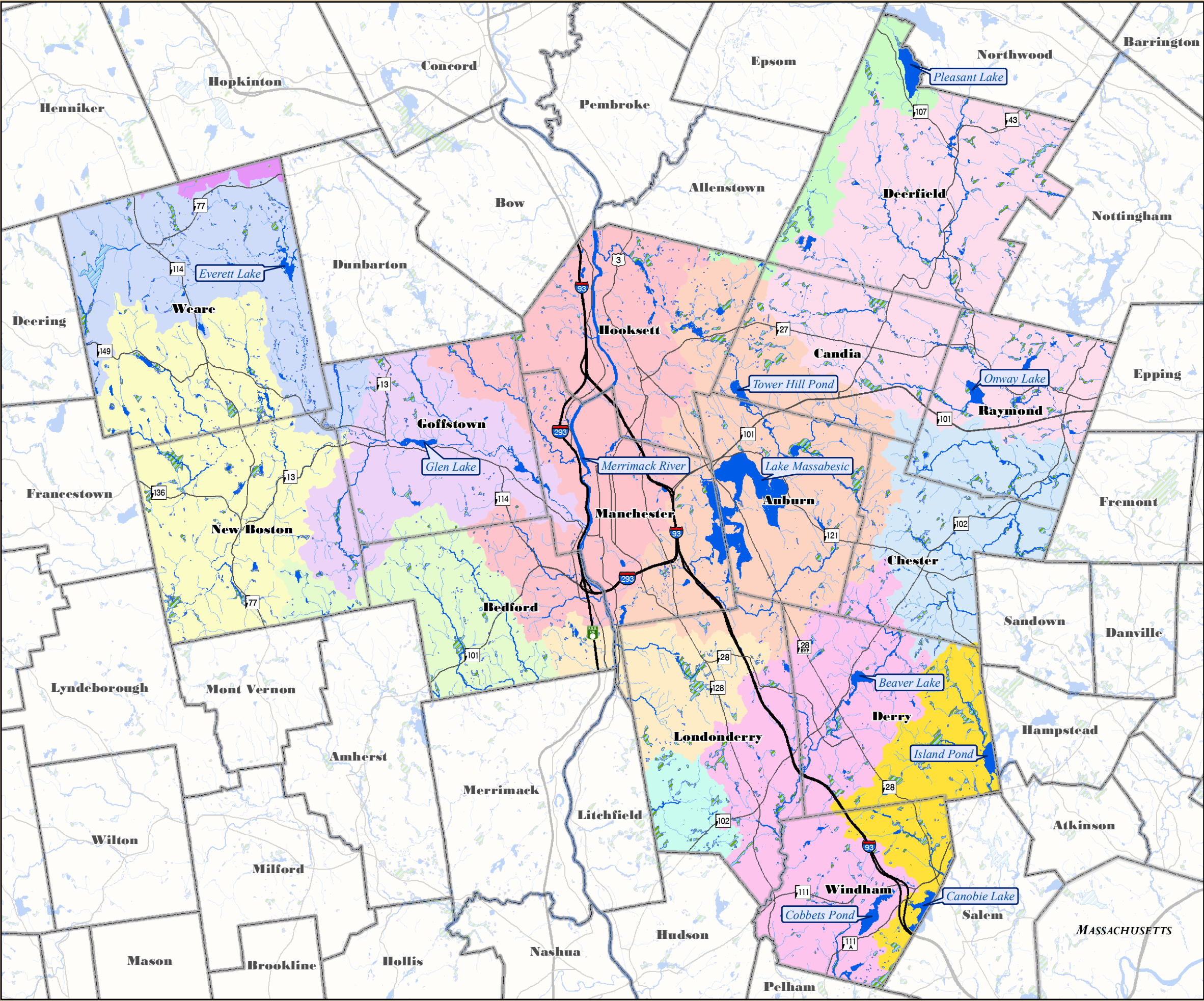
- Baboosic Brook Watershed
- Beaver Brook Watershed
- Cohas Brook Watershed
- Exeter River Watershed
- Henniker Tributaries Watershed
- Lamprey River Watershed
- Litchfield Tributaries Watershed
- Londonderry Tributaries Watershed
- Lower Piscataquog River Watershed
- Lower Suncook River Watershed
- Manchester Tributaries Watershed
- Spickett River Watershed
- Upper Piscataquog River Watershed
- South Branch Piscataquog River Watershed
- Lake/Pond
- Reservoir
- Swamp/Marsh
- Rivers (3rd Order and Above)
- Streams (1st and 2nd Order)
- Interstates
- State and US Routes
- Town Boundary

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities

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SHORELINE BUFFER

The Towns of Candia and Londonderry have established riparian buffer regulations. As noted earlier in this chapter, only fourth order and greater streams or rivers fall under the state's Comprehensive Shoreline Protection Act requirements. Greater awareness of the importance of riparian buffers is a critical issue that needs to be addressed in the region.

HYDRIC SOILS AND WETLANDS

Wetlands are critically important to the environment. They absorb storm waters and spring snowmelt runoff. These waters are slowly released, regulating stream flows during the year. This absorption is especially significant in areas where development has rapidly sprouted, as runoff water tends to increase in these areas. Wetlands also act as a filter, trapping pollutants such as road salt, pesticides, and other chemicals, in their thick, mucky soils. This trapping prevents groundwater supplies from becoming contaminated. These thick soils also lower water acidity levels, and prevent eroded silt and sediments from infiltrating larger water bodies, such as streams, ponds, and lakes.

There are several classifications of wetlands, including but not limited to emergent wetlands, vernal pools, floodplain wetlands and upland wetlands. Emergent wetlands, also called marshes, are usually dominated by perennial vegetation. Emergent wetlands are typically found in either shallow water areas, or in areas that are prone to flooding. Another type of wetland is a vernal pool. Vernal pools are areas that fill with water either when the water table rises, or with melt-water or stormwater runoff. In most cases, vernal pools become dry by late summer. Floodplain wetlands are wetlands that are situated within depressions in floodplain areas. Upland wetlands are typically found in high altitudes, and are filled via stormwater and melt-water runoff.

The U.S. Department of Agriculture National Resources Conservation Service (NRCS) defines hydric soils as those soils that are significantly wet in the upper part to develop anaerobic conditions during the growing season. Two types of hydric soils exist: Hydric A and Hydric B soils. Hydric A soils are those soils classified as very poorly drained. Hydric B soils are those soils classified as poorly drained. Water tables lying at or near the surface for seven to nine months out of the year characterize these soils. Hydric soils typically compose wetlands, bogs, marshes and swamps.

Wetlands are not favorable land for developmental purposes because of their poor soils. Developing these areas requires a significant amount of financial investment due to the poor quality of the ground. In the long run, dredging or filling them is not worth the necessary extra effort if alternative development opportunities exist.

Wetlands serve as a valuable habitat for spawning, nesting and feeding, and they support a wide variety of exclusive plant life. Wetlands also provide numerous human uses, such as recreation, bird watching, fishing, hiking, hunting, and other activities not requiring the construction of buildings.

In the Southern New Hampshire Region, the towns of Auburn, Derry, Goffstown, Hooksett and Weare have designated prime wetlands. The Towns of Bedford, Candia, Chester and Deerfield have completed prime wetland studies.

Prime wetlands are simply a higher level of designation of wetlands protection. In order to designate a wetland as prime, a municipality first needs to evaluate the wetland's functions and values by following the guidelines in the *Method for Comparative Evaluation of Nontidal Wetlands in New Hampshire* (a tidal method is also available).² After this has been completed, a public hearing must be held and residents are given the chance to vote whether or not to accept the designation of the wetland as prime. If the measure is passed, NH DES will review the study completed by the town. If the study is determined to be in compliance with the law, then the wetland is designated as prime.

Once a wetland has been designated as prime, then all projects within or adjacent to the wetland, called "major projects," must be field inspected by a NH DES worker before work can commence. Also, a public hearing conducted by NH DES on the project must also take place. There are no additional special building setback requirements for designated prime wetlands. However, under RSA 155-E, no excavation shall be permitted within 75 feet of any great pond, navigable river, or any other standing body of water 10 acres or more in area or within 25 feet of any other stream, river or brook which normally flows throughout the year, or any naturally occurring standing body of water less than 10 acres, prime wetland as designated in accordance with RSA 482-A:15, or any other wetland greater than 5 acres in area as defined by DES.

Presently, there are nine municipalities in the region that have adopted a Wetlands Conservation District as part of their Zoning Ordinance. These communities are Candia, Chester, Deerfield, Derry, Goffstown, Hooksett, Londonderry, Manchester and New Boston. In addition, most of the region's municipalities have adopted basic building and septic system setbacks from wetlands ranging anywhere from 25, 50, 75 and 100 feet.

Most of the Wetlands Conservation District ordinances were adopted in the 1980s. These districts were set up as overlay zones based on the county soil survey maps delineating poorly drained and very poorly drained soils within each community. While the soil surveys remain relatively accurate, the State of New Hampshire has adopted a new wetlands definition (RSA 482-A, effective July 1, 2004), which now defines wetlands as "an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Because of this new definition and the availability of new wetland inventory maps, it is recommended that many communities go back and review their wetland conservation district ordinances and wetland maps for consistency with the new state definition.

The wetlands identified in this chapter are based on the U.S. Geological Survey (USGS) National Wetlands Inventory (NWI). Designated prime wetlands have not been mapped.

² Ammann, A.P. and Stone, A. Lindley. 1991. Method for the Comparative Evaluation of Nontidal Wetlands in New Hampshire. NHDES-WRD-1991-3. New Hampshire Department of Environmental

VERNAL POOLS

Vernal pools occur at scattered locations throughout the region. Many of the species that depend on vernal pools are restricted to Southern New Hampshire. The most important wildlife values of vernal pools are critical foraging and breeding habitat for a number of reptiles, amphibians, and invertebrates.³

Additionally, New Hampshire Natural Heritage identifies Exemplary Natural Communities of plants and wildlife that represent the best remaining examples of biological diversity in the state. Exemplary Communities are designated by the ecological integrity of the community relative to other examples of that particular type based on size, ecological condition, and landscape context. New Hampshire Natural Heritage designates most occurrences of rare natural community types and some high quality examples of common community types as exemplary. New Hampshire Natural Heritage identifies and tracks Exemplary Natural Community occurrences to inform conservation decisions within the state.⁴

AQUIFERS

Most of the Southern New Hampshire Region is served by a series of stratified drift aquifers. Stratified drift aquifers are made up of deposits of sand and gravel located above the bedrock. Although these aquifers are more effective in water transmission than are bedrock aquifers, stratified drift aquifers are much more susceptible to contamination. Leaking underground storage tanks, poorly maintained septic systems, improper disposal of hazardous chemicals, vehicular accidents and gravel pits are the leading sources of this contamination. Another large problem concerns development above aquifers. These areas are favorable largely because of the levelness of the land and ease of extracting gravel. However, this development often leads to contamination, since work is completed close to the water source.

Protection of aquifers should be among the highest of priorities in the region. Humans have relied on the use of aquifers not only for agricultural reasons, but for habitation as well. Irrigation of arid lands through the use of underground aquifers has allowed crops to be grown and life to be sustained in places where it normally would be too difficult or impossible.

However, there exists a downside to this positive situation. With growing population, aquifers are being drained much faster than they are able to recharge. As a result, they could be depleted in time and cause a very severe crisis in areas where water is a precious commodity. Located in the western United States, the Ogallala Aquifer is a prime example. The Ogallala lies under portions of eight states – Wyoming, Colorado, New Mexico, Texas, Oklahoma, Kansas, Nebraska and South Dakota. The prime use of the Ogallala's water in many of these states is agricultural. Due to the excessive amounts of irrigation and municipal uses throughout the years, the Ogallala is being drained far quicker than it can recharge. The water table's quick rate of descent has forced the deepening of wells in order to reach it, and in some places the aquifer has become dewatered.

³ New Hampshire Wildlife Action Plan 2005, New Hampshire Fish and Game Department (source for all critical habitat description).

⁴ NH Division of Forests and Lands, <http://www.nhdfi.org/about-forests-and-lands/bureaus/natural-heritage-bureau/about-us/naturalcommunities.aspx>

TABLE 5-2 WATER SUPPLY LANDS CONSERVED IN SNHPC REGION

Municipality	Total Municipal Acres	Water Supply Land Conserved (Acres)	Percentage Water Supply Land Conserved
Bedford	21,156	0.30	0.001%
Goffstown	24,065	21.55	0.090%
Hooksett	23,761	0.79	0.003%
Londonderry	26,958	0.11	0.000%
New Boston	27,654	0.69	0.002%
SNHPC Region	123,593	23.44	0.019%

Source: NHDES Favorable Gravel Well Analysis, 2011; GRANIT Conservation and Protected Lands, 2012

In 1995, the U.S. Geological Survey (USGS), in cooperation with NH DES, Water Resources Division, published *Geohydrology and Water Quality of Stratified-Drift Aquifers in the Middle Merrimack River Basin, South-Central New Hampshire*. This study identified the more productive stratified drift aquifers in the region based upon estimated transmissivity rates (ft²/day) which range from less than 2000, 2000 to 4000, 4000 to 8000 and greater than 8000. Transmissivity measures the ability of an aquifer to transmit water. Southern New Hampshire's stratified drift aquifers can supply wells and springs. Many of the region's stratified drift aquifers are shown on Map 5-2.

A number of municipalities within the region have utilized the 1995 and 1977 USGS studies to establish local Aquifer Protection or Groundwater Protection Districts as part of their Zoning Ordinance. These communities include the towns of Candia, Chester, Derry, Hooksett, Raymond, Weare and Windham. Goffstown developed a Groundwater Protection Plan and has in place conservation zoning which protects the Village Precinct's water supply lands and the Town of Deerfield voted to create a district in Fall 2011.

An Aquifer Protection or Groundwater Resource Protection District is similar to the Wetland Conservation District in that it is an overlay district designed to regulate certain types of land uses (such as septage lagoons, landfills, automotive service or repair shops, sand and gravel excavation, etc.) which could contribute pollutants to aquifers that may be designated as future public and private water supply sources. Today, many of these ordinances are now out of date and need to be updated, particularly with respect to identifying and protecting critical aquifer recharge areas.

The New Hampshire Geologic Survey has digitized and enhanced aquifer data to more accurately identify the aquifers and recharge areas. It is recommended that every community within the region amend or adopt an Aquifer Protection District based upon this information.

In addition, each community in the region should consider establishing a Wellhead Protection Program, which provides greater controls to protect existing and future groundwater drinking supplies and well fields. Currently, the towns of Chester, Goffstown, Hooksett and Raymond have adopted Wellhead Protection Programs. Implementing Wellhead Protection Regulations is a key component to the protection of groundwater. Similarly, Aquifer Protection Ordinances are an important step to prevent groundwater contamination, prevent excess groundwater extraction and restrict hazardous land uses.

FLOODPLAINS

Floodplains are land areas located adjacent to rivers and tributaries subject to periodic flooding. These areas provide not only valuable flood storage, but are some of the best wildlife habitat for numerous species. These areas usually contain highly desirable agriculture lands due to the rich soils typically found there. In addition, the sustainability of plant life found within the floodplain is likely to be stronger than the plant life found outside of the flood zone, due to stronger root structures, resulting from a higher tolerance of disturbance.

Floodplains should remain in their natural condition in order to accommodate water runoff and flood storage in all its forms. Floodplains also provide important recreational sites. One of the most common activities is hiking, since these areas offer scenic views.

In 1968, the United States Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act. In order to participate in the NFIP, a community is required to adopt and enforce a floodplain management ordinance. Once the ordinance has been adopted, the Federal Government will make flood insurance available within the community to serve as financial protection against losses caused by floods. An important consideration of floodplains is the amount of flood storage present (See Table 5-3).

TABLE 5-3: CONSERVED FLOOD STORAGE LAND IN SNHPC REGION

Community	Total Town Acres	Flood Storage Land Acres Conserved	Percent Flood Storage Land Conserved
Auburn	18,438	122	0.66%
Bedford	21,156	265	1.25%
Candia	19,557	120	0.62%
Chester	16,718	131	0.78%
Deerfield	33,348	1,004	3.01%
Derry	23,226	117	0.51%
Goffstown	24,065	157	0.65%
Hooksett	23,761	179	0.75%
Londonderry	26,958	766	2.84%
Manchester	22,355	159	0.71%
New Boston	27,654	549	1.99%
Raymond	18,944	298	1.57%
Weare	38,464	713	1.85%
Windham	17,772	63	0.35%
SNHPC REGION TOTAL	332,413	4,643	1.40%

Source: Soil Survey Geographic (SSURGO) Database for New Hampshire, 2009; GRANIT Conservation and Protected Lands, 2012

Presently, every community in the region participates in the National Flood Insurance Program. As part of the NFIP, the Federal Emergency Management Administration (FEMA) prepares a Flood Insurance Study (FIS) of every community participating in the program. The FIS includes statistical

data for river flow, rainfall, topographic surveys, as well as hydrologic and hydraulic analyses. After examining the FIS data, FEMA creates a flood insurance rate map (FIRM) delineating the different areas of flood risk.

Land areas that are at high risk for flooding are called Special Flood Hazard Areas (SFHA), which consist of the 100-year floodplain. The 100-year floodplain is an area that has a 1 percent chance of being flooded in any given year. Copies of flood insurance maps are available in community planning and zoning offices of every municipality in the region.

DRAFT

Granite State Future

Natural Resources

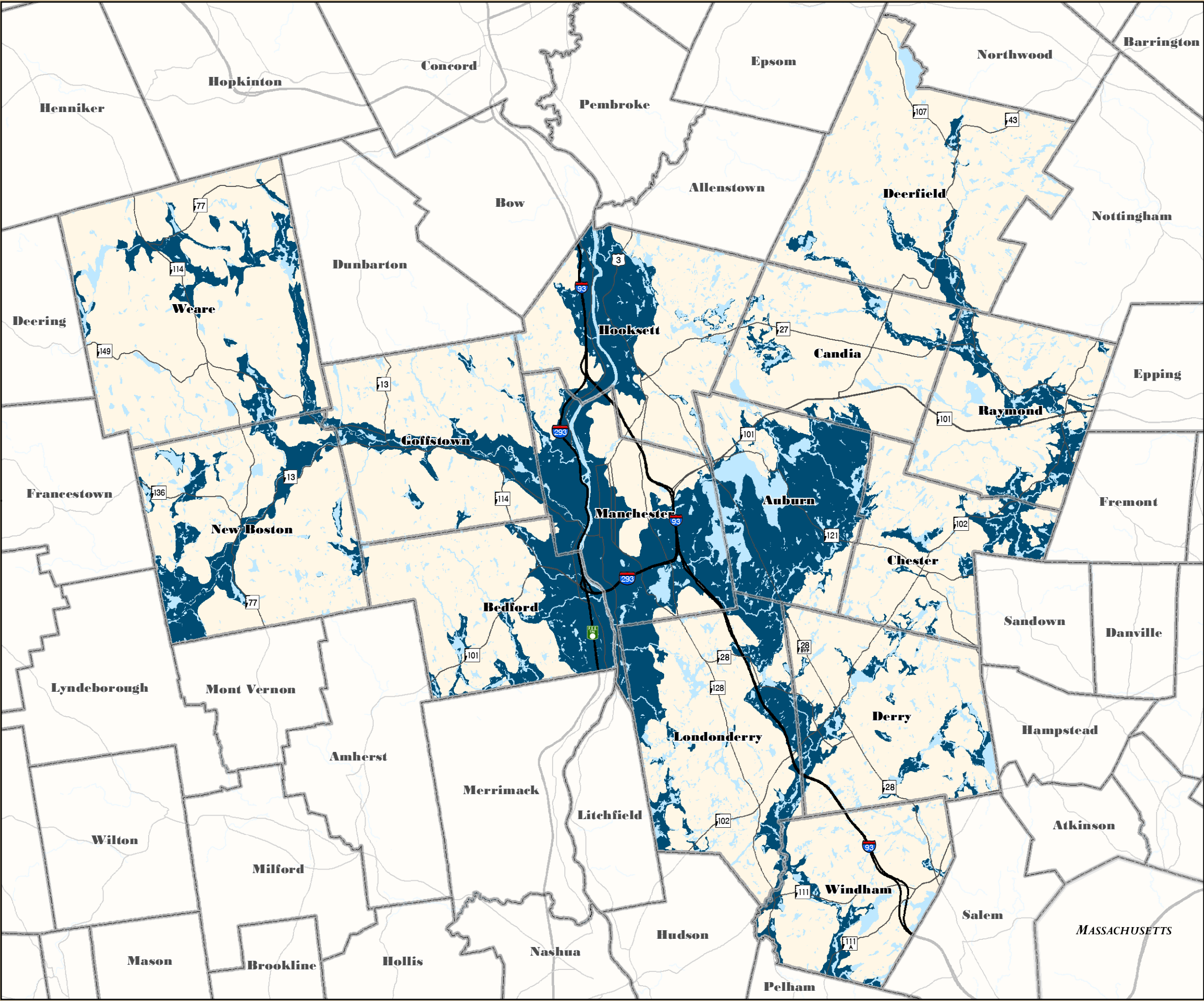
Stratified Drift

Aquifers



- Stratified Drift Aquifers; 88,848 Acres or 27% of Region*
- Water & Wetlands; 28,615 Acres or 9% of Region
- Rivers
- Interstates
- State and US Routes
- Town Boundary

*This includes till, glacial lake deposits and stratified drift undifferentiated aquifers



Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities



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0 1.25 2.5 5 Miles



STEEP SLOPES

Steep slopes in the SNHPC Region are considered to be those areas having a slope of 15 percent or greater. In areas of steep slopes, the soil layer is thinner than normal, and absorption levels are reduced, allowing for a higher concentration of surface-water runoff. As the slope of the land increases, the greater the damage from land degrading processes, such as erosion. Another common danger relates to the inadequate development of these areas. If proper care is not taken into consideration in relation to the slope of the land, then costly environmental and also human consequences could result. Areas with a 25 percent or greater slope should be left as open space and not developed. These areas are suitable for such uses as conservation lands or watershed protection.

Slopes of 15 to 25 percent are less threatening to development, however they are still steep enough where they should be monitored carefully before pursuing any action and, if possible, should not be developed. The most ideal developmental option consists of slopes of less than 15 percent. Generally, high density commercial and industrial activities should be limited to slopes of less than eight percent. Truly ideal locations for any development are slopes of zero to three percent, however these areas are usually found near bodies of water which presents additional problems.

In the 1980s the Hillsborough, Merrimack and Rockingham County Conservation District offices worked with local, regional and state officials to develop soil potential ratings indicating the relative ranking of a given soil for development. The overall potential is based on the suitability rating for three uses: septic system absorption fields, dwellings with basements, and local roads and streets. The Southern New Hampshire Planning Commission (SNHPC) uses this soil potential rating information to prepare slope maps and generalized development capability maps for communities. Many communities also use these maps to develop steep slope ordinances and to regulate the placement of septic systems, dwellings and roads on slopes generally exceeding 15 percent.

Steep slope areas should be avoided as developmental sites due to the erosion problems that may occur. When erosion occurs, numerous other problems follow, such as flooding and reduction in water quality. Locating septic systems on steep slopes increases seepage and leachate runoff down gradient of the system, which could contaminate adjacent drinking water supplies. The State of New Hampshire requires a minimum 75-foot separation between wells and septic tanks, but there is limited oversight of septic installation on steep slope conditions. This concern needs to be addressed locally through the review of subdivisions and building permits in steep slope areas.

To date, the Towns of Auburn, Candia, Goffstown, Hooksett, New Boston and Raymond have adopted Steep Slopes Ordinances addressing building development. All of the communities within the region have adopted site plan or subdivision regulations addressing the placement of septic systems and public and private roads on slopes of various grades.

Map 5-3 shows the geographic location of steep slopes within the region. As a whole, there are 53,932 acres of steep slopes falling within the 15-24.99 percent range located within the SNHPC Region (See Table 5-4). The Town of Weare contains most of these slopes with 11,922 acres, followed by New Boston, which has 7,630 acres, and Goffstown, which has 7,380 acres.

TABLE 5-4: STEEP SLOPE ACREAGE IN SNHPC REGION

Municipality	Minimum Slope > 15% - 24.99%*	Minimum Slope 25% or greater**
Auburn	1,769	0
Bedford	3,144	357
Candia	1,819	0
Chester	1,842	9
Deerfield	5,637	147
Derry	2,873	34
Goffstown	7,380	600
Hooksett	3,185	633
Londonderry	1,756	0
Manchester	2,686	39
New Boston	7,630	599
Raymond	2,289	0
Weare	11,922	N/A
Windham	N/A	N/A
SNHPC Region	53,932	2,418

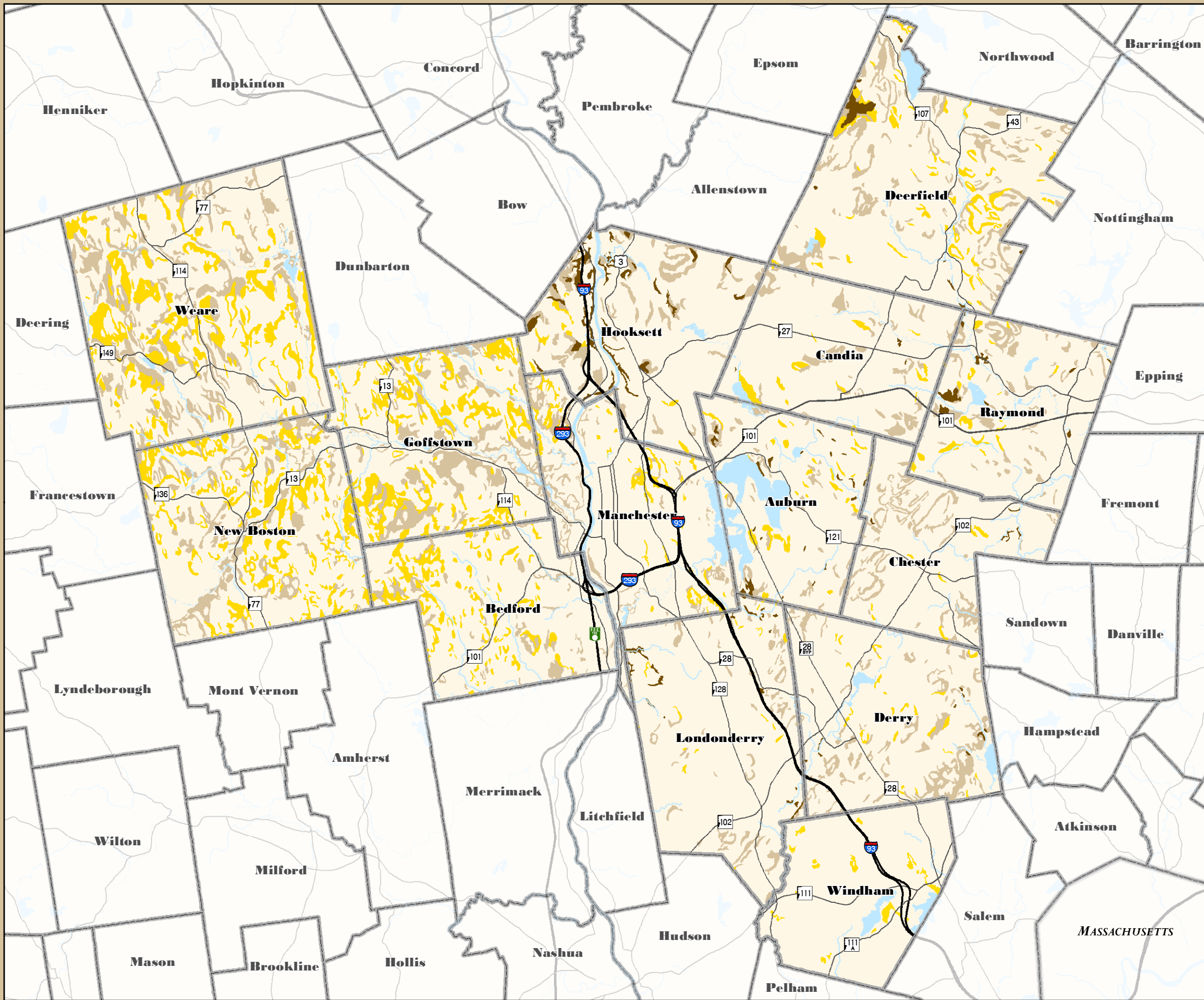
*Weare includes all acres with a minimum slope >15% and is not capped at 24.99%.

**Soil data for Hooksett includes a minimum slope data of 15-34.99% and greater than 35%.

Source: SNHPC

The towns with the least acreage of steep slopes in the 15-24.99 percent slope range include Candia with 1,819 acres, Auburn with 1,769 acres, and Londonderry, which has 1,756 acres. The remaining communities in the region contain between 1,842 and 5,637 acres.

Overall, there are fewer acres of 25 percent or greater steep slopes within the region (See Table 5-4). The communities of Hooksett, Goffstown and New Boston lead the region with 633, 600 and 599 acres respectively. Of the remaining communities in the region, Bedford and Deerfield have the next largest amounts of slopes 25 percent or greater.



Granite State Future



Natural Resources Steep Slopes

Steep Slopes - Representative Slope*

- Slope between 15 % - 24 %
- Slope between 25 % - 35 %
- Slope between 36 % - 60 %
- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

* **Representative Slope** - Slope gradient is the difference in elevation between two points, expressed as a percentage of the distance between those points. The slope gradient is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities

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0 1.25 2.5 5
Miles



FOREST LANDS

Considered one of the most important natural resources on the planet, forested lands are now disappearing quickly and without the potential for sustained replenishment. According to the Society for the Protection of New Hampshire Forests:

*“New Hampshire remains the second-most forested state in the nation following Maine, but forest cover has been steadily diminishing since the early 1980s. This loss, which totals about 17,500 acres per year, is largely driven by land development.”*⁵

The Society for Protection of New Hampshire Forests (SPNHF) has been documenting and reporting the extent of forest cover in New Hampshire for many years. In *New Hampshire’s Changing Landscape 2005*, SPNHF has predicted the percent loss of forest land by municipality throughout the state.⁶

Many municipalities located within the Southern New Hampshire Region are projected to lose over ten percent of their forest land by 2025. According to SPNHF, the largest extent of known forest cover in the state occurred in 1983, however, by 1997, the U.S. Forest Service estimated forest cover in New Hampshire had dropped to 84 percent, a loss of 163,400 acres in 14 years.⁴ The most up to date estimates according to SPNHF based on 2001 satellite data indicate New Hampshire’s forest cover has since dropped to 81.1 percent.”⁷

SPNHF predicts “New Hampshire’s forest cover will decline to 79.1 percent by 2025 and that a total of 85 towns will lose more than 500 acres of forestland by 2025, while 20 towns – all in the southeast and the Lakes Region – will lose more than 1,000 acres.”⁸ The greatest loss of forestland will occur in southeastern New Hampshire, with about 60,000 acres expected to be lost in Rockingham, Hillsborough, and Strafford Counties.⁹ According to SPNHF this could accelerate the demise of critical forest-based economies in these areas, and undermine recreational opportunities.

Forested lands serve a multitude of purposes such as providing food and shelter for wildlife, shading shoreline areas which allows for critical temperature control for aquatic species, nature trails for hiking, prevention of soil and wind erosion, and transformation of harmful gases into oxygen needed to sustain life. Forest trees also are able to store large amounts of water and play a vital role as regulators of the hydrological process, especially those processes involving groundwater, as well as local evaporation of rainfall/snowfall patterns. Beech/Oak, Birch/Aspen, Other Deciduous, White/Red Pine, Spruce/Fir, Hemlock, and Mixed Forest areas can all be found in the SNHPC Region (See Map 5-4: Forest Cover).

Large blocks of forest not broken up by roads, other land uses or water are also critical. SPNHF has determined that “a 500-acre forest block is big enough to support significant wildlife habitat, protect water quality and allow some economic forest management.”¹⁰ In evaluating forest blocks in New Hampshire, SPNHF has found 500-acre blocks are still widespread, but are already

⁵ New Hampshire’s Changing Landscape 2005, Society for Protection of New Hampshire Forests.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid.

sparse in the Seacoast and lower Merrimack Valley, and becoming so in the Lakes Region.”¹¹ This is particularly true for Southern New Hampshire as shown by the percent of land with forest blocks greater than 500 acres in size by municipality in Map 5-5. Large blocks of forested lands represent the fabric that holds together New Hampshire’s natural environment and provide the basis for New Hampshire’s forest, recreation and tourism industries.

According to SPNHF, “sustainable forest management and ecological significance requires blocks of at least 5,000 acres, and these values increase with block size.” Given current development patterns, there are no blocks of this size remaining within the Southern New Hampshire region.

In order to better protect these precious resources some towns, including Derry, Londonderry and New Boston, have established and adopted Forestry and Conservation Districts. In addition to these districts, the communities of Auburn, Bedford, Candia, Chester, Deerfield, Derry, Hooksett, Goffstown, Londonderry, New Boston, Raymond, Weare and Windham have created Open Space Plans, which are designed to inventory and assist in the protection of a community’s natural resource areas (See data in Table 5-5).

TABLE 5-5 CONSERVED FOREST LANDS IN SNHPC REGION

Community	Total Town Acres	Forest Acres Conserved	Percent Forest Conserved
Auburn	18,438	2,461	13.35%
Bedford	21,156	195	0.92%
Candia	19,557	2,385	12.20%
Chester	16,718	3,935	23.54%
Deerfield	33,348	13,117	39.33%
Derry	23,226	211	0.91%
Goffstown	24,065	1,341	5.57%
Hooksett	23,761	6,514	27.41%
Londonderry	26,958	1,410	5.23%
Manchester	22,355	1,180	5.28%
New Boston	27,654	3,129	11.32%
Raymond	18,944	4,779	25.23%
Weare	38,464	5,057	13.15%
Windham	17,772	2,274	12.80%
SNHPC Region Totals	332,413	47,988	14.44%

Source: SNHPC & GRANIT

¹¹ Ibid.

Granite State Future



Natural Resources
Forest Cover

Forest Cover*

- Beech/Oak
- Birch/Aspen
- Other Deciduous
- White/Red Pine
- Spruce/Fir
- Hemlock
- Mixed Forest
- Interstates
- State and US Routes
- Town Boundary
- Rivers
- Lakes

*Forest Cover data taken from the New Hampshire Land Cover Assessment data from 2001

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities

The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2013.
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0 1.25 2.5 5
Miles

WILDLIFE HABITAT

In the Southern New Hampshire Region, a variety of wildlife habitats exist including wetlands, forests, rivers, lakes, floodplains, and many others. Preservation of wildlife habitat is critical to the region's overall ecosystem. The loss of even one single species could have a catastrophic ecological impact. Therefore, loss of habitat is a considerable concern. Wildlife habitat loss can occur when land becomes developed or when an invasive plant or a non-native species invades and overwhelms the native flora and fauna.

One of the largest destroyers of wildlife habitat is urban development. Growth and development within southern New Hampshire is occurring rapidly. Many species and habitats are at risk by this development, particularly wetlands, ponds and streams and surrounding uplands.

TABLE 5-6: CONSERVED WILDLIFE HABITAT IN THE SNHPC REGION

Community	Total Town Acres	Wildlife Habitat Acres Conserved	Percent Wildlife Habitat Conserved
Auburn	18,438	94	0.51%
Bedford	21,156	372	1.76%
Candia	19,557	613	3.14%
Chester	16,718	314	1.88%
Deerfield	33,348	4,574	13.72%
Derry	23,226	0	0.00%
Goffstown	24,065	579	2.41%
Hooksett	23,761	1,834	7.72%
Londonderry	26,958	1,419	5.26%
Manchester	22,355	527	2.36%
New Boston	27,654	420	1.52%
Raymond	18,944	834	4.40%
Weare	38,464	2,258	5.87%
Windham	17,772	213	1.20%
SNHPC REGION TOTALS	332,413	14,052	4.23%

Source: SNHPC and NH Fish and Game 2010 Wildlife Action Plan

Removal or modification of natural vegetation reduces the quality of habitat areas. Habitats can also be fragmented and dispersed when land is subdivided into smaller lots. Other development threats to wildlife include altered hydrology, stormwater runoff, oil spills, roads and highways, and recreation. In 2006 the New Hampshire Fish and Game Department's (NH F&G) released the state's first ever Wildlife Action Plan (WAP). This plan identifies New Hampshire's wildlife and habitats at risk, and sets forth a variety of conservation strategies for habitat protection. In this plan, the types of wildlife and habitat most threatened within Southern New Hampshire can be identified. Additionally, NH F&G released updated digital habitat maps in 2010.

According to the 2005 WAP, Southern New Hampshire harbors the greatest diversity of the state's wildlife, including many rare or endangered species. At the current rate of protection and development, many more species will likely become rare, and several species may become

extirpated.¹² In preparing the Wildlife Action Plan (WAP), NH F&G utilized the following information sources: Endangered and Threatened Species Lists; Natural Heritage Rank: Animal Tracking List; Species of Regional Concern; Living Legacy Project; and Taxonomic Experts. As identified in the draft WAP, New Hampshire currently has 24 species listed as state endangered and 12 listed as threatened. Appendix A identifies all the species of greatest conservation concern throughout the state as identified by the WAP.

However, a list of critical wildlife habitats was developed as part of the draft WAP based on the habitat requirements of the wildlife species of concern. A hierarchical data structure of habitats within the state was created from large scale habitats and watershed groupings to natural community systems and natural communities forming subordinate smaller scale habitats. By utilizing this information, the critical wildlife habitats found in Southern New Hampshire are identified in Table 5-7. Each of these critical habitats as identified in the WAP is described below.

TABLE 5-7: NEW HAMPSHIRE WAP CRITICAL HABITAT LIST

Large Scale Habitats	Watershed Groupings	Medium and Small-Scale Habitats
Appalachian Oak – Pine Forest	Coastal Transitional	Grasslands
Hemlock – Hardwood – Pine Forest	Coastal Transitional Watersheds	Marsh and Wet Meadows*
	Non-Tidal Coastal Watersheds	Peatlands
		Floodplain Forests
		Vernal Pools

*Note: Marsh and Wet Meadows and Shrub Wetlands were combined for the threat ranking process and habitat profiles.

Source: NH Fish & Game

Appalachian Oak-Pine Forest

The most extensive Appalachian oak-pine forest blocks are located in Rockingham County. Appalachian oak-pine forests are one of New Hampshire's most at-risk habitats. The most challenging issues facing these forests are human development and transportation infrastructure and altered natural disturbance. Some of the important wildlife found in these forests include: the American woodcock, bald eagle, black bear, black racer, Blanding's turtle, bobcat, Canada warbler, common nighthawk, Eastern box turtle, wild turkey, whip-poor-will, white-tailed deer, wood thrush and migrating birds.

Hemlock-Hardwood Pine Forests

Hemlock-hardwood pine forests are also one of New Hampshire's most at-risk habitats. The most extensive hemlock-hardwood pine forests are located in Belknap and Merrimack counties. The most challenging issues facing this habitat are human development, introduced species, and altered natural disturbance.

¹² New Hampshire Wildlife Action Plan 2005, New Hampshire Fish and Game Department

Grasslands

Grasslands are located in all New Hampshire counties. The largest proportions occur in Grafton (20 percent), Merrimack (13 percent) and Coos (12 percent) counties. Important wildlife includes American woodcock, Blanding's turtle, Eastern meadowlark, grasshopper sparrow, horned lark, purple martin, white-tailed deer, wood turtle, black racer and migrating birds.

Floodplain Forests

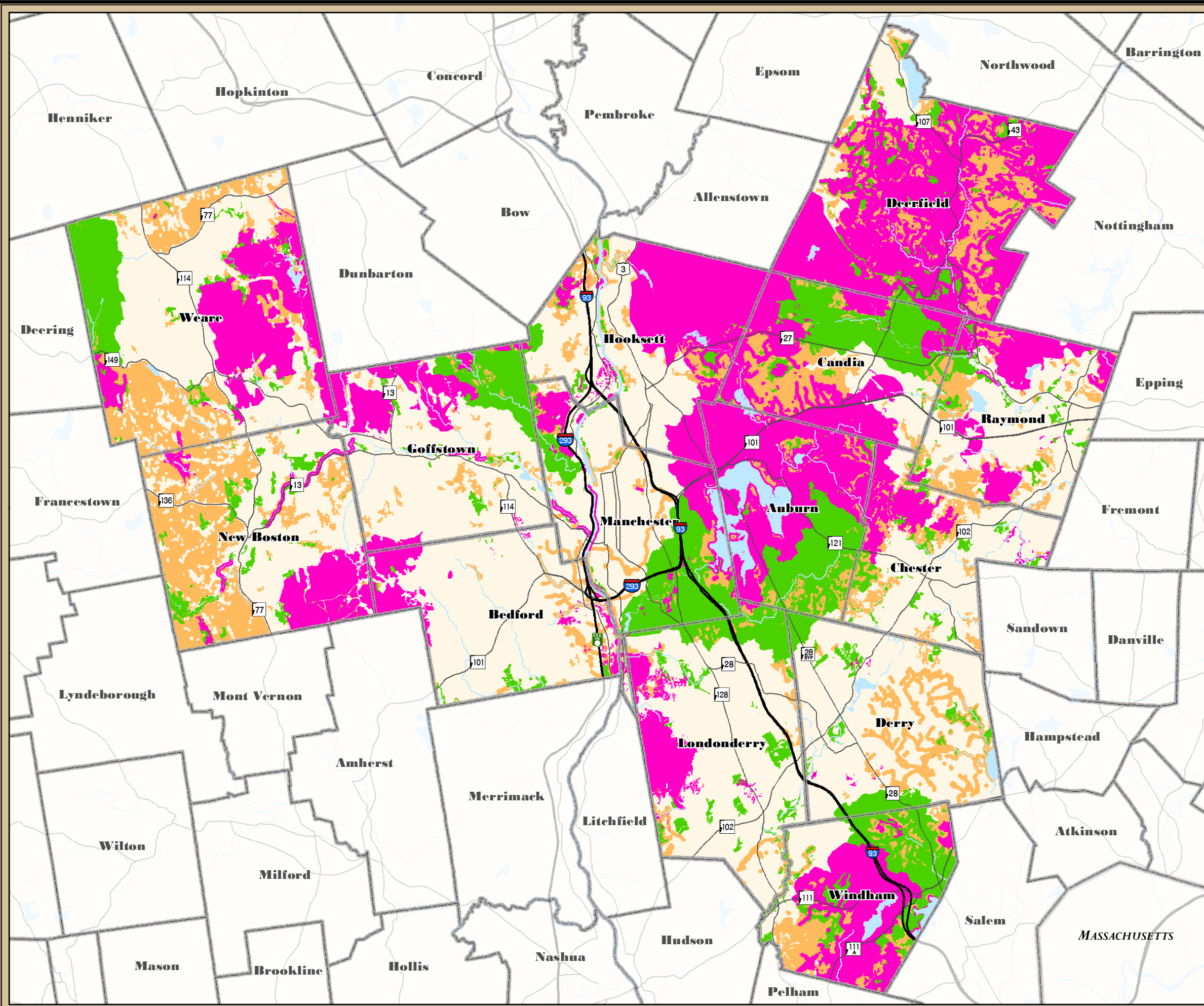
Floodplain forests are widely distributed throughout the state and within the region in association with larger rivers and streams. Important wildlife include the American woodcock, warbler, hawk, Eastern red bat, salamander, northern leopard frog, red shouldered hawk, spotted turtle, wood thrush, Canada warbler and migrating birds.

Marsh and Shrub Wetlands

Marsh and shrub wetlands are also broadly distributed throughout the state and region. Some of the state's most extensive wetland complexes are located in Southern New Hampshire, including Belknap and Rockingham Counties. Some of the most challenging issues are fragmentation, transportation infrastructure, development of surrounding uplands and invasive species.

Peatlands

Peatlands occur in clusters throughout the state and region. Some of the important wildlife includes mink frog, northern bog lemming, palm warbler, ribbon snake, spotted turtle, and the spruce goose.











Map # 5 - 5

Granite State Future

Natural Resources

Ranked Wildlife Habitats

Wildlife Action Plan*

- Tier**
-  Highest Ranked Habitat in NH; 103,732 Acres or 31% of the region
 -  Highest Ranked Habitat in Biological Region; 46,935 Acres or 14% of the region
 -  Supporting Landscapes; 49,145 Acres or 15% of the region
 -  Interstates
 -  State and US Routes
 -  Town Boundary
 -  Rivers
 -  Lakes

*Ranking acreages generalized based on raster data.
For more information on the New Hampshire Fish & Game Wildlife Action Plan 2010 and wildlife ranking methodology please visit http://www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm



Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
NHFG Wildlife Action Plan 2010
All SNHPC Communities


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0 1.25 2.5 5 Miles

 Location Map

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IMPORTANT SOILS

Soils vary for a variety of reasons. Parent material, climate, topography, biology and time all play a part in shaping the character of soils. Soils are broken down into a multitude of classifications, each having their own unique qualities based upon county soil surveys.

Understanding soils is a gateway to understanding the limitations or opportunities they present for land use. Wise land use decisions can only be made through proper awareness of the types of soils existing in an area and their specific, unique qualities. The Natural Resources Conservation Service provides extensive information about soils and offers help to landowners. Some of the most favorable soils within the region for development, septic fields and construction purposes are identified in Table 5-8.

TABLE 5-8: SOIL TYPES FAVORABLE FOR BUILDING, SEPTIC FIELDS AND CONSTRUCTION

Soil Name	Building Site Development	Septic Tank Absorption Fields	Construction Materials
Adams	X		X
Agawam			X
Becket	X		
Belgrade	X		
Bernardston	X		
Canton	X	X	
Charlton	X	X	
Chatfield	X		
Colton	X		X
Croghan	X		
Deerfield	X		
Hinckley	X		X
Hoosic	X		X
Madawaska	X		
Marlow	X		
Monadnock	X	X	X
Montauk	X		
Newfields	X		
Ninigret	X		
Ondawa			X
Paxton	X		
Pennichuck	X		
Peru	X		
Scio	X		
Scituate	X		
Tunbridge	X		
Unadilla			X
Windsor	X		
Woodbridge	X		

Source: Rockingham and Hillsborough County Soil Survey

KEY ISSUES AND CONCERNS

Southern New Hampshire is developing at an incredibly fast rate. The region's natural resources are under threat, both in supply and condition, due to development pressures. These concerns are outlined in this chapter.

Water supply and water quality consistently tops the list of concerns. Many localities are consuming more treated drinking water than what they have or plan to have available, and supply is shrinking. Additionally, water quality in the Merrimack River, although improving, is still not optimal. A 2009 report the United States Department of Agriculture (USDA) concluded that of the 15 watersheds that could experience the largest changes in water quality as a result of increases in housing density on private forest land, three of the four highest ranked watersheds occur at least partially in New Hampshire (see Appendix A). These include the Piscataqua-Salmon Falls and the Merrimack watersheds, both of which make up a portion of the SNHPC Region.

Groundwater and aquifer protection are also important issues. As the region develops and the land becomes covered by pavement and buildings, the natural recharge and water quality of these important sources of drinking water become threatened. Wetlands are also a major concern as development rapidly spreads throughout the region. Wetlands are much more important than people realize as a source of both groundwater recharge and wildlife habitat. Most people are in favor of preserving their water supply and water quality, but they do not always support protecting wetlands when it comes to their own property. As a result, it becomes necessary to protect these important natural resources through local, as well as state and federal regulations.

Large unfragmented blocks of forested and wooded lands are equally significant for wildlife habitat and the open space they provide. There are several rare and important species of trees located within the Southern New Hampshire region, which also need to be protected and managed. However, large tracts of forested lands are shrinking quickly and the sustainability of these areas need to be monitored carefully and protected for future generations.

Agricultural sustainability, and the protection of the region's high quality agricultural soils, is another equally significant issue. As the region continues to develop, the quantity and quality of the region's important farmland soils is quickly deteriorating.

Some of the key take aways from this environment and natural resources section are identified below:

Key Issues and Concerns:

- The region's natural resources are not limitless and are under continuing development pressures;
- Staffing and program cutbacks at federal and state environmental agencies means non-profit organizations and local conservation commissions and land trusts must provide a greater role in protecting the region's and local natural resources
- Municipalities have a significant leadership role in environmental protection and can successfully work to both protect the environment and maintain community growth and development. This is a balancing act.
- Low-impact development practices offer an effective solution to this issue.



OPEN SPACE & RECREATION

EXISTING CONDITIONS

INTRODUCTION

Within the past decade, a number of communities in the Southern New Hampshire Planning Region, including Auburn, Londonderry, Bedford, Chester and Derry have all passed warrant articles as well as bond issues for land protection. The primary reasons for these bonds have been to preserve key undeveloped tracts of land (“Open Space”) in order to manage growth and development, protect natural resources, create recreational opportunities, and maintain community character.

In almost every community within the region, open space and recreation planning is an ongoing activity led mainly by volunteers from conservation commissions and planning boards. Some municipalities have professional planners and recreation department staff who assume these responsibilities. For the most part, however, planning for open space and recreation is a locally driven process. SNHPC is addressing open space and recreation at a regional level for the first time in this plan.

The objectives of this section are three-fold. First, to prepare an inventory and map of all the federal, state and municipal lands, town forests, parks and recreational areas, and other publicly- and privately-owned lands that are protected by public ownership, acquisition or conservation easements. Second, to identify and map all of the sites and land areas that municipalities within the region describe as desirable for protection in the future as conservation, open space or recreation. For the most part, these sites have been identified as natural areas under the 2004 Local Resource Protection Priorities (LRPP) program. Third, to describe and evaluate all the state parks, forests and other state-owned lands within the region and to determine if these parks are adequate to address the region’s growing population.

THE IMPORTANCE OF OPEN SPACE AND RECREATION

For the purpose of this plan, “Open Space” refers to undeveloped land that has local, regional and statewide value as protected or conservation land, historic or cultural sites, or scenic vistas. Such areas may contain, but are not limited to, forests, farmlands, old fields, floodplains, wetlands, shorelands, parks and recreation areas.

Residents of New Hampshire have a strong connection with the outdoors as well as the natural and cultural heritage of the state. The state’s landscape lends itself to a wide range of ecological and recreational pursuits that are enjoyed by residents and tourists alike. This heritage is an important reason why New Hampshire continues to be a popular place to visit and an attractive place to live.

In 1997, the University of New Hampshire (UNH) conducted a *Statewide Outdoor Recreation Needs Assessment* of New Hampshire residents.¹³ According to this survey, over 81 percent of the respondents said that New Hampshire's scenic beauty and cultural heritage were important to them personally. Sixty-one percent of the respondents agreed that outdoor recreation played a central role in their lives.

There are many reasons why open space and recreation are important at the local, regional and state level. These resources not only provide opportunities for public use and enjoyment, but they improve the environment and the overall health of the population, and promote tourism and economic development.

Some of the most important benefits that communities can derive from open space and recreation include:

- **Growth Management** – Protecting open space and conservation lands can help guide growth and development to areas that are the most appropriate and cost-effective for municipalities to serve.
- **Land Use Compatibility** – Incompatible land uses can be buffered and attractive and functional green space and trail opportunities can be provided within densely developed areas.
- **Historic Preservation** – Threatened historic and cultural sites can be protected through historic and conservation easements, and possibly accessed as recreational pursuits.
- **Agricultural Preservation** – The viability of working farms and forests can be protected to sustain the community's character, economy and local employment.
- **Scenic Views** – By preserving key parcels and large open blocks of undeveloped lands, important scenic vistas and views can be maintained and enjoyed by local residents and tourists alike.
- **Water Supply** – An adequate water supply is essential for economic activity. Preservation of open space can protect and contribute to a readily accessible and sufficient supply of water.
- **Water Quality** – Sustained water quality is vitally important in supporting all ecological functions. Open and undeveloped land helps maintain water quality. The forested soil of wooded lands can filter significantly more pollutants or roadway-related runoff from entering the water system (up to 90 percent more) than can lawns or asphalt surfaces.¹⁴
- **Aquatic Buffers** – Vegetated buffers physically protect a stream or river by maintaining trees, shrubs, bushes, tall grasses, and groundcovers that provide shade and remove debris and polluting nutrients. Buffers usually contain three zones: the innermost *streamside* zone of forested shade to enhance stream quality; the *middle* zone, 50-100 feet, often a

¹³ New Hampshire Outdoors 2003-2007 Statewide Comprehensive Outdoor Recreation Plan, prepared by New Hampshire Office of State Planning, March 2003, page 10.

¹⁴ Anderson 2000, Trust for Public Land 2005.

managed forest with some clearing for trails or open areas, and the *outer zone*, usually around 250 feet, but often expanded to protect adjacent wetlands and any floodplain.

- **Aquifer Protection/Recharge** – By providing open space, municipalities can protect their water supply aquifers, preventing costly clean up in the case of a polluted water source. Trees, meadows, scrub areas, and agricultural lands also allow water to recharge back into underground supplies, maintaining base flow in rivers and streams, lakes and ponds, and wetlands. Without such recharge, droughts are more likely, as well as flooding during severe rainfall or snow melt.
- **Flood Control** – Many communities throughout the region are purchasing open space to increase flood storage and reduce repetitive losses due to flooding.
- **Air Quality** – Preservation of open space is integral in maintaining air quality. Trees in forested areas absorb pollutants such as ozone and sulfur dioxide, leaving the air noticeably cleaner. A single acre of trees takes in about 2.6 tons of carbon dioxide each year, removing some of the pollutants released by vehicles.¹⁵ Older, larger trees in many of the region's forests, such as the Black Gum Tree, can remove up to 70 times more pollution from the air than trees with diameters less than thirty inches in size. Additionally, trees trap particulate pollution that causes asthma and respiratory problems.¹⁶
- **Biodiversity** – Biodiversity, which encompasses the existence and interacting processes of plants, animals, fungi, algae, bacteria, and other microorganisms, is integral to human survival. The complex natural world provides elements that support human life, such as enriched soil to grow food, oxygen to breathe, and purified water to drink. Maintaining these processes is important for economic as well as ecological reasons. Plants are sources of food, medicine, fuel, fibers, timber, and more. Furthermore, plants and animals pollinate fruit and vegetables, control pests, and add nutrients to the soil as part of their natural functioning.
- **Habitat Protection** – Preserving open space lands enhances wildlife protection. Wildlife is an attractive draw for residents and visitors alike, who enjoy bird-watching, hunting and fishing, and hiking amidst the fall foliage. As noted earlier, over 81 percent of the population in New Hampshire participates in outdoor recreation and wildlife-related activities. This brings millions of dollars to the region and local communities.
- **Greenway Planning** – Greenways or riparian corridors offer an important means for connecting open space and recreation, particularly along the region's rivers and streams. These corridors provide many social as well as ecological benefits, including the potential for recreational trail development, wildlife viewing, and a wide expanse of connected open space. Greenways can also provide a wealth of opportunities to citizens literally in their own backyards.

¹⁵ Hilary Nixon and Jean-Daniel Saphores, *Impacts of Motor Vehicle Operation on Water Quality: A Preliminary Assessment*, School of Civil & Environmental Engineering, University of California, Irvine (www.uctc.net), 2003.

¹⁶ *Ibid.*

- **Public Access** – Open space offers the potential for public access to a variety of active or passive recreational opportunities. Public access, however, needs to be located at appropriate places, which will not compromise the character of the area.
- **Aesthetics** – Aesthetic landscapes lend appeal to a community and provide economic benefits as well. As documented in the following section, several studies indicate that land values bordering open space and recreation lands are higher than those in developed neighborhoods, suggesting that people are willing to pay for the aesthetic value derived from open space protection and recreation.
- **Social Interaction** – The advancement of open space and recreational opportunities can also expand the social network of the community. Residents can meet neighbors while hiking a trail, hold town festivals in newly-established parks, and work together to construct improvements to public open spaces.
- **Tourism** – A beautiful environment makes New Hampshire and the region an attractive place to live, work and visit. This in turn helps the region's economy and helps to attract businesses and visitors to locations where quality of life is an important factor.

In identifying and ranking important lands for open space, conservation or recreation purposes, the following criteria may be useful:

- **Potential linkages to existing open space**, recreation facilities, and to similar areas in adjacent communities.
- **Environmental sensitivity and importance of the parcel** such as the presence of aquifers, rivers, wetlands, wildlife and scenic qualities. This includes wildlife corridors, unique habitat, and endangered, threatened and rare species.
- **Areas with insufficient public open space** or existing open space areas threatened by continued development. Consideration should be given to land which can encourage town-wide distribution of open space and recreation.
- **Town-wide versus special group benefit.** The acquisition of land should benefit the town as a whole and not a select group of residents. The importance of addressing each need will depend on the specific goals of the town.
- **Outdoor recreation potential.** This is related to providing additional athletic fields as well as providing areas for greenways and trails that provide opportunities for hiking, walking, running, skiing, and biking.
- **Cost and availability of the parcel.** This should account for the amount of residents that are willing to pay to purchase open space (in the form of increased taxes) and the availability of funding sources that would be available if a particular property were targeted for acquisition.

- **The financial impact** that removing the parcel from development will have on the municipality. For example, a residential parcel may cost the town in services while a commercial property may be a positive contribution to the tax base.
- **Aesthetic benefits to the general public** and the preservation of community character. This can include scenic values, cultural and historic preservation and/or the overall agricultural and rural character of the community.



FIGURE 5-6: CONSERVATION LAND IN CANDIA

Source: Candia Conservation Commission

THE ECONOMICS OF OPEN SPACE

While open space and recreation offers many planning, ecological, and environmental benefits, clearly the economics of open space remains a hotly debated issue. In many communities throughout New Hampshire and the region, there are major debates among planning boards about the costs and tax consequences of open space and how it should best be managed and protected. In many communities, taxpayers are concerned about the trade-offs between increasing their property tax bills versus the environmental, recreational, and quality-of-life benefits of conservation and open space.

While it is difficult to quantify these trade-offs, especially in monetary terms, it is important to address several common misconceptions about open space and growth. The issues can be boiled down to two main lines of thought. The first holds that open space and recreation programs are expensive for municipalities and thus lead to higher taxes. The second contends that growth and more development produces more taxpayers and therefore lowers taxes.

Over the past few decades, there have been a number of important Cost of Community Services studies that have addressed these issues. The overall results show that communities who curb sprawl and implement smart growth principles, including land preservation, spend considerably less money than those municipalities with sprawl. In addition, the studies demonstrate that open space and recreation enhance property values and over time contribute to the stability of community tax rates by requiring fewer services.

COST OF LAND PROTECTION

In New Hampshire and other New England states, local governments are more reliant on the property tax than they are in other regions of the country. Local officials are often sensitive to changes in the tax base because property taxes are particularly burdensome to New Hampshire households with the least ability to pay, and many people across the state have already reached their limit. Because open space and recreation projects can involve complex land transactions, it is important that local officials and residents better understand the system of taxation in New Hampshire as well as the various costs and tax implications of preservation actions.

In 2005, the Trust for Public Land (TPL) released an important study entitled, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*. Looking at the unique relationship between property taxes and municipal revenue in New Hampshire, the study addressed the concern that land conservation increases property taxes. In short, the results of the 2005 TPL study indicated that while there are short-term tax consequences associated with the acquisition of permanent open space and land conservation; in the long term, residents pay fewer taxes overall with more open space and protected lands than residents in other communities.

IMPACTS OF THE COST OF LAND PROTECTION TO TAXPAYERS

According to the 2005 TPL study, the tax consequences of permanent land conservation projects vary according to the agency or organization acquiring the land. Federal, state and local governments do not pay property taxes. However, federal agencies do make payments in lieu of taxes of different amounts for fee-simple acquisitions. The State of New Hampshire also does not pay property taxes on the land it owns. However, the state does make a payment to the municipality that is based upon the amount of taxes that the land would pay if it were enrolled in the current use program, at an average value. Also, municipalities do not pay taxes to themselves. Therefore, land acquired by a local government comes off the property tax rolls and there is no payment in lieu of taxes.

Most private non-profit conservation organizations enroll the land that they own in fee in the current use program and pay taxes on it. However, a local government can waive the tax requirement. Most private non-profit conservation organizations are more likely to conserve land through conservation easements than through fee-simple acquisition. If the land was already assessed at current use there would be no change to the municipality after the acquisition of the easement. If the land was previously assessed at full value, there would be a decrease in the taxable value due to the easement. As a result, acquiring conservation lands by direct purchase comes at a quantifiable cost to the purchasing body, which in the case of a municipality impacts the taxpayers.

Calculating the net revenue loss due to the purchase can give taxpayers a starting point for evaluating whether the open space purchase is a worthwhile long-term investment for their community. However, the calculation of the tax effect of a particular open space or land conservation project is not well understood, mainly because removing the property from the tax rolls is not typically an expense that shows up in the budget, but rather it is a decrease in the revenue raising ability of the municipality.

Generally, the short-term tax effect of land conservation is the removal of land value from the tax rolls. In the short term, land protection, by fully or partially removing land from taxation, reduces

the tax base and results in a tax increase for a finite period. As a result, the taxes no longer paid on the open space or protected land must therefore be shifted to other taxpayers.

Since many municipalities often need to compensate for lost tax revenue, there can be a small, *short-term* tax increase for residents. To address this tax issue, municipalities purchasing conservation lands should clearly communicate to residents both the benefits of the open space to be purchased as well as the costs and benefits of the purchase itself.

In addition, there are measures in place by land conservation organizations to account for this tax base loss and avoid making residents pay the difference. Most of these measures are described in the next section on Land Protection Techniques. However, for the purpose of this section, it is important to point out that most open space and recreation land likely acquired through municipal action or through a private conservation group is obtained by donation or conservation easement. Open space and recreation land may also be obtained through conservation subdivisions. In each situation, the cost to the taxpayer is different, as described below:

- **Private conservation groups** – Private conservation groups generally put the land into current use and continue to pay taxes on it. These groups tend to seek open space through conservation easements, in which the owner continues to pay taxes on the land.
- **Conservation subdivision** – Open space land in conservation subdivisions is often owned by the developer, where it gets passed on to a Homeowner's Association. The taxation values are low because the land has lost its development rights, and taxes are paid through homeowner association dues by the residents of the subdivision.
- **Municipal lands** – When a municipality purchases land, they do not pay property taxes to themselves, so the property is removed from the tax roll. However, due to the Statewide Education Property Tax and Adequacy Aid (SWEPT), the total equalized value of the town would decrease with the lands removed from the tax roll. Therefore, "property rich" towns would have to send fewer property taxes to the state for education and "property poor" towns would receive greater adequacy aid from the state. While the SWEPT funds do not account for the total value lost, the resulting tax increase is slight (in the 2005 TPL study, the highest scenario of tax increase was a mere \$0.88 on a \$100,000 property).

State and federal government also have measures in place to account for municipal tax revenue lost through state and federal open space land acquisition. While these measures are not as likely to occur within the region, some of the basic procedures are noted below:

- **Federal lands** – If the federal government purchases land in New Hampshire, they do not pay taxes but instead pay two annual fees. One fee goes directly to the town's school district and the other to the town as a Payment In Lieu of Taxes (PILT).
- **State lands** – When the state purchases land in New Hampshire, the state pays the municipality the amount of taxes they would receive under current use value of the land. If the fees do not equal the amount of taxes the town would receive on that land under current use, the state pays the difference. In many cases, these fees often exceed the current use taxation values.

LONG-TERM BENEFITS OF LAND PROTECTION

The results of the 2005 TPL report also demonstrate that residents in municipalities with more permanently protected land pay fewer property taxes than municipalities with fewer permanently protected lands. The strongest indication of lower taxes comes in the form of commercial development, which generally offsets the financial demands resulting from residential development. All else being equal, the 2005 TPL study emphasizes, land protection does *not* result in higher taxes and generally results in lower taxes, dispelling the myth that land protection is costly over the long run.

The report also describes that the conservation of a single parcel does not have a large effect on the amount of development that will occur within a municipality. However, the strategic placement of certain conserved parcels can influence the direction and location of development, with the possible effect of confining development to proximate areas, which would ease the construction and servicing of infrastructure to new development.¹⁷

Several academic studies have also examined the relationship between open space and property values, indicating that properties bordering open space increase in value due to the quality-of-life increases associated with open space. Jacqueline Geoghegan's 2002 study of Howard County, Maryland, determined that land values on land located next to "permanent" open space increased three times more than land located near "developable" open space. These studies suggest that the property value increases derived from the open space additions can be used to fund current and future open space initiatives.¹⁸ These findings clearly indicate that there is greater land value due to proximity to permanent open space.

PAYOFFS OF OPEN SPACE

A study conducted during the mid-1990s by Philip A. Auger, Extension Educator, Forest Resources, University of New Hampshire Cooperative Extension, looked at the cost of community service for residential, commercial, industrial and open space land uses within the communities of Stratham, Dover, Fremont, and Deerfield. In each community, the study found that expenditures exceeded residential land use revenues by an average of approximately 12 percent. Conversely, for open space, revenues exceeded expenditures.

The results of this study, published in 1996, still ring true today as evidenced by a similar study for the Town of Brentwood, New Hampshire. This small town in southern New Hampshire, not far from Deerfield, had a population of 3,197 in 2000. Tax revenue generated from residential property

¹⁷ Trust for Public Land, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*, 2005, http://www.tpl.org/content_documents/nh_managing_growth_report.pdf.

¹⁸ Geoghegan, J., L.A. Wainger, and N.E. Bockstael. 1997. Spatial landscape indices in a hedonic framework: an ecological economics analysis using GIS. *Ecological Economics* 23(3): 251-264. Also Geoghegan, Jacqueline. 2002. The value of open spaces in residential land use. *Land Use Policy* 19: 91-98. And Hobden, David W. G.E. Laughton, and K.E. Morgan. 2004. Green space borders—a tangible benefit? Evidence from four neighborhoods in Surrey, British Columbia, 1980–2001. *Land Use Policy* 21(2): 129-138.

in the town fell short of the cost of school and town services by 17 percent, while open space lands revenue exceeded town service costs by 17 percent.¹⁹

While each town in New Hampshire has a unique blend of land uses, revenues and expenditures, these studies point out some fiscal consistencies that are likely to apply in most circumstances. One of these findings is that residential land use very often costs communities more than they generate in revenues. Traditional residential housing brings with it a tremendous cost load in community services, roads, landfills and schools.

Open space lands are often a net asset to New Hampshire communities, and contribute to the stability of community tax rates. If land is taken out of open space and converted to housing, it will often cost far more than it generates in taxes. This has been supported by other well-documented fiscal impact studies in New Hampshire communities, including Milford and Londonderry.

The 1990 fiscal impact analysis of housing costs in Milford estimated that the community needed to raise approximately \$2,073 for each new three bedroom home above and beyond taxes and fees generated by homeowners.²⁰ In addition, a 1989 study by Statewide Program of Action to Conserve the Environment (SPACE) compared the taxes generated and community costs of a 330-acre Londonderry apple farm enrolled in current use to those generated if the open space were converted to a 290 single family residential housing development. As a working farm enrolled in current use, it was generating \$18,830 per year above the cost of services it required from the town. By contrast, the development would have cost the community \$643,710 per year (\$2,220 per home) above and beyond taxes and fees generated.²¹

Another analysis completed by the Society for the Protection of New Hampshire Forests (SPNHF) found that open space based on economic activities contributes \$8.2 billion dollars to the New Hampshire economy each year (for 1996/1997).²² The report found that the gross direct income from agriculture related activities was \$413 million; income from forest related activities was \$1.2 billion, and the income from tourism and recreation spending was almost \$3.2 billion.²³

In another study, the National Association of Home Builders found that it is not uncommon for the value of building sites to be enhanced by 15 to 20 percent in the vicinity of park and recreation areas.²⁴ The increased value to the landowner is also shared by the municipality, because when relative property values are higher, then assessed valuations and tax revenues will also be higher. In summary, it can be concluded from these studies that in the short-term, the permanent protection of land results in a tax increase. However, there are no tax increases in the following situations:

- When the land is acquired by the federal government and the federal payments exceed the tax loss (which is only likely if the land is already assessed at its current use value).

¹⁹ Brentwood Open Space Task Force. Does Open Space Pay in Brentwood? Part 1: Housing Growth and Taxes. May 2002.

²⁰ Does Open Space Pay?, prepared by Philip A. Auger, Extension Educator, Forest Resources, University of New Hampshire Cooperative Extension, page 6.

²¹ Ibid., page 6.

²² The Economic Impact of Open Space in New Hampshire, The Society for the Protection of New Hampshire Forests, January 1999, page 2.

²³ Ibid.

²⁴ National Association of Homebuilders, *Business NH Magazine*, October 1998.

- When a conservation easement is placed on the land and the land is already enrolled in current use.
- When the state or federal government acquires land already enrolled in current use and it is valued at or below the “average” current use value the state uses to calculate the state payment.

Thus, the short-term tax implications of land protection can be easily calculated so that the costs of “carrying” the conservation land can be made explicit to voters and taxpayers. The overall tax impact in any municipality depends not only on the type of land conservation proposed, but also on the municipality’s tax rate, total assessment, and property valuations per pupil.

In the long-term, contrary to the common perception that development will bring lower taxes, property tax bills are generally higher in more developed municipalities than in rural towns. The tax bill on a typical dwelling unit is on average, higher in municipalities where there are more residents and/or more buildings.

In general, municipalities with more development have higher tax bills. However, this does not mean that every development will increase taxes. All else being equal, property taxes are likely to be somewhat lower if the community tax base has a high proportion of nonresidential property to help offset the costs of residents.

Property tax bills are not higher in municipalities that have the most permanently protected land – conservation land or easements owned by a government agency or conservation organization. In fact, tax bills are generally lower in these towns. Thus, for town residents, it can be concluded that open space land does not increase, and in many cases decreases, residents’ taxes, based on infrastructure savings and improved property values.²⁵

However, land protection alone does not lead to lower taxes. Open space protection and recreation often redirect rather than preclude development in town. Over the short-term at least, the amount of development a municipality is likely to experience will probably not be changed by the conservation of a single parcel of land. Instead, the conservation of certain key parcels may influence the location and pattern of development, which may make providing municipal services more efficient.

Over the long term, open space preservation will affect the ultimate “build-out” of a municipality by limiting the amount of land that can be developed. This may reduce the total amount of development and/or change the pattern of development from one of sprawl to one with denser development in designated areas with coherent patches of open space. From a planning perspective, it is only logical that it is less costly for a municipality to provide services to open space or clustered development than scattered development.

There are also many good reasons why a municipality may want both development and open space. The property tax implications and economics should only be one part of a municipality’s future vision.

²⁵ Trust for Public Land, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*, 2005, http://www.tpl.org/content_documents/nh_managing_growth_report.pdf.

SUMMARY OF THE REGION'S PROTECTED LANDS

Open space and conservation lands provide opportunities for many different recreational activities. These can range from developed, intensively used parks to somewhat remote experiences. While some parcels in this inventory may contain areas managed expressly for recreation, a majority of these lands may also be managed with a broader set of goals in mind. These broader management goals might include preserving wildlife habitat, maintaining productive forest or agricultural lands, or protecting water quality or rare or endangered species. In some cases, such as the state forests, the protected lands may only be available for dispersed low impact recreation. In other cases, public access might not be available at all. Access varies and it is important to know and respect the landowner wishes before entering public or private held conservation lands.

The conservation lands shown on Map 5-7 include the parcels of land that have been protected in one form or another principally by the primary protecting agency. This information was originally gathered from a variety of state, regional and local sources under the direction of The Society for the Protection of New Hampshire Forests, as a result of multiple efforts and projects. The digital archive of this database is managed by NH GRANIT at Complex Systems Research Center at UNH and is available to the public through the GRANIT system.

From the many attributes available in the database, the classification scheme chosen for this chapter is the primary protecting agency or organization. As the name implies, this is a description of the agency responsible for assuring that the parcel is under protection. In some cases, however, this may or may not be the owner of the parcel and the type of protection may vary depending upon the ownership restrictions on the land. There are a variety of other attributes available for each parcel contained in the database, including the type of easement or protection in place, the level of protection, and the degree of public access available for the parcel.

The categories chosen for the display of primary protecting agency are:

- 1) Town government
- 2) State agencies
- 3) Federal agencies
- 4) Private entities/individuals
- 5) Other public/quasi-public entities including organizations such as school or water districts, historical societies, and in a few instances, there are parcels along the town lines, which are protected by adjacent towns

PROTECTED LANDS ANALYSIS

Based upon GRANIT's existing conservation lands database, there are a total of 718 parcels identified as protected lands within the region. The majority (515) is classified as Town ownership; 53 are owned by the State, and 27 are owned by the Federal government. The remainder (123) is owned by private and other public or quasi-public entities.

The largest number of protected parcels (115) is located within the Town of Bedford, followed by 102 parcels located within the Town of New Boston. The fewest number of protected land parcels (17) are located in the Town of Raymond (see table 10.1 below). The Town of Deerfield, on the other hand has the largest amount of protected land (19,519 acres), followed by the Town of

Weare (13,393 acres). The Town of Chester had the smallest amount of protected land (1,233 acres).

The largest single holding is Bear Brook State Park containing 9,472 acres within the Town of Deerfield. The total land area in the region under protection is approximately 63,615 acres, equivalent to about 20 percent of the region's total land area of 314,640 acres.

TABLE 5-9: PROTECTED LANDS BY MUNICIPALITY IN SNHPC REGION

Municipality	Number of Protected Parcels*	Acreage of Protected Parcels	Percent of Region**
Auburn	93	3,937	6%
Bedford	115	1,876	3%
Candia	42	2,965	5%
Chester	34	1,233	2%
Deerfield	58	19,519	31%
Derry	38	1,623	3%
Goffstown	80	2,510	4%
Hooksett	20	2,442	4%
Londonderry	68	2,260	4%
Manchester	58	2,918	5%
New Boston	102	7,570	12%
Raymond	17	1,389	2%
Weare	87	13,393	21%
TOTAL	812	63,635	

*Note: Some of the parcels overlap adjoining towns, therefore the actual total number of parcels is 718

**Note: Percent Rounded Up

Source: NH GRANIT, April 2006

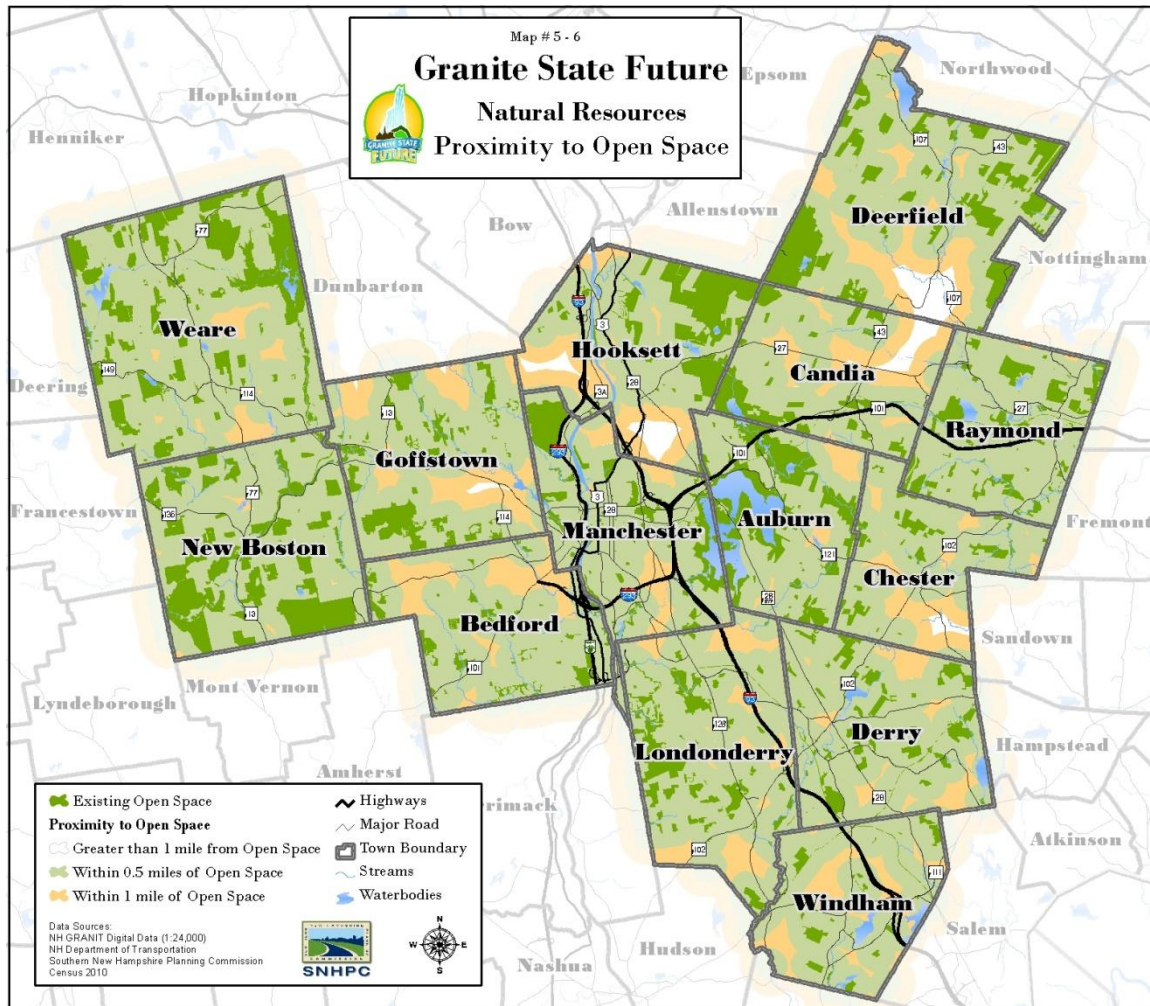
SUMMARY OF THE REGION'S 2004 LOCAL RESOURCE PROTECTION PRIORITIES – NATURAL RESOURCES

During the first and second years of the NH DES Regional Environmental Planning Program (REPP) each community within the region was given an opportunity to recommend local historical, natural, and cultural resources worthy of protection. SNHPC staff worked extensively with local conservation officials and commission members during 1997 and 1998 to assist with this identification. The land areas and sites identified for protection included ecological, historical and cultural resources, forestry and agricultural resources, and water resources.

The location of each of these resources was documented as a point location by SNHPC on a map titled Natural and Cultural Resources Identified for Protection. The associated database includes all the information offered by the communities and the information that SNHPC had available through the GIS databases, and other resource projects were also included and listed by community in a report titled Natural and Cultural Resources Inventory. However, none of the areas shown on the map or identified in the report were prioritized at the time.

All of the locally defined natural resources as identified in Map 5-6 are important in terms of defining a future open space framework for the region. These resources are also important given their proximity to existing protected and conservation lands and the contribution they provide in preserving large tracts of unfragmented land. When combined with the region's existing protected lands, state parks, forests and recreational areas, a regional framework for future open space and recreation can begin to be developed.

MAP 5-6: PROXIMITY TO OPEN SPACE



Source: SNHPC

SUMMARY OF THE REGION'S STATE PARKS, FORESTS AND RECREATION AREAS

State lands under the jurisdiction of the New Hampshire Department of Resources and Economic Development (NH DRED) are referred to as "reservations" by state law. RSA 227-G:2 defines "reservation" as public land under NH DRED including, but not limited to: state forest, state park, natural area, historic site, geologic site, recreation trail, memorial area, fire tower, wayside area, heritage park, resource center, agricultural area, state forest nursery, fish pier, administrative facility, information center, demonstration forest, certain islands, and lands under lease to the department.

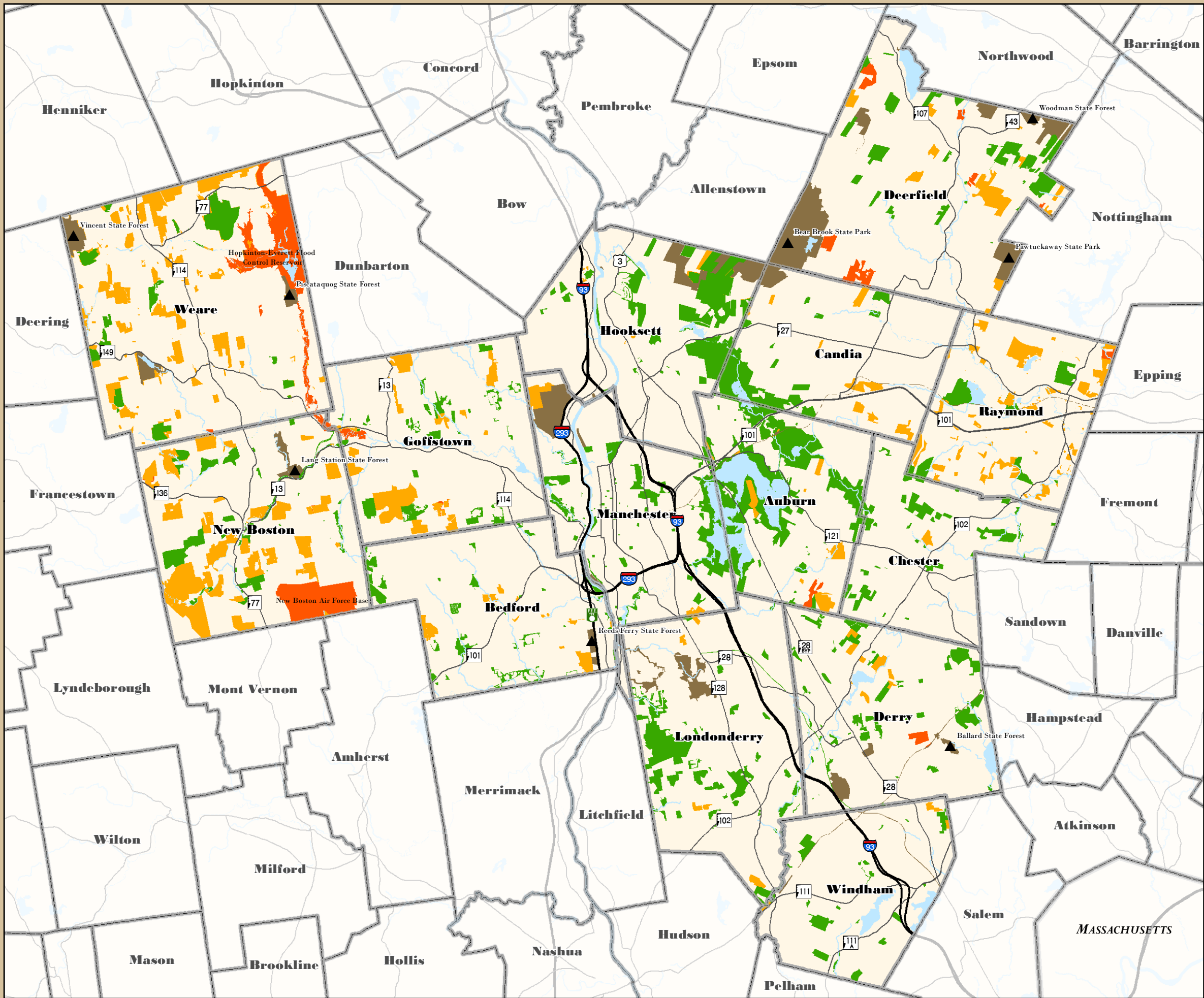
Within the Southern New Hampshire Planning Region, there are currently a total of 15 reservations consisting of 4,900 acres located within 9 of the 14 municipalities. These include three state parks, five state forests and five other lands. The average overall size of each of these 15 parks, forests and other lands is 326.72 acres (See Table 5-10).

TABLE 5-10: STATE RESERVATIONS – SNHPC REGION

Municipality	Reservation	Town Acreage	Property Acres
Bedford	Reed's Ferry State Park	122.5	122.5
Candia	Bear Brook State Park	263	10,083
Deerfield	Woodman State Forest	85.5	137.8
	Bear Brook State Park	1,945	10,083
	Pawtuckaway State Park	479.9	5,536.1
Derry	Frost Farm Historic Site	64	64
	Warner Hill Fire Tower	1.8	1.8
	Ballard State Forest	71	71
	Rockingham Recreation Trail	62	200
Hooksett	Bear Brook State Park	985	10,083
Manchester	Smith's Ferry Heritage Park	17.1	17.1
New Boston	Lang Station State Forest	242.7	242.7
Raymond	Pawtuckaway State Park	4.8	5,536.1
Weare	Piscataquog State Forest	160	160
	Vincent State Forest	396.5	633.8
	SNHPC Region Total	4,900.80	
	Average Size	326.72	

Source: State of New Hampshire, DRED, Division of Forest and Lands,
Source: Forest Management Bureau, May 23, 2005

Currently, the state of New Hampshire manages a total of 212 reservations consisting of 201,513 acres and 221 properties located within 145 towns throughout the state. Of these reservations, there are 212 state parks and state forests and 27 conservation easements administered by DRED. These reservations, parks and state forests range from 0.1 acre to 39,601 acres in size. The average size is 772 acres.



Map # 5 - 7

Granite State Future

Natural Resources

Recreational

Lands



- ▲ State Parks
- Town Lands
- State Agency Lands
- Federal Agency Lands
- Other Existing Open Space*
- ↔ Interstates
- ↔ State and US Routes
- Town Boundary
- ~ Rivers
- ~ Lakes

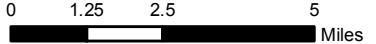
*Other Existing Open Space includes lands from conservation sub-divisions, private entities such as land trusts, public organizations, etc.

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities

The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2013.
Contact: SNHPC, gis@snhpc.org or (603) 669-4664



Location Map

State Parks and Forests

State Parks are properties with developed or otherwise specific recreation uses available to visitors. Most offer activities such as swimming, hiking, camping, picnicking and hunting but not necessarily to the exclusion of other uses such as timber management, water resource protection and wildlife habitat management. State Forests are properties associated with undeveloped forest land managed for many uses including demonstrations of sound forestry practices, public access for forest-based recreation, protection of threatened and endangered species, preservation of historic resources and rural culture, and conservation of biological diversity.

All state parks and forests are open for public use. Some state parks and forests have natural preserves and sites of geologic and historic interest. Bear Brook State Park, for example, in the towns of Allenstown, Deerfield, Candia and Hooksett offers both developed and undeveloped recreation (e.g. woods roads and skid trails for hiking), wildlife and natural preserves, and timber management areas.

Other Lands

Other lands include conservation easements and reservations not associated with a state park or forest that are managed or operated for a specific purpose or program. Examples of other managed lands include Frost Farm Historical Site (64 acres) in Derry and Smith's Ferry Heritage Park (17.1 acres) in Manchester. At the present time, there are no conservation easements held on private property administered by NH DRED within the Southern New Hampshire Planning region.

Land Classification of State Parks and Forests

Every acre of state parks and forests is classified by the state into one of four major land use categories: (1) agricultural lands, (2) conservation easements; (3) forestry lands, and (4) recreation lands. Forestry lands are further classified into key resource areas based on identified forest resource values. Key resource area designation is based on recognized natural values or dominant features such as mountain tops, key sources of wildlife food and cover, scenic areas, cultural and natural heritage features, and water resources. In this manner, management emphasis can be placed on conserving and enhancing the highest and best forest land values for public benefit.

All of the state parks, state forests and other lands owned by the state located within the Southern New Hampshire Planning region are described below.

STATE PARKS

Clough State Park

Route 13, Weare, NH

This state park is located about five miles east of the Town of Weare on the shoreline of Everett Lake, a 150-acre lake formed by a dam on the Piscataquog River. Activities in the park include swimming, picnicking, playing fields, fishing and boating. A boat launch is available for small boats or canoes (motorized boats are not allowed). The park is open weekends only from Memorial Day and daily from late June through Labor Day.

Bear Brook State Park

Route 28, Allenstown, NH

Bear Brook State Park is the largest developed state park in New Hampshire consisting of nearly 10,000 acres.

Roughly 283 acres of the park are located within the Town of Candia, 1,945 acres are located within the Town of Deerfield and 985 acres are located with the Town of Hooksett. However, the vast majority of the park is located within the Town of Allenstown. Bear Brook State Park serves much of the southeast region of the state.

The park offers hiking, boating, swimming, fishing and camping. There are roughly 40 miles of trails through the heavily wooded forests, leading to seldom visited marshes, bogs, summits and ponds. These trails offer a variety of options for hikers, mountain bikers, and equestrians. Canoe rentals are available at both Beaver and Catamount Ponds, while rowboat rentals are also available at Beaver Pond. Fly-fishing is also available at the park. There are also two archery ranges and a 1 and ¼ mile, 20-station fitness course. Bear Hill 4-H is also located in the park. A day-use fee is collected at the toll both near Catamount Pond.

Pawtuckaway State Park

128 Mountain Road, Nottingham, NH

Pawtuckaway State Park contains approximately 5,536.1 acres. The majority of the park is located within the Town of Nottingham, however, roughly 479.9 acres are located within Deerfield and 4.8 acres are located within Raymond. Similar to Bear Brook, Pawtuckaway State Park serves most of Southeast New Hampshire. This large state park contains numerous exemplary natural communities and rare plant populations. It has a little bit of everything, from rare river birch trees along the shores of the lake, to black gum and Atlantic white cedar swamps in the undulating lowlands, to rocky ridges and rich woods on the mountains to the west. There are also marshes, boulder fields, ponds and peatlands. An extensive trail network allows for exploration of large amounts of the park area.

Pawtuckaway State Park offers a variety of landscapes for hiking with trails leading to many special points, including a mountaintop with fire tower; an extensive marsh with beavers, deer, and great blue herons; and a unique geologic field with large boulders called glacial erratics which were deposited when glacial ice melted near the end of the ice age.

The park also includes a campground and beach area along the shoreline of Pawtuckaway Lake. Other activities at the park include biking, fishing, snowmobiling, and cross-country skiing. The park is open for day use on weekends between Memorial Day weekend and June 20, and then daily until Columbus Day.

STATE FORESTS

Reed's Ferry State Forest

The state acquired this forest in Bedford in 1977. It is roughly 220 acres in size. There are no developed recreation opportunities, but passive outdoor recreation use is allowed. Some of the land may have existing forest management roads.

Woodman State Forest

The state acquired this forest in Deerfield in 1933. It contains 137 acres. There are not developed recreation opportunities, but passive outdoor recreation use is permitted. Some of the land may have existing forest management roads.

Ballard State Forest and Taylor Sawmill Historic Site

The 200-year old "Taylor Up and Down Sawmill" is cooperatively maintained and run by the Division of Parks and Recreation and the Division of Forests and Lands Community Forestry and Stewardship Bureau. The site is located on the 71-acre Ballard State Forest in Derry. The entire property, including the sawmill, the house nearby, and seven acres of land, were donated to the State of New Hampshire.

Lang Station State Forest

The state acquired this forest in 1993 in New Boston. It is roughly 226 acres in size. There are no developed recreational opportunities, except for passive outdoor use. Some of the forest may have existing forest management roads.

Piscataquog State Forest

The state acquired this forest in 1953 in Weare. It is 160 acres in size. There are no developed recreational opportunities, except for passive outdoor use. Some of the forest may have existing forest management roads.

Vincent State Forest

The state acquired this land in 1936 in Weare. It is roughly 638 acres in size. There are no developed recreational opportunities, except for passive outdoor use. Some of the forest may have existing forest management roads.

OTHER LANDS

Frost Farm Historical Site

Derry

The Robert Frost Farm State Historic Site consists of 64 acres located within the Town of Derry. The site includes the home of Robert Frost and his family from 1900 to 1909, which consists of a simple two-story white clapboard farm house typical of New England in the 1880s. There is also a nature and poetry trail at the site.

Warner Hill Fire Tower

Derry

The Warner Hill Fire Tower is 41 feet high steel tower. It was constructed in 1939 with New England Forest Emergency funds. During the Second World War the tower was altered at least twice and used for aircraft detection by the Aircraft Warning Service. After the war the extra levels were removed and a new cab installed. It remains in service today.

Rockingham Recreation Trail – Portsmouth Branch

Manchester, Auburn, Candia, Raymond

The Rockingham Recreation Trail is a rail trail owned by the State of New Hampshire but managed by the Bureau of Trails, which is a part of NH DRED. The trail serves as a multiple-use recreational trail. Permitted uses include equestrian, hiking, biking, dog sledding and snowmobile use. The Portsmouth Branch is 24 miles long extending from the east side of Manchester at Lake Massabesic through the towns of Auburn, Candia and Raymond to the Rockingham Junction in Newfields. Parking is provided at either end of the trail.

Rockingham Recreational Trail – Manchester/Lawrence Branch

Manchester, Londonderry, Derry and Windham

The northern leg of the Manchester/Lawrence Branch of the Rockingham Recreational Trail is 3.3 mile long. It extends from Manchester at the former Lawrence line south through the Town of Londonderry to the Derry town line. The southern leg of the Manchester/Lawrence Branch extends north from the towns of Salem and Windham through the Town of Derry to Epping, where it connects with the Portsmouth Branch of the Rockingham Recreational Trail.

Smith's Ferry Heritage Park

The state acquired this park in 1992 in Manchester. It is roughly 17 acres in size. There are no developed recreational opportunities, except for passive outdoor recreation use such as walking and bird watching, etc.

Manchester Cedar Swamp

This preserve is located within Manchester and is open to the public for recreation and education purposes. The preserve is owned and managed by The Nature Conservancy, but it has been included in the New Hampshire Natural Heritage Bureau's Visiting NH Biodiversity project. Four

different kinds of Atlantic white cedar swamps have been described in New Hampshire. The type at Manchester Cedar Swamp is the globally rare Atlantic white cedar – giant rhododendron swamp. It occurs at fewer than ten swamps in New England, and this is the only one north of Massachusetts.

BIKEWAYS AND GREENWAYS

SNHPC is currently participating, along with NHDOT, Rockingham Planning Commission and local trail stakeholder groups in a Regional Trails Coordinating Council (RTCC). The Council, formed in 2010, is designed to build upon the past work of the Manchester Regional Trails Alliance that also included Goffstown, Bedford, Londonderry, Auburn, Derry and Hooksett. The primary goal of the RTCC is to assist member organizations in the development and implementation of a comprehensive trail plan. The RTCC strives to connect existing and planned trail networks in the region by providing a forum for cooperation and collaboration among trail organizations. It also serves as an information clearinghouse for regional trails stakeholders. The goals of the RTCC, but are not limited to the following:

- Assist in the development of individual trails to form a continuous network in the southern and central regional regions of the State of NH;
- Develop maps of the region's trail network, including completed as well as planned and missing segments, and their conditions;
- Identify and assist in obtaining available public funding (state, federal, etc.) for trail use;
- Identify and assist organizations in obtaining available funding;
- Identify and prioritize trail segment development tasks;
- Provide forums and events to educate the public as to the importance of non-motorized multiuse trails in the health and quality of life of the regions;
- Combine and augment the passion of volunteer groups and the power of regional planning commissions to achieve common missions and values to accomplish common goals while, as necessary, overlapping jurisdictional boundaries.

Recognizing the value of trail projects to municipalities, the RTCC will be responsible for developing and implementing a comprehensive plan to complete north/south and east/west corridors. Currently, there are portions of regional trail systems that are in various stages of completion. To facilitate completion of these facilities, the RTCC would be responsible for identifying and pursuing sources of funding, developing fundraising programs, bike tours, grant writing, and prioritizing trail sections to be completed. It is hoped that a prioritized program of projects with a funding plan can be developed for completing these north/south and east/west trail corridors.

As of 2013, the regional trails network is a patchwork of local trails that have not yet been connected. The longest paved trail includes the Windham and Derry Rail Trails with a continuous 8 miles of trail between the two towns. Manchester has three paved trails: the South Manchester Trail, the Piscataquog Trail, and the Riverwalk/Heritage Trail. These trails are no longer than two miles each in length, and not all connect. Unpaved trails include the Goffstown Rail Trail, and the

Rockingham Trail, which is managed by NH DRED and continues to the Seacoast region of NH. The Head's Pond trail is a short trail with a smooth hard packed surface. This trail may someday

become part of a Manchester to Concord connection. See Map 5-9 on page 68 for an inventory of existing trails in the Southern New Hampshire Region

OPEN SPACE PROTECTION TECHNIQUES

There are a variety of techniques many communities throughout the region have used for open space and land protection. Many of these techniques are described in more detail in Dorothy Tripp Taylor's handbook *"Open Space for New Hampshire, a Tool Book of Techniques for the New Millennium."* Information from this handbook as well as the Regional Open Space Plan prepared by Rockingham Planning Commission (March 2000) has been adapted for use here. For the purpose of this chapter, these techniques have been broken down into five areas:

- Public Outreach and Landowner Contact
- Voluntary Protection
- Land Acquisition
- Regulatory Measures
- Open Space and Recreation Planning

PUBLIC OUTREACH AND LANDOWNER CONTACT

Protecting open space must be approached for the public good of all citizens in mind, including the landowner(s) who own the land to be protected. Ideally, if the needs and benefits of open space and recreation were acknowledged by all the residents of the community, landowners would cooperate more with municipalities to sell their land or property rights with fair compensation. However, this is not an ideal world and municipalities and conservation groups often face the challenge of reaching out to residents to persuade them of the importance and the benefits, both social and economic, of open space.

Public education campaigns are an important first step. Many communities across the state and within the region are utilizing the facilitation services of their Regional Planning Commissions. There is also the Natural Resource Outreach Coalition (NROC), which provides an excellent forum for public education to occur. NROC is coordinated through the Community Conservation Assistance Coordinator of the UNH Cooperative Extension Office. This program allows residents to discuss growth related issues and concerns and to identify conservation lands by focusing on the need to protect lands based on natural resource values, large parcels of land, and "hot spots" within the community without identifying specific parcels or landowners.

With community outreach, education and cooperation, landowners and developers will be more eager to conserve their land through easements, conservation subdivision options, and the sale of property. Communities must recognize that not all parcels perceived to be of highest conservation value will be available for purchase. However, when landowners are contacted and approached with correct information about the benefits of land protection they may be more likely to sell or donate their land. This is particularly true with regard to the income and estate tax benefits of land conservation, as these benefits can be some of the most influential ways to acquire and protect open space. Ultimately, the most successful protection technique will depend upon the specifications of the property and the needs of the landowner.

VOLUNTARY PROTECTION

There are two primary voluntary land protection methods available that can permanently protect privately held open space and conservation areas. These methods include: the donation of land and conservation easements (see Appendix A for more information related to tax benefits, funding and easements).

Donation of Land

The outright donation of open space lands is the least expensive option to protect land. The benefits to the landowner are reductions in a variety of federal, state, and local taxes. There are at least five methods of donation: fee simple, less than fee simple, donation with a reserved life estate, donation of an undivided interest in the land, and donation by bequest. The fee simple method is a gift of the entire interest in the property. Full legal title passes directly to the beneficiary (the community or conservation group), and the landowner no longer possesses any control over the land. However, the landowner may specify in the deed that the land is to be used solely for a specific purpose, such as tree farming or agriculture.

Less than fee simple is a gift of partial interest in the property. The landowner retains legal title to the property, but must give up some of the rights (for example, development rights, timber rights, mining, etc.). The donation with a reserved life estate occurs when a landowner donates property to the community or qualified conservation organization, but retains possession and use of the property for his/her lifetime and/or the lifetime of other family members. A donation of undivided interest in land is a gift of a percentage interest in the land, not any specific, physical portion. As a result, the land as a unit will be owned as tenants in common by those parties who have interest in the property. Donation by bequest occurs when a landowner donates land in his or her will to the community or conservation group. In such cases, the donated land is not subject to estate or inheritance taxes.

Conservation Easements

Conservation easements provide permanent protection from uses of land that could damage or destroy its scenic, ecological, and natural resource values. The easement operates on the premise that the right to develop a parcel is separable from the ownership of the land. Thus, it provides practical options for private landowner's who wish to protect their land while retaining ownership. Generally, easements are donated (although they may be sold) to qualified non-profit conservation organizations or public agencies, which ensure that the conditions of the easement are fulfilled.

To be effective, the terms of the easement must run with the land and apply to all future owners. Whether purchased or received as a donation, an easement can be a much less expensive method of payment than a fee simple purchase for two reasons. First, the outright cost of acquisition will be less since not all of the land rights are being acquired. Second, the ongoing cost of ownership including maintenance, liability, and property taxes continue to be borne by the owner. The sale of a conservation easement is often referred to as the purchase of development rights. Purchasing development rights allows the landowner to receive monetary compensations for the land's development value without having to convert the land to other uses. Once the development rights are sold, the owner still retains the other rights associated with property ownership. The owner is still responsible for property taxes, which should be assessed only on the non-development

potential of the land. However, if the land was already assessed at its current use value, there would be no change in assessed value.

There are also several tax incentives that make conservation easements attractive. These benefits include an increase in estate tax exclusions, a reduction in capital gains tax rates, and several other options available for estate tax planning. In donating development rights, landowners can receive a reduction in local property tax, federal income tax, capital gains tax, and estate tax. Generally, there are at least four methods by which communities and qualified conservation organizations can acquire development rights: direct purchase of the rights; purchase and resale with restrictions; purchase and lease with restrictions; and donation of rights and/or easements. With all of these methods, the restrictions on development run with land, and are binding on future landowners.

An easement *does not* signify public use; rather, the landowner can determine the best use of the land, including granting permission for public access, recreation and use.

Land Acquisition

The primary methods available for the purchase of land include: fee simple purchase, purchase and leaseback, purchase and resale or lease, the acquisition of development rights and conservation easements, options to purchase, and rights of first refusal. These methods all involve the protection of land through the direct acquisition and control of land, or some portion of the land. They are also very dependent upon the needs of the landowner, the sources of funding available to the community, and the nature and extent of the land and development rights that can be purchased by the municipality.

In the case of an outright purchase, the town buys the property at market value from the current landowner. There are no tax benefits or exceptions for either party, and the Town no longer receives taxes on the land. This is the most costly method of land protection but requires no special arrangements with the landowner.

A bargain sale is an agreement of discounted sale to the Town. The landowner agrees to sell his/her land below market value, and the difference between fair market value and the sale price becomes a tax-deductible charitable donation. Bargain sales are also useful for the landowner in minimizing the liability of a long-term capital gains tax associated with selling a large estate. After the sale, the Town retains all rights and responsibilities over the land.

Finally, the Town can purchase or acquire conservation easements over the land, which means the owner still maintains ownerships and tax responsibility but is prohibited from developing the land. The owner of the easement purchases development rights, which is usually calculated to be the fair market value of the land for development purposes minus the value of the land for open space or agricultural purposes. The Town gains the responsibility of easement stewardship, which means monitoring the land to ensure that the agreements of the easement (generally a lack of development or disturbances) are being followed. While these methods are described for use independent of other strategies, they can also be creatively combined to protect more land for less money.

Fee Simple Purchase

Fee simple acquisition is the most straightforward approach to land protection. The land, and all the property rights that go with it, are acquired. Assuming the agency acquiring the land is tax exempt, the entire value of the property is removed from the municipality's tax rolls.

Most protected lands are held in fee simple ownership where the holder of title of land possesses all rights associated with the property. This common method of protecting open space has traditionally been through the direct purchase of property. An important consideration is that open space lands protected using fee simple acquisition are often purchased at or close to fair market value based upon development potential. Purchasing open space lands at fair market value can be prohibitively expensive, and can seriously limit the amount of land that can be protected. Fee simple purchases can also involve private organizations or state agencies that often make payments in lieu of taxes.

Though land purchased for conservation purposes will no longer generate property taxes, it will not demand much in the way of public services. In addition the sale of a property for less than its full market value, known as a bargain sale can also be useful during a fee simple purchase. There are other options that can help recover the costs associated with a simple purchase. These include purchase and leaseback, and purchase and resale with covenants, although they are rarely used in this region. The first option – purchase and leaseback – allows the purchaser (community or conservation organization) to lease the land back for a particular use compatible with open space preservation (such as farming or forestry), thus recouping a portion of the land's purchase price. Lease agreements should be written in a manner that will protect the interest of the community while being sensitive to the landowner's needs. Another option – purchase and resale with covenants – allows the land to be resold with a deed committing the buyer to maintain the parcel as open space or limit the nature and extent of development allowable.

Bargain Sale

This is the sale of property for less than its full market value. It can be considered a combination land sale and charitable contribution. One motivation for the landowner is the income tax benefit from the charitable donation. The amount deductible for income tax purposes is the difference between the land's fair market value and the actual sale price. In addition to a charitable contribution, landowners can receive the following benefits: cash from the sale, a capital gains tax reduction, the avoidance of brokerage fees, and the avoidance of a higher tax bracket which could otherwise result from a full value sale of the property.

Options to Purchase and Rights of First Refusal

If a community cannot afford to purchase a site immediately, an option to purchase, or the right of first refusal, may allow a community some time to raise the necessary funds. An option establishes a price at which the community could purchase the land during a specified period of time.

REGULATORY MEASURES

For local government, regulatory measures are perhaps the most cost-efficient means of land preservation. If implemented according to the open space priorities of the community, these measures can be extremely effective in curbing sprawl and protecting open space. Some of the most important regulatory measures include natural resource overlay and agricultural zoning techniques, open space development and conservation subdivisions, transfer of development rights, and growth management ordinances. Zoning is also an important tool that can be used to help protect open space within a community. NH RSA 674:21, Innovative Land Use Controls, permits environmental characteristics zoning, intensity and use incentives, cluster development, and several other innovative land uses, many of which can be incorporated in zoning approaches which promote the conservation of open space and recreation.

Environmental Characteristics Zoning

Generally, environmental characteristics zoning involves overlay districts that are superimposed on existing zoning districts. Proposed development must comply with the requirements of both the underlying district and the overlay district. A natural resource overlay district adds additional restrictions and requirements to those of the underlying district. Overlay districts can be applied to a variety of natural features including, but not limited to, floodplains, wetlands, aquifers, steep slopes, rivers, streams, ponds, and lakes. There are many examples of overlay districts in many of the communities within the region. However, as a foundation to a proposed natural resource overlay district, the master plan needs to identify and outline the importance and/or threat to the resources contained within the district.

Agriculturally Friendly Zoning

To help protect the rural qualities of the region, the ability to sustain agriculture is a vital part of the visual landscape. There are a variety of zoning tools that have been developed to help communities preserve rural character through agricultural preservation. A resource kit called *Preserving Rural Character Through Agriculture* (Kit 77) was made available in 1999 from the UNH Cooperative Extension. Communities should update their master plan detailing the importance and/or threat to agricultural resources within the community, as well as the region, prior to adopting agricultural friendly zoning provisions.

Open Space Development and Conservation Subdivision Ordinances

An Open Space Development or Conservation Subdivision is a residential or mixed-use development in which a large portion of the site is set aside as permanently protected open space, with the buildings clustered on the remaining portion of the land. A Conservation Subdivision Ordinance gives specific criteria that developers must meet and these criteria will vary by town. Some of the main advantages of this arrangement include its efficiency and low-cost relative to other protection methods, and its ability to maintain rural character while still allowing development. Drawbacks include resistance from residents concerned with increased density and more complex governance of the resultant open space.

In most conventional developments, developers do not provide open space or recreation. The lots are typically drawn first, thereby eliminating many of the significant natural features. An open space development however can incorporate an incentive based approach to entice developers to set aside open space in perpetuity. An Open Space or Conservation Development Ordinance

promotes the protection of open space by allowing buildings to be clustered on the area of the parcel that is best suited for development. At the same time, the remainder of the parcel is left undisturbed.

OPEN SPACE DEVELOPMENT VERSUS CONSERVATION SUBDIVISION

Conservation subdivisions, like open space developments, set aside open space land and increase the density of individual lots. However in conservation subdivisions, open space land is placed under an easement for permanent protection from development. More significantly, conservation subdivisions consider the natural features of the landscape and natural vegetation when laying out parcels for homes and for open space areas. Focus is placed upon connecting sensitive resources, unfragmented lands, and trails rather than setting aside the most convenient parcel for open space.

These ordinances can permit developers to build the same number of units allowed in a conventional subdivision while setting aside a certain percentage of the land as open space. Another incentive based method may allow a developer to build additional units, as a bonus and include less rigid dimensional requirements, in return for requiring a greater amount of open space to be preserved.

For almost all open space developments, both the development and service/utility costs are lower than for conventional developments due to shorter roads and utility lines and reduced site preparation costs. Most importantly, communities can use this technique in order to create interconnected parcels of permanent open space. To ensure that the open space is protected, typically a legal document must be recorded. There are different types of ownership of the open space. It can be deeded to the community, held in a conservation easement or included as part of a homeowner's association.

Promoting open space, conservation or clustered developments is one of the few concrete actions that can be done through land use and zoning controls to protect open space. It is also one of the most important. Unfortunately, there are several communities within the region that have attempted to make this form of development mandatory instead of optional. This has generated some mistrust and disuse of the concept. Still, where this concept remains optional, and there are incentives and cost reductions to developers, it is widely taken advantage of. A better balance among all the communities in the region is needed to place conservation or cluster development on an equal footing.

Another form of voluntary conservation subdivisions exists as the "Village Plan Alternative," as described in RSA 674:21. This stipulates that a developer must locate all development on 20 percent of the developable property to allow for maximum open space. The open space area would be protected under a recorded conservation easement. The Village Plan alternative provides for an expedited application review process and it is subject to all ordinances and regulations with the exception of density, lot size, and frontage and setbacks.

Transfer of Development Rights (TDR)

Although this technique has never been used in this region, it is an extension to the purchase of development rights concept. It relies on the separation of development rights from other land ownership rights and adds to that the shifting of those rights from one location (the "donor" zone)

or zoning district to another (the “receiver” zone). A TDR program can protect critical resource areas by shifting the development potential from areas where it is least desirable to areas where it is most desirable.

Under a TDR program, landowners in the donor zone can sell property development rights directly to a landowner in the receiver zone or indirectly through a public agency who would then transfer the development rights to the town’s receiving area. The land to be protected would then be subject to deed restrictions barring future development. Although this technique holds great promise to protect open space without great public expenditures, it is comparatively complex and has not yet gained wide acceptance in New Hampshire. The success of a TDR program depends on a strong real estate market because without strong demand for development rights, just and timely compensation for the seller cannot be assured. Under the right market conditions, TDR can be an important conservation tool for protecting land at a very low cost to the community.

Growth Management Ordinance

A Growth Management Ordinance is often employed by municipalities experiencing population growth at a rapid pace where public facilities and services cannot keep up. They function by placing short or long-term caps on new residences or population numbers. Under certain circumstances, a town may adopt regulations to control the rate of development. In New Hampshire, a town must have both a master plan and a capital improvement plan before it can adopt any ordinances controlling the timing of development. In certain rapid growth situations, slowing the rate of development can give a community time to update its master plan, develop infrastructure, and consider ways to conserve open space. Methods include limiting the number of building permits, or an interim growth moratorium allowing the planning board to halt or severely limit development for up to one year.

OPEN SPACE AND RECREATION PLANNING

Open Space and Recreation Plans

A key tool for communities to proactively protect open space is to develop open space and recreation plans. Several towns within the region have adopted open space plans including Candia, Chester, Deerfield, Derry, Hooksett, Londonderry, Weare and Windham. The communities of Auburn, Bedford, Goffstown, New Boston, Manchester and Raymond have less formal plans, but nonetheless are actively pursuing various land protection efforts. Almost every community within the region has included open space and recreation as an element of their municipal master plan.

In order to promote the protection of open space, it is important to incorporate local goals and a protection strategy in an open space plan. It is equally important to review current zoning and subdivision regulations, identify key open space and resource areas and interconnections between them, identify and contact landowners of key undeveloped land and to inform them about the community’s conservation and open space objectives, prioritize areas to be protected through acquisitions of land, development rights or agreements, and establish a conservation fund through grants, the municipality’s CIP, current use tax penalties or other sources.

Smart Growth Principles

The preservation of open space is closely tied to smart growth principles and the largest threat to open space may be a community’s growth patterns. There are a number of smart growth

principles that can help to preserve open space and rural character. Some of these are incorporated into the following actions.

- Consider mandating future subdivisions to include open space provisions, integrating practices that protect sensitive environmental features of the development parcel.
- Provide incentives to developers building open space developments, including density bonuses, reduction of minimum lot standards, and a streamlined application process.
- Create areas where increased density will be allowed in exchange for protecting specific rural features.

Conservation Commissions

Conservation Commissions play a key role in the conservation and preservation of open space, including the development of open space plans. In addition, Conservation Commissions are heavily involved in the completion of natural resource inventories, the identification of specific areas worthy of protection, and potential greenways, trail networks, and connections to existing conservation lands. The Conservation Commission is usually the entity that oversees town forest management plans, which are specifically authorized by RSA 31:112. RSA 36-A:4 also allows Conservation Commissions to receive gifts of property and/or money for conservation purposes, subject to approval of selectmen. In addition, RSA 36-A:5, I authorizes Conservation Commissions to expend monies from the conservation fund without further approval of Town Meeting. This is a tool that more communities within the region should be using in order to leverage money for conservation easements or bargain sales.

Cost of Community Service Studies (COCS)

Measuring the public costs and benefits of land use and development is an important planning function for local government. One recognized method for analyzing municipal service revenue and expense is the Cost of Community Service Study (COCS) as made popular by the American Farmland Trust.²⁶ A COCS study compares all the revenues a community receives by land use type to all the community's expenses associated with that land use type. The results provide valuable information on the comparative service costs and tax revenues associated with different land uses within a community.

Several communities within the region such as Deerfield, Windham and recently New Boston have participated in or prepared a COCS. These studies typically indicate that for each dollar of tax revenue generated, open space land requires less than one dollar in public services and residential development requires over a dollar in public services. Commercial development generally falls somewhere in the middle. These results can be helpful in demonstrating the economic consequences of losing open space. They also serve as another practical tool for communities to use to strengthen the need for public expenditures for open space.

Natural Resources Inventories

A Natural Resources Inventory (NRI) is a summary in map form of a municipality's protected and unprotected open space lands, water, and natural and cultural resources. The NRI is intended to

²⁶ See American Farmland Trust FIC Fact Sheets: Cost of Community Services Studies (August 2004).

clearly delineate all the natural resources within the community, which in turn, provides a foundation for the municipality's open space plan. The NRI also provides a factual basis for making natural resources decisions and formulating regulations.

Co-Occurrence Analysis

A natural resource co-occurrence analysis is an important tool in identifying and prioritizing areas for protection. A co-occurrence analysis is typically included as an important part of a NRI. It identifies high-value natural resource areas and maps them, with multiple levels of unique resource data over-layed spatially using GIS to display on one comprehensive map. The analysis applies numerical values to selected resource factors, with higher values and darker colors indicating land that should be prioritized for protection. The following are example resource factors that are typically considered:

- Stratified drift aquifers
- Potentially favorable gravel well area
- Sanitary radii
- Drinking water protection areas
- National Wetlands Inventory (NWI) identified wetlands
- Open/Agricultural/Disturbed land cover
- High elevation (>800 ft.)
- Steep south facing slopes
- Unfragmented natural land cover
- Undeveloped riparian zone
- Prime agricultural soil and soils of statewide significance
- Hydric soil (poor or very poor drainage)

ORGANIZATIONS, PROGRAMS AND FUNDING OPPORTUNITIES

Many communities within the region have already taken a vital step in ensuring that some of its open lands remain permanently in their natural states. These municipalities may have adopted bond measures for open space and recreation or have allocated their land use change tax monies to their conservation commission for the purpose of acquiring conservation lands. However, these funds are not always adequate due to rising land values. In order to maximize the economic, social, and environmental benefits of open space, many municipalities must find additional funding sources and land protection strategies.

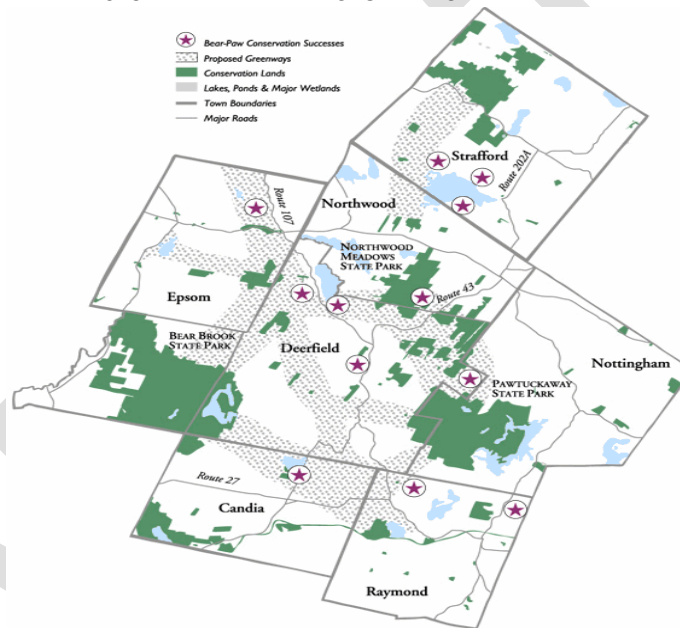
Additionally, many municipalities within the region recognize the importance of regulatory conservation strategies, including changes to zoning ordinances to encourage the use of conservation subdivisions. These regulations generally have very little implementation cost and, in fact, save money on future municipal infrastructure costs. By encouraging conservation subdivisions, the open space land is built into the new development rather than purchased afterwards, providing significant future cost savings for local government.

To help fund land acquisition, municipalities are also working cooperatively with a number of land trusts and private non-profit conservation organizations to pool financial resources and expand conservation efforts. The Bear Paw Regional Greenway Land Trust for example, works

specifically with a number of surrounding communities to link Bear Brook State Park, Pawtuckaway State Park, Northwood Meadows State Park, and other conservation areas (See Map 5-8). As a community-based organization composed of townspeople, Bear Paw can serve as an important mobilizing and organizing resource. The Rockingham Land Trust, serving all the communities of Rockingham County, can also be a good local resource, although it currently maintains very few conservation lands within the SNHPC Region.

The Trust for Public Land and the Nature Conservancy are both national land trust organizations active in New Hampshire, which can provide resources and assistance to preservation projects. Additional state resource organizations include the Society for the Protection of New Hampshire Forests and the Audubon Society. Many of these programs and organizations are described below. For more information see Appendix B.

MAP 5-8: BEAR PAW REGIONAL GREENWAY PLAN



PUBLIC PROGRAMS

Current Use Program – The Current Use Assessment Program allows qualifying land to be taxed according to the value of its current use rather than its potential use. One of the more distressing realities of owning large parcels of open land in New Hampshire is the exceptionally high property tax rates. The Current Use Program has been an important method of reducing this burden. Current use typically reduces property taxes assessed on undeveloped land by more than two-thirds, and is vital to the preservation of open space in the region. As of 2004, a total of 94,206 acres of land were included in the Current Use Program within the region. This represents 31 percent of the total land area of the region.

Land and Water Conservation Fund – The Planning, Development and Outreach Office through the Division of Parks and Recreation administers funds received by the State through the Federal Land and Water Conservation Fund (LWCF). This fund provides 50 percent matching grants to municipalities for the acquisition of open space and recreation lands. The LWCF is funded through

offshore oil and gas lease sales. In previous years, the Land and Water Conservation Fund was an important source of funding for communities, particularly for leveraging monies to purchase land and develop recreational facilities.

Department of Resources and Economic Development (NH DRED) – The Commissioner of Resources and Economic Development may also upon request establish a program to assist those cities and towns that have adopted the provisions of Chapter 36-A, Conservation Commissions, in acquiring land and in planning of use and structures as described in RSA 36-A:2. In addition, the State Trails Bureau within NH DRED manages the recreational trails grant program in New Hampshire. The Recreational Trails Program (RTP) is a component of the Transportation Equity Act for the 21st Century (TEA-21). It funds motorized, non-motorized, and diversified trail projects through federal gas tax money paid on fuel for off-highway recreational vehicles. Projects are given up to 80 percent of funding, with at least 20 percent required from the municipality or local organization in the form of labor, supplies, or cash. Many recreational trail projects are completed by local scout groups or volunteers. New Hampshire receives approximately \$500,000 annually for RTP projects.

Land Management Assistance – There are three County Conservation Districts, which serve the region – Rockingham County, Hillsborough County and Merrimack County. These agencies provide direct assistance to landowners in sustaining the productivity of their farmland. As part of their effort to protect the land, the County Conservation District will also accept and monitor conservation easements. Experienced staff from the UNH Cooperative Extension program will also assist landowners and communities with land protection efforts. In addition, the USDA Natural Resource Conservation Service (formerly the Soil Conservation Service) provides technical assistance in natural resource management serving Rockingham, Hillsborough and Merrimack counties.

NH Department of Agriculture – This federal agency is actively involved in a number of ways to protect the State's farmland resources, including providing technical assistance on land use issues, conservation programs and efforts to improve the economic return of farm enterprises. Since many farms in New Hampshire often contain a variety of open space, these programs also help to maintain the integrity of open space areas.

RSA 432:18-31A authorizes the establishment of an Agricultural Lands Preservation Committee (ALPC) within the New Hampshire Department of Agriculture. This committee administers funds for the acquisition of agricultural land development rights. However, this program has not been funded since the early 1980s. If the ALPC designates a farmland parcel as an "agricultural preservation restriction areas", the Department of Agriculture may purchase the land's development rights in order to limit the use of the land to agricultural production. Criteria used to make the designation include soil types found on the land, and the immediacy of the threat to development.

NH Land and Community Heritage Investment Program – Created in 2000, the Land and Community Heritage Program (LCHIP) is an independent state authority that makes matching grants to NH communities and non-profits to conserve and preserve New Hampshire's most important natural, cultural and historic resources. Over 200,000 acres of land have been conserved and 83 historic structures have been preserved and/or revitalized. Within the SNHPC Region the following grants have been awarded to date:

- The Town of Bedford received \$20,000 in funding to perform a study of the Joppa Hill property, which comprises 312 acres;
- The Town of Derry was awarded \$125,000 to acquire a 68-acre parcel known as the Corneliussen Orchard. The property has important passive recreation opportunities and agricultural land. An easement was placed on the property and the farmer donated an easement on 38 additional acres. This property abuts conservation agricultural land;
- The Town of Hooksett received \$10,000 to rehabilitate Robie's Country Store. This building is on the National Register of Historic Places and is the first site in Hooksett to receive such a listing. Renovations to the building include replacing the roof, painting exterior clapboards, molding, and windowsills, and insulating the windows. Since 1822, a general merchandise market has operated at the site and it has a national reputation as being a "must do" political campaign stop;
- The Towns of Londonderry, Hudson, and Windham received \$300,000 to purchase an easement on 205 acres of the Ingersoll Tri-Town Tree Farm;
- The City of Manchester received a total of five grants: \$70,000 to purchase and rehabilitate the Athens Building (next door and above the Palace Theatre) for use as office space and cultural programming for performing arts organizations; \$75,000 to acquire 150 acres to add to a major preserve of natural resources totaling 600 acres. Unique features include rare plant communities such as an Atlantic White Cedar, Rhododendron and Black Gum complex. The project protects endangered and rare species in a densely developed area under intense development pressure; \$70,230 to convert Manchester's first High School building to a home for the Sargent Museum of Anthropology and Archeology. This phase will stabilize and secure the severely fire-damaged building, and will provide an Historic Structures Report, a National Register nomination, and Architectural and Engineering services for the building's ultimate rehabilitation; \$236,250 to repair and upgrade the Historic Association Headquarters. This project will include exterior repairs (including windows) and improvements to ensure appropriate storage of the Association's extensive collection, and will make the collection more accessible to the public; and \$200,000 to complete the first two phases of an extensive rehabilitation plan for a classic 1841 garden-style urban cemetery.

Natural Heritage Inventory - New Hampshire's Natural Heritage Inventory (NHI) is responsible for identifying and assessing sites that contain habitat of rare, endangered and threatened natural species throughout the state and region. While specific location of these sites is not released to the public, this information is helpful in evaluating lands for open space and conservation purposes. In addition, New Hampshire Fish and Game has just completed a new statewide wildlife action plan (WAP) for both game and important non-game species. This plan includes detailed wildlife habitat maps, which are important for conservation planning. Because of the importance of wildlife to rural economies, additional federal funding is expected to be provided to the state to support a wide range of activities in local communities so that wildlife populations remain healthy as the state grows.

Forest Stewardship Plan - A forest stewardship plan addresses fish and wildlife habitat, water resources, recreation, forest protection, soils, timber, wetlands, aesthetic values, cultural features

and endangered species at the local level. Besides giving management direction, a forest stewardship plan is necessary for certain current use assessment categories and certified Tree Farm status. Communities should consider hiring a licensed forester to determine the best approach to managing town-owned forest lands and open space areas.

Forest Legacy Program – The Forest Legacy Program, operated by the Land Trust Alliance, is a voluntary program of the U.S.D.A. Forest Service, providing grants to states for the purchase of conservation easements and fee acquisition of environmentally sensitive or threatened forestlands. The Forest Legacy Program provides federal funding for up to 75 percent of the cost of conservation easements or fee acquisition of existing natural resources. Participation in Forest Legacy is limited to private forest landowners. To qualify, landowners are required to prepare a multiple resource management plan as part of the conservation easement acquisition. The federal government may fund up to 75 percent of program costs, with at least 25 percent coming from private, state, or local sources. The state grants option allows states a greater role in implementing the program. The program also encourages partnerships with local governments and land trusts, recognizing the important contributions landowners, communities, and private organizations make to conservation efforts.

Other Federal Programs – There are several other federal grant programs which may be utilized for the purchase of open space land: 1) The NH Department of Fish & Game receives Pitman-Robertson Act Funds which cover 75 percent of the fair market value of lands acquired by the Department for wildlife protection, and the Dingel-Johnson Fund (1950) which cover 75 percent of acquisition costs to provide access to and provide for fishery habitat; 2) the North American Wetlands Conservation Act, enacted in 1989, to conserve North American wetland ecosystems and waterfowl and other migratory birds and fish that depend upon such habitat; and 3) the Environmental Protection Agency, through the NH DES, offers grants under the Source Water Protection State Revolving Fund for land acquisition projects, and additional funds are available (as a matching grant program) for land acquisition in designated water protection areas. See Appendix B for more information about this and other federal and state programs.

Non-Profit Organizations

Private non-profit conservation organizations and land trusts are important entities, which provide assistance in open space protection. Most of these organizations help to conserve land through land donations and conservation easements.

Region Trails Coordinating Council – SNHPC is currently participating, along with NHDOT, RPC and local trail stakeholder groups in the Regional Trails Coordinating Council (RTCC). The Council, formed in 2010, is designed to build upon the past work of the Manchester Regional Trails Alliance that also included Goffstown, Bedford, Londonderry, Auburn, Derry and Hooksett. The primary goal of the RTCC is to assist member organizations in the development and implementation of a comprehensive trail plan. The RTCC strives to connect existing and planned trail networks in the region by providing a forum for cooperation and collaboration among trail organizations. It also serves as an information clearinghouse for regional trails stakeholders. The goals of the RTCC, but are not limited to the following:

- Assist in the development of individual trails to form a continuous network in the southern and central regional regions of the State of NH;
- Develop maps of the region's trail network, including completed as well as planned and missing segments, and their conditions;

- Identify and assist in obtaining available public funding (state, federal, etc.) for trail use;
- Identify and assist organizations in obtaining available funding;
- Identify and prioritize trail segment development tasks;
- Provide forums and events to educate the public as to the importance of non-motorized multiuse trails in the health and quality of life of the regions;
- Combine and augment the passion of volunteer groups and the power of regional planning commissions to achieve common missions and values to accomplish common goals while, as necessary, overlapping jurisdictional boundaries.

Recognizing the value of trail projects to municipalities, the RTCC will be responsible for developing and implementing a comprehensive plan to complete north/south and east/west corridors (See Map 5-9). Currently, there are portions of regional trail systems that are in various stages of completion. To facilitate completion of these facilities, the RTCC would be responsible for identifying and pursuing sources of funding, developing fundraising programs, bike tours, grant writing, and prioritizing trail sections to be completed. It is hoped that a prioritized program of projects with a funding plan can be developed for completing these north/south and east/west trail corridors.

The Audubon Society of New Hampshire encourages the preservation of wildlife habitat and natural areas through education and land acquisition.

The Society for the Protection of New Hampshire Forests (SPNHF) promotes the conservation and wise use of natural resources, and strives to protect productive forest and agricultural lands. Currently, SPNHF manages 574 conservation easements totaling 86,105 acres throughout the state. SPNHF also holds 40,976 acres of land in fee simple ownership and manages another 13,218 acres through deed restrictions.

The Nature Conservancy is an international, non-profit conservation organization. Its mission is to preserve plants, animals, and natural communities that represent the diversity of life by protecting lands and waters they need to survive. The Conservancy owns more than 1500 preserves, the largest private system of nature sanctuaries in the world. The New Hampshire Chapter has protected more than 121,000 acres of land around the state. The Manchester Cedar Swamp is the only preserve located within the region.

The Trust for Public Land (TPL), a national nonprofit organization is also actively involved in open space protection and conservation easements. As part of its Farmland Protection Initiative in Southern New Hampshire, TPL helped the Town of Derry conserve the 68-acre Corneliusen Farm and 38 adjacent acres of active farmland in 2004. Critical funding was committed by the town, the state's Land and Community Heritage Investment Program, and private supporters. Federal grants to the state from the Land and Water Conservation Fund and USDA Natural Resource Conservation Service's Farmland and Ranchland Protection Program closed the funding gap. As a result of this collaborative project, 68 acres of prime soils have been protected from development by agricultural preservation easements and will continue to be farmed. In addition, 38 scenic acres offering views of surrounding hillsides are now owned and managed by the Town of Derry for wildlife and low-impact recreation. The remaining 10 acres were purchased by adjoining landowners and permanently protected from development by conservation easements.

The Rockingham County Conservation District (RCCD), the Merrimack County Conservation District (MCCD), and the Hillsborough County Conservation District (HCCD) are all members of the New

Hampshire Association of Conservation Districts. Since 1946, the New Hampshire Association of Conservation Districts (NHACD) has provided statewide coordination, representation, and leadership for Conservation Districts to conserve, protect, and promote responsible use of New Hampshire's natural resources. At the present time, only the Rockingham County Conservation District is actively involved with federal, state, and local agencies, nonprofits, conservation groups and landowners to protect open space through conservation and agricultural preservation easements. The Merrimack County Conservation District and the Hillsborough County Conservation District offices are currently not involved or staffed to address conservation and agricultural easements.

The Rockingham Land Trust, established in 1980 and located in Exeter, is another non-profit land trust organization, which accepts gifts of land by donation or bequest, and monitors conservation easements on several properties within Rockingham County. Since 1980, the Rockingham Land Trust has worked with landowners and municipalities to voluntarily conserve more than 3,300 acres of land within Rockingham County. RLT is the primary holder of 60 easements and currently holds executory interest in seven easements in Rockingham County. Within the region, RLT holds a total of three easements: one in Auburn and two in Derry. The conservation easement in Auburn is located on the 54-acre Preston Tree Farm.



The Bear Paw Regional Greenway is a land trust established by resident volunteers to protect open space lands around and between Pawtuckaway and Bear Brook Park. Bear Paw has proposed regional greenways as a means of connecting these parks with large areas of conservation land in a seven-town region including: Candia, Deerfield, Epsom, Northwood, Nottingham, Raymond, and Strafford (see the following greenway plan). This network of voluntarily protected lands will provide important wildlife habitat and recreational opportunities. To date, Bear-Paw has protected over 2,028 acres and has been in contact with landowners about the protection of an additional 10,498 acres.

Local Open Space/Land Protection Committees - There are a number of municipalities within the region that have appointed open space and land protection committees to preserve natural resources and protect open space within their communities. These municipalities include the towns of Weare, New Boston, Londonderry, Derry, Chester, Candia and Deerfield. Many of these committees are made up mostly of volunteers who work to identify and protect key parcels of land.

ASSESSMENT OF STATE PARKS, FORESTS AND RECREATIONAL AREAS

How should the region go about assessing the adequacy of the state parks, forests and recreational areas located within the region? How much open space and recreation does the region need or desire? How can this be determined? What standards or guidelines should be used? The answers to these questions are difficult to determine. The Society for the Protection of New Hampshire Forest often suggests that a community needs 25 percent of its total land area protected as open space. Can or should this suggestion be applied to the region?

Over the years, benchmarks and standards that prescribe specific park types and acreages of recreational facilities have collected their share of critics. There are always differences from one community or region to another in terms of population age and density – not to mention climate and terrain and the availability of land – that likely influence the amount of open space and recreation considered practical or even desirable.

Perhaps the recreation standard that has received the highest profile of all is the National Recreation and Park Association (NRPA)'s recommendation "that a park system, at a minimum, be composed of a 'core' system of parklands, with a total of 6.25 to 10.5 acres of developed open space per 1,000 population – more often expressed simply as 10 acres per 1,000 population."²⁷

In many communities today, however, the adequacy of open space and recreation is most commonly determined by actively monitoring the use of existing resources, including evaluating the public's demands for the additional resources. This generally requires surveys and participation forecasts to determine management priorities and to guide the acquisition and development of new resources.

Unfortunately, very few surveys and forecasts of this kind have been conducted within the State of New Hampshire let alone within the region. Presently, the only guidelines or suggestions available for assessing the need and adequacy of recreational facilities at the state or regional level is provided by the 2003-2007 Statewide Comprehensive Outdoor Recreation Plan (SCORP) for New Hampshire.

As part of the 2003-2007 SCORP, a recreation survey of 3,000 households in the state was conducted by the University of New Hampshire. This survey asked respondents to identify how important it was for the state to manage various natural resources, what priorities the state should give to outdoor recreation, and how future monies for recreation should be spent in New Hampshire.

The results of the survey indicate the most important management objective for the state should be the preservation and protection of drinking water and groundwater recharge areas (52.1 percent), followed by setting aside special natural areas from development (37.9 percent), and protecting typical examples of New Hampshire's natural regions (37.9 percent). State programs or projects receiving the highest priorities include the preservation and/or restoration of native wildlife (58.9 percent), and wetland preservation/protection (37.4 percent).²⁸

As noted in the 2003-2007 SCORP as well as the new park, recreation, open space and greenway guidelines (1996) developed for the National Recreation and Park Association and the American Academy for Park and Recreation Administration, greater emphasis is being placed on comprehensive open space and greenway planning, and the integration of recreation and open space at the regional and state level. There has also been a growing trend toward more collaboration among recreation providers, and between community parks and schools. Other trends include greater inclusion of green space as part of new development proposals, downtown and neighborhood revitalization, and a heightened recognition of the role that recreation and open space play in contributing to more livable, sustainable communities.

Unfortunately, there are limited funds and funding opportunities available in New Hampshire to purchase and expand the state park system, forests and recreational sites. In addition, funding levels in the Federal Land, Water and Conservation Fund (LWCF) and New Hampshire's Land and Community Heritage Investment Program (LCHIP) have fallen significantly and cannot keep pace with increasing demands.

²⁷ "Municipal Benchmarks Assessing Local Performance and Establishing Community Standards", by David M. Ammons, Second Edition, 2001, page 261.

²⁸ "Assessment of Outdoor Recreation in New Hampshire: A Summary Report", by Robert Alex Robinson, Ph.D., University of New Hampshire, Department of Resource Economics and Development (1997).

Given the lack of financial resources, DRED has not been actively pursuing the purchase and development of new parks and recreation facilities in the state. Instead, the state is actively working with property owners, the Society for the Protection of New Hampshire Forests, and other environmental organizations in facilitating conservation easements and gifts. When and if funding is available, however, real property considered to be acquired by the State is typically evaluated based on the following criteria:

1. Seacoast property (ocean front, estuaries, salt marsh or contiguous upland)
2. In holding (totally within existing State ownership)
3. Land with frontage on a great pond or river
4. Intrusions into existing State ownership (State owns on 3 sides)
5. Land abutting existing State ownership
6. Land connecting State ownership

Generally, separate or individual parcels of land are considered by the state only if they have outstanding forestry or recreation or specialized natural or cultural values that warrant protection and/or preservation. According to DRED:

- For State Forest acquisition, the parcel must be of sufficient size, considering its species composition to make a manageable multiple use unit of public land or is an acquisition of abutting land;
- For State Parks acquisition, the parcel must be of sufficient size as a manageable recreation facility or is likely to be enlarged to such a size by acquisition;
- For protection/preservation acquisition, the parcel must be of unique or unusual or natural value or specialized tracts such as marshes, reservoir sites, floodplain, public access sites or high elevation (mountain top) land.

Most funding land acquisition by DRED is achieved through the legislative process. However, only the legislature may direct acquisition of a state forest or state park by statute as appropriate. DRED currently has management responsibility for 380,000 acres of land; of which 214,700 are easements and 165,300 are in fee simple ownership.

While it is important to assess the adequacy of all the state parks and forests within the region, it is also important to consider existing municipal parks and town forests as well. Generally, park adequacy is typically gauged by the residents and the visitors who use the parks. This suggests that a survey and park assessment needs to be conducted for the region and efforts to protect open space lands should continue to be encouraged.

GRANITE STATE RAIL-TRAIL

The RTCC and its participating bodies envision a regional trail network that consists of a trail serving as the “backbone” of the region from Salem to Concord as envisioned in the 2003 Salem to Concord Bikeway Study. This trail will connect to planned and existing trails in Methuen, Massachusetts, and connect to the planned extension of the Northern Rail Trail into Boscawen. This

backbone Salem to Concord trail in combination with the Northern Rail Trail has been dubbed the “Granite State Rail Trail”, which will extend from Lebanon to the Methuen, MA line in Salem.

From the “Granite State Rail Trail” backbone, several branches will extend east and west. These spur trails will extend the reach of the trail system to additional communities. See Map 5-9 for the envisioned trail system for the Southern New Hampshire Region.

A variety of funding sources exist at the local, regional, state, and federal levels. Most trail projects described in this plan will require significant funds from a variety of sources. Most existing trails have used Federal Transportation dollars and developing trails will likely use these funds as well. In the past, this has taken the form of Transportation Enhancements (TE), Congestion Mitigation Air Quality (CMAQ) or Recreational Trails Program (RTP), all of which require a 20 percent local match. As of late 2012, a new transportation bill combines funding sources into Transportation Alternatives (TA) of which RTP is a part. RTP will continue to be managed by the Department of Economic Development (DRED), and TA through the Department of Transportation.

Funding levels in this new transportation legislation, MAP-21, are significantly lower than under the previous legislation. In addition, these reduced funds may be directed elsewhere if the State so chooses. As a result, there will be even more competition for funding for non-motorized trail use in the foreseeable future. Trail construction may need to rely even more on non-federal dollars than in years past.

There are a number of funding and fund-raising options outside of federal funding. It takes some research to determine which funding sources are appropriate for each trail, depending on any specific goals of the grants and the amounts of funding that need to be raised. For most projects in the RTCC region, significant amounts of fund raising are required simply to provide match money for federal projects. The websites for the following organizations provide a primer on trail funding, and links to resources and ideas. As mentioned in the Rails-to-Trails website, funding often takes considerable ingenuity and research; informal funding ideas such as partnerships, events, and volunteer opportunities are also discussed.

An alternative to trail funding is to construct trails through volunteer time and labor, or as part of larger projects. The Windham Rail Trail, as an example, was begun by the developer of an adjacent housing development who recognized the value of a trail to his development. There may be opportunities for trails to be constructed as part of commercial, residential, or mixed use development. Given the benefits of trails, it is very possible developers will be amenable to the idea.

Ensuring ongoing funding for proper maintenance can be a challenge. Building the trail is just the beginning. Keeping it in good condition is a permanent job. Costs can be defrayed with the use of volunteers and donated materials. Municipal public works departments often contribute significantly to trail maintenance. The *Regional Trails Plan* contains a table of needs and choke-points in the current trail system by each municipality on pages 14-16.

KEY ISSUES AND CONCERNS

New Hampshire's rapid growth has spurred interest among people in many municipalities throughout the region to conserve open space and to seek ways to raise public funds to acquire land for conservation and recreational purposes. With continued growth and development, however, there will be fewer opportunities in the future to preserve and protect the important natural and cultural lands that exemplify the open space and livability of the region.

While much of the region still remains undeveloped, population growth and sprawling development are consuming open space and community character at a rapid pace.²⁹ Researchers estimate that within the next 25 years, southeastern New Hampshire will be virtually built-out, meaning that all the available land not conserved will be developed.³⁰ This will place tremendous strains on local budgets and community resources.

Planning Boards and Conservation Commissions have an important responsibility to ensure that open space and recreational opportunities are made available to the public. This means open space and recreation must be addressed as an essential part of the community planning process.

Currently, local groups involved in the Regional Trails Coordinating Council are primarily facing issues with funding bikeways and greenways. The current federal transportation bill, MAP-21, decreased funding for alternative transportation by a third, compared to the previous federal transportation bill. Concerns of the group include preserving the old railroad Right of Way (ROW) for future development of a trail network. In areas where the ROW has been built on, working with local landowners to allow a trail on their property has proven to be a significant barrier. Likewise, in sprawling communities there are limited, if any, opportunities to develop a trail network that serves the public.

The NH DRED cannot do it alone. Monitoring state parks and lands is becoming a financial burden as costs continue to rise and ridership and user fees decline as public use of state facilities continues to climb.

²⁹ The current estimate of undeveloped land is 172,888 acres, excluding all water surfaces.

³⁰ Society for Protection of New Hampshire Forests, New Hampshire Everlasting Initiative.

Granite State Future Natural Resources Planned Regional Trail System



- Planned Extensions and
- Paved
- Unpaved
- Interstates
- State and US Routes
- Town Boundary
- Existing Open Space
- Rivers
- Lakes



Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities



The individual municipalities represented on this map and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map.

This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes.

Map Produced by GIS Service SNHPC 2013.
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Miles





AGRICULTURAL RESOURCES

EXISTING CONDITIONS

The purpose of this section is to identify and describe the current and future status of agriculture within the region. This section outlines goals and objectives for agricultural sustainability in the region based on the region's unique history and farmland trends for the future.

THE IMPORTANCE OF AGRICULTURAL SUSTAINABILITY

Agricultural sustainability allows agricultural producers to meet the needs of their operations, their environments, and their communities. While specific techniques and approaches vary by farmer, common goals include:

- Providing a more profitable farm income
- Promoting environmental stewardship
- Promoting stable, prosperous farm families and communities

Agriculture encompasses a wide range of food and plant production, including but not limited to: livestock; fruits and vegetables; annual and perennial greenhouse plants; nursery stock; maple syrup; honey; hay and sod; lumber.

Agricultural land is integral to the region economically, ecologically, aesthetically, and culturally. All towns in the region were originally settled as agricultural establishments, with much of the current forested areas once existing as farmland. Today, most of the region's employment is non-farm related; only five to seven percent of the land in the state is in agricultural use (GRANIT 2004). Southern New Hampshire still contains a wealth of prime farming soil, and its agricultural heritage helps to establish the rural character of many of the towns in the region.

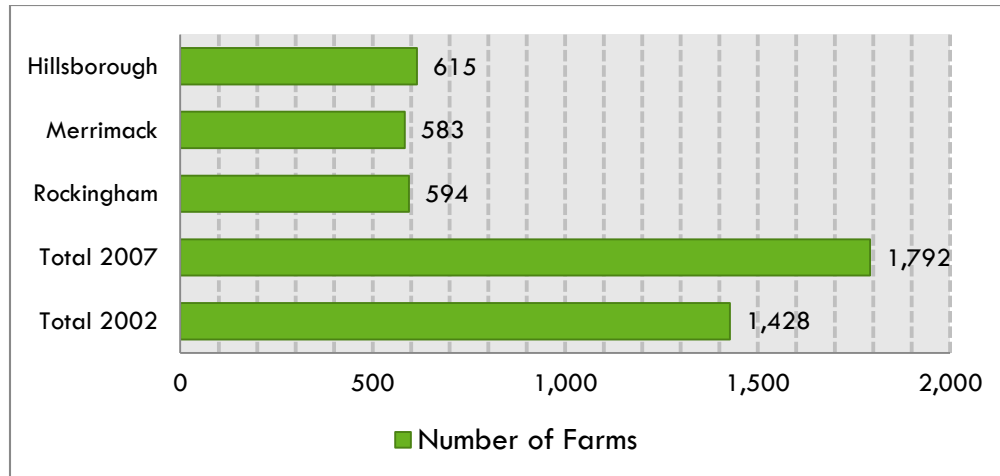
KEY STATISTICS

The United States Census Bureau collects agricultural data by county. This data was last released in 2007, which is reflected in the figures shown in this section. The SNHPC Region lies primarily in Hillsborough and Rockingham Counties, containing the municipalities of Bedford, Goffstown, Manchester, New Boston, and Weare. Rockingham County containing the municipalities of Auburn, Candia, Chester, Deerfield, Derry, Londonderry, and Raymond and Windham. The town of Hooksett lies in Merrimack County.

New Hampshire has a rich agricultural history, with nearly 50 percent of the state being used for farm or pasture land prior to the industrial revolution. A strong agricultural tradition continues in the SNHPC Region, with the total number of farms increasing by 26 percent between 2002 and 2007.

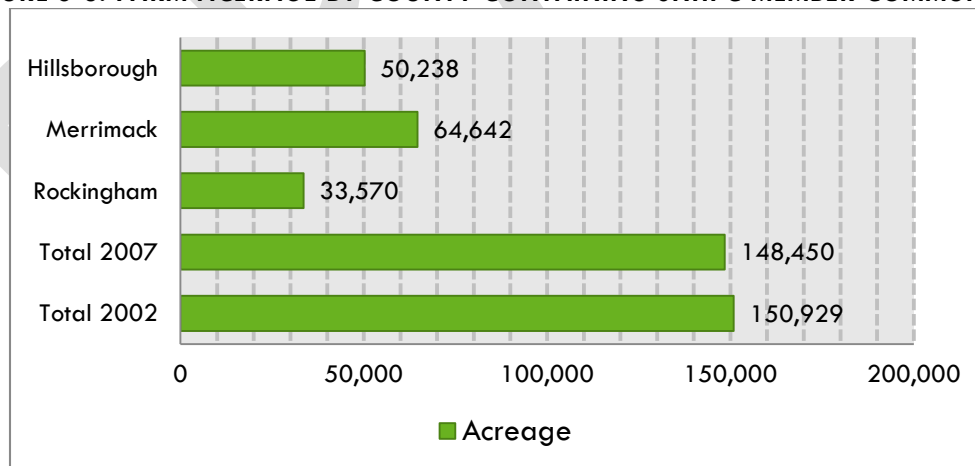
The number of multi-generational family farms in the region is decreasing as is the acreage of existing farms; the median farm size in the region decreased by 16.4 percent, from roughly 40.5 acres in 2002 to 34 acres in 2007. This trend could be attributed to the rising cost of land in our region, or an increase in “hobby farms,” where the expectation is that the owner may not be relying on agricultural profits as a main income stream.

FIGURE 5-7: NUMBER OF FARMS BY COUNTY CONTAINING SNHPC MEMBER COMMUNITIES



Source: 2007 Agricultural Census

FIGURE 5-8: FARM ACREAGE BY COUNTY CONTAINING SNHPC MEMBER COMMUNITIES



Source: 2007 Agricultural Census

The SNHPC Region has a diversified agriculture system with significant production of: vegetables, fruits and berries, greenhouse crops, sheep, goats, and horses, apples, sweet corn, hogs and pigs, grains, cattle, sod and hay. Market value of agricultural products sold for the three counties in the region topped \$98 million in 2007.

TABLE 5-11: MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD U.S.; STATES; SNHPC COUNTIES

	Value	U.S. Rank	State Rank
Maine	\$617,190,000	42	
Massachusetts	\$489,820,000	47	
Vermont	\$673,713,000	41	
New Hampshire	\$199,051,000	48	
Merrimack County	\$55,286,000		1
Rockingham County	\$26,035,000		3
Hillsborough County	\$17,097,000		4

Source: 2007 USDA Agricultural Census

Within local communities, farming supports government budgets and the local economy. Farming facilitates job creation, support services and businesses, and secondary markets such as food processing. Environmental benefits of farmland preservation include protected wildlife habitat, clean air and water, flood control, groundwater recharge, and carbon sequestration. Finally, the farmlands of the SNHPC Region are an integral part of the area's heritage and identity.

Farm stands and farmers' markets, traditional sales operations that allow agricultural producers to sell directly to community members, are increasingly important to the success of the region's agriculture. Dozens of markets and individual farm stands already exist, but local experts suggest that there remains a greater demand for local food and not enough publicity for current operations. Agricultural producers and agencies are looking to expand advertising and signage for farmers' markets and farm stands and to increase overall visibility of local food sales (see Table 5-12 for a listing of farms stands in the SNHPC Region).

The Southern New Hampshire Planning Commission (SNHPC) has worked with most towns to create unique farmers' markets of their own (See Table 5-13). The newest market is in Hooksett which started in 2010 as a product of the CTAP initiative. Also, Raymond started a winter farmers' market this past season. A couple of the farmers markets in Manchester are organized and operated by refugees who work and grow produce on the Common Earth Farm in Bedford.³¹ Their farmers markets are held on the West Side of Manchester, a historically lower-income neighborhood where many of the refugees are situated. In 2013, Citizens Bank awarded The Common Earth Farm a \$30,000 grant, which allowed the farm to purchase a 2010 Ford cargo van to haul their bounty to Manchester. This market allows access to healthy and affordable foods while also providing business training and skills for refugee farmers.

³¹ Mark Hayward. "A Moveable Feast." New Hampshire Union Leader. July 23, 2013.

TABLE 5-12: FARM STANDS IN THE SNHPC REGION 2013

Municipality	Name	Address	Website
Chester	Field to Fork Farm	522 Haverhill Road	http://fieldtoforkfarm.com
Chester	Hazelton Orchards	Route 102, Harantis Lake Road	http://www.hazeltonorchards.com
Chester	Millcreek Maple Farm	217 Chester Street	http://www.millcreekmaplefarm.com/
Derry	J & F Farms	120 Chester Road	http://www.jandffarms.net/
Londonderry	Mack's Apples	230 Mammoth Road	http://www.macksapples.com/farm-market/
Londonderry	Elwood Orchards	54 Elwood Road	http://elwoodorchards.com/
Londonderry	Sunnycrest Farm	59 High Range Road	http://sunnycrestfarmnh.com
Windham	Johnson's Highland View Farm	101 Range Road	http://www.farmnfools.com
Windham	Apple Acres	52 Searles Road	http://appleacres.com/

Source: SNHPC

TABLE 5-13: FARMERS MARKETS IN THE SNHPC REGION

Municipality	Location	Summer Seasonal Schedule	Website
Auburn	Massabesic Audubon Center	Every Saturday, Mid-June through Mid-October	www.auburnfarmers.org
Bedford	St. Elizabeth's Parish	Tuesdays, June 18 through October 15	www.bedfordfarmersmarket.org
Deerfield		Fridays, June through September	www.farmersmarket.deerfield-nh.us
Derry	Town Hall	Wednesdays, June 19 through September 26	www.facebook.com/derryfarmersmarket
Hooksett	Goodwill Plaza	Wednesdays, July 10 through August 28	www.facebook.com/farmersmarket.hooksett
Manchester	Downtown	Tuesdays	http://iine.us/common-earth-farms/
Manchester	Lafayette Park	Wednesdays	http://iine.us/common-earth-farms/
Manchester	Downtown next to Victory Park	Thursdays, June through October	www.manchesterfarmersmarket.com
New Boston	Town Common	Saturdays, June 15 through October 19	www.facebook.com/NewBostonFarmersMarket
Raymond	Riverbend	Tuesdays, June	www.raymondareanews.com/thing

	Marketplace	through September	stodo/frmrsmkt.php
Weare	Gazebo area next to Weare Middle School	Fridays, June 7 through October 18	http://harvesttomarket.com/farmers-market/Weare-Farmers-Market-NH
Weare	Across from TD Bank	Fridays, June 7 through October 11	http://moodypondmarketplace.com/

Source: Collected by SNHPC Staff from market purveyors and organizers.

Community Supported Agriculture (CSA) is an emerging concept bringing community members into direct participation in the local agricultural industry. Participants buy a subscription or share in the harvest prior to the start of the growing season. In exchange, they regularly pick up a portion of the produce throughout the season, subject to the success of the harvest. CSAs can range in level of participation, with some operations requiring labor or pick-your-own for some produce, as well as availability of foods. Table 5-14 shows some of the various foods available through local CSA farms. Several of the farms in the area cannot keep up with the demand for shares, demonstrating a greater need for expansion of CSA operations.

TABLE 5-14: COMMUNITY SUPPORTED AGRICULTURE IN SNHPC REGION

Municipality	Name	Farm and Membership Information	Address	Website
Goffstown	Benedikt Dairy CSA	A certified organic farm with raw milk, cream and eggs available through CSA shares..	106 Shirley Hill Road	http://benediktdairy.com/
Candia	Charmingfare Farm CSA	CSA farm offering both a vegetable and a livestock program.	774 High Street	http://www.visitthefarm.com
Manchester	Fresh Start Farms CSA	A non-profit offering a CSA/farmstand with organic vegetables and specialty ethnic crops.	521 Maple Street	http://freshstartfarmsnh.org/
Chester	New Hampshire CSA	A certified organic farm with Community Supported Agriculture (CSA) with a variety of vegetables.	89 Towle Road	http://www.nhcsa.com/

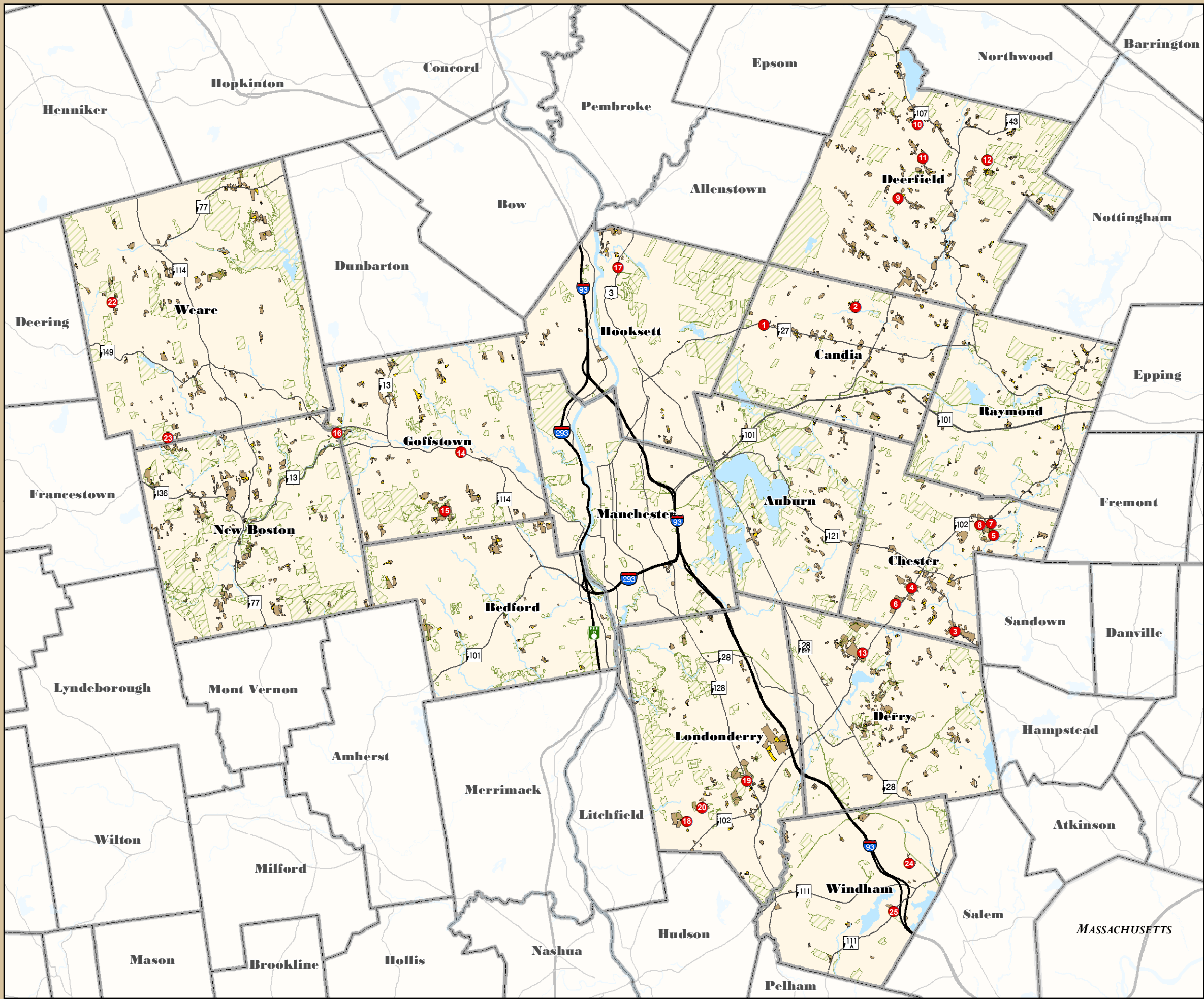
Source: CSA providers and various publications from the NH Department of Agriculture, found here:

<http://agriculture.nh.gov/publications/>

Several existing programs through the New Hampshire Department of Agriculture address the integration of agriculture into community life. The New Hampshire Farm to Restaurant Connection aims to increase the purchase of local foods for use in restaurant preparation. This project includes: chef surveys; a directory of supplier farms; a directory of restaurants using local foods; and "Grower Dinner" promotional events. Another program supporting local agriculture is the New Hampshire Farm to School Program, which integrates local produce into school cafeterias and classroom curricula.

In 2009, there were three certified organic farms in the SNHPC Region with dozens more in surrounding areas. However, almost all local farmers markets feature organic produce, indicating that outside organic farmers supply the region. As public demand for organic foods has increased in recent years, there is a need to encourage and promote more organic farming in the SNHPC Region. Local agricultural producers are identified on Map 5-10.

DRAFT



Granite State Future



Natural Resources
Agricultural Resources

- Agricultural Producers
- Homesteads and Barns
- Farm Fields
- Existing Open Space
- Interstates
- State and US Routes
- Town Boundary
- Lakes
- Rivers

Local Producers			
Number	Name	Address	Town
1	Charmingfare Farms	774 High St.	Candia
2	Northway Farm	216 North Rd	Candia
3	Field to Fork Farm	522 Haverhill Rd.	Chester
4	Hillside Farm of Chester	121 Derry Rd.	Chester
5	New Hampshire CSA	89 Towle Rd	Chester
6	Hazalton Orchards	20 Harantis Lake Rd	Chester
7	Spring Hill Farm	Towle Rd	Chester
8	Maggie Mae Farm	96 Towle rd	Chester
9	Ridge's End Farm	65a Ridge Rd	Deerfield
10	Deerview Farm	64 Old Center Rd North	Deerfield
11	Hungry Moon Farms	18 Old Centre Rd	Deerfield
12	Meadowhawk Farm	19 Harvey Rd	Deerfield
13	J&F Farms	120 Chester Rd	Derry
14	Devriendt Farm Products, LLC	178 S. Mast St.	Goffstown
15	Shirley Hill Farm	106 Shirley Hill Rd	Goffstown
16	Berry Good Farm	234 Parker Rd	Goffstown
17	Lavalley Farms	1801 Hooksett Rd	Hooksett
18	Elwood Orchards	54 Elwood Rd	Londonderry
19	Mack's Apples	230 Mammoth Rd	Londonderry
20	Sunny Crest Farm Inc.	59 High Range Rd	Londonderry
21	Middle Branch Farm	280 Colburn Rd	New Boston
22	Random Hills Farm	16 Dels Way	Weare
23	Good Earth Farm	52 Poor Farm Rd	Weare
24	Apple Acres LLC	52 Searles Rd	Windham
25	Johnson Highland View LLC	101 Range Rd	Windham

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities



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Londonderry successfully operates tourism around “Apple Way,” a route of orchards supplemented by bed-and-breakfasts and other commercial establishments. Agriculture tourism can be an integral part of the region’s agriculture industry; farm tours, field trips, and “pick-your-own” operations can better integrate agriculture into the community.

Finally, a new statewide grant program focusing on rural development helps agricultural operators to develop business and marketing plans. Currently there are twenty farms in New Hampshire being served by this program, including several in the SNHPC Region.

EXISTENCE OF CONSERVATION EASEMENTS

Conservation Easements are currently one of the most feasible solutions for farmland preservation in the region. After valuation by professional appraisers the land remains privately owned and on tax rolls, and the owner maintains the right to use the land. Conservation easements are also an important tool for the protection of forested land for lumber operations.

The Farm and Ranchlands Protection Program (FRPP), a program of the Natural Resources Conservation Service (NRCS) of the USDA, has helped acquire several agricultural conservation easements. Among these are 371.5 acres of orchard land in Londonderry, the 20.5-acre Root Farm in Chester, and the 25-acre Robert R. Corneliusen Trust property in Derry (Eagle Tribune 2004). Recently there are eight federally funded agricultural conservation easements in Hillsborough County for over 650 acres and holds potential for additional easements in the future.

DEFINITIONS OF AGRICULTURE SOILS

Prime farmland³²: “Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses” (Natural Resources and Conservation Service)

Farmland of statewide importance: “Soils which are considered to be important to agriculture in New Hampshire. Although these soils exhibit such properties as erodibility and droughtiness, they can produce fair-to-good crop yields when properly managed.”

Unique Farmland³³: “This is farmland other than prime that is used for the production of specific high-value food and fiber crops in New Hampshire. Sites represent a special combination of soil quality, location, growing season and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. In order to qualify as unique farmland, a high-value food or fiber crop must be actively grown. In New Hampshire, unique farmland crops include, but are not necessarily limited to apples, peaches, pears, plums, strawberries, raspberries, cranberries, blueberries, pumpkins, squash, and tomatoes.”

³² Town of Chester 1997, definitions derived from NRCS USDA standards

³³ New Hampshire Soil Attribute Data Dictionary, 2002

TABLE 5-15: IMPORTANT SOILS CONSERVED FOR AGRICULTURE IN SNHPC REGION

Community	Total Town Acres	Productive Soil Acres Conserved	Percent Productive Soil Conserved
Auburn	18,438	96	0.52%
Bedford	21,156	466	2.20%
Candia	19,557	16	0.08%
Chester	16,718	18	0.10%
Deerfield	33,348	278	0.83%
Derry	23,226	69	0.30%
Goffstown	24,065	748	3.11%
Hooksett	23,761	1,387	5.84%
Londonderry	26,958	365	1.36%
Manchester	22,355	243	1.09%
New Boston	27,654	1,388	5.02%
Raymond	18,944	72	0.38%
Weare	38,464	1,778	4.62%
Windham	17,772	22	0.12%
SNHPC REGION TOTALS	332,413	6,947	2.09%

Source: Soil Survey Geographic (SSURGO) Database for New Hampshire, 2009; GRANIT Conservation and Protected Lands, 2012

AGRICULTURAL RESOURCES

While specific regulations and measures can help facilitate agricultural operations in the SNHPC Region, overriding ingrained attitudes and techniques have the greatest potential for real change in bringing about sustainable agriculture. These new perspectives and practices require the participation and support of agricultural operators as well as municipal leaders, planning and zoning boards, and community residents. Cooperation and understanding between all three groups can provide mutually beneficial results for the entire community.

DIRECT SALES TO CLIENTS

According to farmers and those who work most directly with them, the single best action farmers can take towards sustaining agricultural activity in the region is direct involvement with clients. This can range from the simple step of manning a booth at a farmers' market to bottling milk on site at a dairy farm to create the ability to sell directly to the community. Especially in urbanizing areas, where residential neighborhoods lie adjacent to agricultural operations, the farmer who can serve the community the best will be the most successful. According to Bill Wilson of the Hillsborough County Farm Service Agency, "In urbanized areas, 'wholesale' has been termed 'no-sale.'" Customers want to see where their food comes from and are eager to buy local foods from a known source. Farmers who can make the transition to direct customer sales will see a difference in their bottom line.

Agricultural operators cannot make this switch alone. With more involvement by community leaders, agricultural dollars can have an even greater impact within the local economy. Residents can participate by buying directly from farmers and learning more about agricultural operations. If farmers can purchase equipment and supplies locally and market their products to local consumers, all of the financial agricultural benefit can be felt within the local economy.

An increase in the farmer's bottom line is an increase in the healthy living in the region. In 2011 the Carsey Institute published an article that found that rural communities had a difficult time gaining access to healthy, fresh foods despite being located near farms, particularly lower income individuals who found little selection, low quality, and intermittent availability of fresh foods.

Community Supported Agriculture (CSA) farms are one solution that can facilitate the direct sales of produce to local residents. The success of current operations in the region as well as the unmet demand for shares in CSAs demonstrate the need to expand shareholder farms.

CONSERVATION EASEMENTS

Conservation easements have been promoted in the region as a response to the continuing loss of farmland to development. While some easements have been created, there still remains a vast potential for saving thousands of acres of farmland through easements. There are a variety of government programs and non-profit agencies that provide grants and matching funds for easements. The challenge for towns is to educate taxpayers on the benefits of conservation easements. Town planners can help by drafting regulations that prevent development on prime farmland soil and soil of statewide importance and working with agricultural producers to enact other agriculture friendly ordinances. Municipalities can also preserve wooded lands on prime agricultural soil, as these may someday be reverted back to farmland.

Municipalities should make every effort to assist all agricultural operators who wish to continue producing upon their land through zoning regulations and facilitation of community programs. However, farmers should always have the option to sell their land and operations at their highest value, should they choose to cease production. The community must recognize that conservation easements are an important tool in farmland preservation, yet in some cases, the value of an easement may not be high enough to meet farmers' needs. A municipality supportive of farmland preservation must also respect the individual farmer's property rights.

The New Hampshire Farm Viability Committee is considering a new land conservation model termed Lease of Development Rights (LDR). According to the committee this program would allow for land to be leased for a term of years. This would help communities "buy time" and stabilize farmland ownership that has come under pressure to be sold, thus allowing farmland owners the opportunity to carefully plan the diversification, expansion, or generational transfer of their farm business and resist the temptation to sell out quickly.

For municipalities that value their local farms and rural character establishing an agricultural commission is an option for New Hampshire communities. According to the University of New Hampshire Cooperative Extension, an agricultural commission has no regulatory or enforcement authority. The commission serves a similar role for local agriculture as a heritage commission for historical resources, or as the non-regulatory aspect of a conservation commission for natural resources. In the SNHPC Region the Town of Weare has established an agricultural commission. Planning or zoning boards could refer projects to the agricultural commission, who would then make a recommendation based on the agricultural impact of the project. Several towns have had

success with these commissions in Massachusetts, leading to an interest in developing them in New Hampshire.

DIVERSIFICATION OF AGRICULTURAL PRODUCTION

Another emerging trend that offers promise for agricultural sustainability in the future is the diversification of agricultural operations. Small, part-time farmers have increased in the past few years, and they have focused on diversifying their types of operations as well as the ways in which they market their products. Some farmers take on multiple small-scale operations, such as honey and soap from goat's milk. Agricultural operators are becoming wiser about diversifying their products in general, with techniques such as rotational breeding and cutting hay on dormant fields. One dairy farm, for example, bottles milk, produces ice cream and beef, and maintains an on-site hunting operation. The added creativity of diversification results in greater efficiency and profits.

Another trend suggested by the Farm Viability Committee is the encouragement of the use of biofuels, such as biodiesel, by government agencies and private consumers. This increases the market for agricultural products, from which the fuel is made.

COMMUNITY EDUCATION AND INVOLVEMENT

Even as communities value the "rural character" that agriculture provides in their towns, many residents are unaware of the diversity of operations in modern agriculture and the benefits agriculture brings to the local economy. Citizens living in close proximity to agricultural operations should learn more about the tax benefits of open spaces provided by agricultural land, practices such as manure-spreading (a natural alternative to fertilizers), the health and economic benefits of eating locally produced food, the availability of locally produced foods and goods, and the threat development poses to farmlands. Almost all state and federal grant programs require cost-sharing with local municipalities, and therefore farmland will continue to be threatened until taxpayers are willing to pay for farmland preservation directly.

Perhaps the greatest hope for revitalization of New Hampshire's agricultural industry lies with community involvement. The best way to involve community members and educate them about local agriculture is through an on-site event at a local farm, where residents can see for themselves the type of production that occurs. Residents also tend to mobilize around major issues that affect the community, so events should be geared around those, if possible. One example to model is that of Stonewall Farm in Keene, which is a fully operational farm with livestock, produce, dairy, and flowers open to the public seven days a week. The farm includes a year-round learning center, a summer camp, and community events including workshops and contra-dances.

In addition, experts highlight a proliferation of farmers' markets and farm stands, CSAs, Buy Local campaigns on a town level, an expansion of agricultural tourism and other businesses that support agriculture, and the purchase of farm equipment and supplies within the community as evidence of New Hampshire's agricultural revitalization. The few programs and markets in operation should be promoted and serve as examples for others. These changes are best facilitated through community education programs and agriculture-friendly planning and regulations.

AGRICULTURAL ISSUES AND CONCERNS

A key issue in New England is the contrast between urban and rural lands, which are extremely close in proximity. Despite the importance of agriculture to the region's economy and culture much of New Hampshire's most productive farmland remains unprotected. Generally, the soils that are desirable for agriculture are also the easiest to develop. Within the SNHPC Region, no municipalities have adopted a zoning district designed specifically for agriculture (See Table 5-16). This encourages more development on agricultural lands. Municipalities in the SNHPC Region value local agriculture, however, future roadway improvement projects planned for the next few decades may increase land values potentially augmenting land conversion.

Goffstown has an "Agricultural District" and Weare has a district designated "Rural/Agricultural District," but both of these districts have been established with the purpose of encouraging low or limited density residential development and maintaining the rural character of the towns. Additionally, Bedford, Chester, Deerfield, Londonderry, New Boston, and Raymond all have agriculture/residential districts. These districts generally permit all types of agriculture, but mainly consist of low-density residential developments. The Town of Candia permits unrestricted commercial agriculture in its industrial district. The remaining municipalities in the region allow agriculture in rural or low-density residential zones. Many of the towns also offer limited or special exception agricultural operations, such as forestry, farm stands, and pesticide-free farming, in commercial, industrial, conservation, and other residential districts.

The lack of agriculture-specific zoning contributes to the rapidly diminishing supply of farmland. With no zoning for agricultural use, current municipal ordinances do not ensure the preservation of farmland. Some municipalities have taken steps toward preserving local farmland through land purchases, conservation easements, tax exemptions, and increased regulations; however, many of these purchases were for conversion to recreational sites.

TABLE 5-16: PRIMARY ZONING DISTRICT FOR UNRESTRICTED AGRICULTURE

Municipality	Agricultural District	Agriculture/Residential District	Rural/Low Density District
Auburn			X
Bedford		X	
Candia			
Chester		X	
Deerfield		X	
Derry			X
Goffstown	X		
Hooksett			X
Londonderry		X	
Manchester			X
New Boston		X	
Raymond		X	
Weare	X		
Windham			X

Source: SNHPC



CONCLUSIONS & RECOMMENDATIONS

GOALS FOR NATURAL RESOURCES

The Southern New Hampshire region is located in one of the fastest-growing areas in the state, and this region in particular is one of the most popular development locations. As a result of this development and increased human activity, the natural resources in this region are amongst the most threatened in the state. The *2015 Land Use Plan*, developed by SNHPC, outlined two specific natural resource protection goals that should be followed in order to help maintain and protect these precious resources before it is too late. These goals are:

Goal 5-1: Preserve Open Space

Achieve coordinated, planned development of the region by utilizing established as well as new and innovative land use principles and planning concepts as authorized by RSA 674:21.

Goal 5-2: Protect Natural Resources

Protect and improve the quality of the natural environment while developing a complementary man-made environment.

Goal 5-3: Support Regional Conservation Efforts

Facilitate greater collaboration and discussion between local planning boards and conservation commissions regarding land use regulations and natural resource conservation.

In addition to these regional goals, all towns in the region have endorsed their own goals and objectives regarding protection of natural resources in their Master Plans. Some communities even have entire Master Plan chapters devoted to the topic. If these master plan goals can be reached, the Southern New Hampshire region can continue to develop and thrive, while maintaining these important resources for all to enjoy.

RECOMMENDATIONS FOR NATURAL RESOURCES

The Southern New Hampshire Region is presently at a critical stage in natural resource protection. The steps and actions taken or ignored to protect the region's natural resources over the next decade will likely determine the overall environmental and ecological conditions of the region for many years to come. The pace of growth and development of the region will not slow down or wait for state and local government to recognize the absolute importance of the region's natural environment or the natural resource issues facing the region.

However, there are a number of key strategies and objectives for natural resource protection and conservation that can be identified here. Many of these strategies are identified in the New Hampshire Fish and Game Wildlife Action Plan and have been adapted for this plan.

Recommendation 5-1: Develop A Comprehensive Natural Resources Plan

A comprehensive, science-based natural resource and land conservation plan is needed for the region. This plan should address the following focus areas: regional air and water quality, local land and water conservation, biodiversity and conservation. There is a multitude of environmental and monitoring data that is collected and maintained at both the federal and state level. None of this information, however, has ever been evaluated or addressed at a regional level.

The Coastal Lands Conservation Plan is the first time such an effort has been addressed at the regional level in the state. This planning effort can and should be used as a model for Southern New Hampshire. The resulting plan could help to prioritize and develop regional strategies for maintaining diverse wildlife habitat, abundant wetlands, clean water, productive forests and farms, and outstanding recreational opportunities in the future.

In addition, the plan could provide a report and series of maps that delineate and describe the highest priority areas for conservation such as:

- Large, intact forest blocks
- Critical floodplains and riparian zones
- Large wetland complexes
- Significant wildlife habitats
- Rare species
- High condition headwater stream networks
- Important connectivity zones
- Exemplary natural communities

Recommendation 5-2: Develop Local Natural Resource Inventories and Action Plans

A source of state or local funding needs to be developed and set aside to allow planning boards and conservation commissions to develop local land and water conservation action plans and natural resource inventories. These plans would provide the necessary science-based data and information needed to establish land use and other regulations needed to protect the natural environment. Some communities in the region have undertaken natural resource inventories at a great expense. But, once the inventory has been completed, they have not advanced to the next

level of establishing an action plan or a set of guidelines for how to protect the resources that have been identified.

Recommendation 5-3: Encourage Inter-Agency and Regional Coordination in Resource Management

As recommended in the Wildlife Action Plan, greater emphasis needs to be placed on promoting sustainable development and wise resource use at all levels of government. This can be achieved through collaboration and improved coordination of federal, state and local conservation efforts. Working groups, technical guides and targeted educational materials will be important, but the regional planning commissions can also provide a greater role in inter-agency and regional coordination.

Recommendation 5-4: Request the State to Prepare Maps of the Region's Critical Natural Resources

Mapping the region's critical natural resources such as existing and potential wildlife corridors can target land conservation efforts and help retain ecological connectivity and sustain wildlife diversity. Summary maps will also help planners and citizens use available tools to address land protection and mitigate the impacts of development.

Recommendation 5-5: Advise Conservation Commissions and Planning Boards

Working together the state and regional planning commissions should develop a program to provide technical assistance to local planning boards and conservation commissions regarding key natural resource management issues in their communities. Increased awareness leads to action and encourages appropriate stewardship on private lands. A technical assistance program would help to encourage changes in regulations and policies that target wise resource management and use.

Recommendation 5-6: Release Wildlife Maps to the Public

The state should make wildlife-related and other natural resource information accessible to developers and the public, while also protecting sensitive information and landowner rights. If developers and the public have access to information prior to planning their projects they will know which agencies to contact for a full review or for help in project design before investing large amounts of time and money in site design and planning. This will also help to streamline the review process and reduce redundancy in the review of permits. The GRANIT or regional planning commission databases would be an appropriate venue for public access to this data.

Recommendation 5-7: Encourage Communities to Study and Designate Prime Wetlands

Prime wetlands designation does not result in increased land regulations. The state statutes could be revised to make this clear to the public. However, prime wetlands designation should convey the importance and the functions and values of the wetlands and more communities should embrace this concept.

Recommendation 5-8: Consider Fee-In-Lieu Programs for Resource Management

While not always popular, fee-in-lieu of dedication or even mitigation of a development project could be considered at both the state and local level as a means of raising funds for resource management. The New Hampshire Department of Environmental Services has proposed a wetland mitigation fee-in-lieu program to establish wetland compensation. Such a program could allow applicants that propose to harm wetlands to pay a fee rather than selecting land for protection or restoration. These fees would then be placed into a fund which could be used to generate funds for the protection and restoration of wetlands throughout the state. A similar program could be considered at the local level for granting permits.

Recommendation 5-9: Restore and Maintain Watershed Continuity and Natural Flow Regimes

The Sustainable Rivers Project is a good example of how state and federal agencies can work together to modify the way existing dams are managed to improve the ecological health of rivers. The Merrimack River should be included as a key resource in this project. In addition, stream crossings (e.g. bridges, culverts and railroads) and dams often fragment aquatic ecosystems. Constricted flow and “perched” culverts can prevent passage of fish and other aquatic organisms. Stream crossings may also alter the natural geomorphology of a river or stream, changing sediment deposition patterns above and below the crossing. The state and SNHPC could work together to establish a River and Stream Continuity Steering Committee, composed of representatives from federal, state, local and non-governmental organizations to identify problem stream crossings within the region and develop local solutions. The Nature Conservancy initiated a similar project for the Ashuelot River Watershed.

Recommendation 5-10: Incorporate Habitat Conservation into Local Land Use Planning

Master plans, zoning ordinances, subdivision regulations, and other innovative land use tools should be amended to include science-based data and information for addressing wildlife habitat. This will lead to greater protection of habitats and help to conserve water quality and maintain landscape connections.

Recommendation 5-11: Promote Riparian/Shoreland Habitat and Other Wildlife Corridors

Studies and maps of prioritized wildlife habitat in riparian zones need to be developed at both the state and regional level. These maps can then be used as guides when selecting riparian

buffers and shoreline areas to protect or restore. In addition, this information would be helpful in the environmental review of development projects.

Recommendation 5-12: Natural Services Network

As part of the CTAP I-93 reconstruction project, a new regionally-based approach to address the impacts of growth in the region has been initiated. The goal is to identify priority areas for critical natural services – water supply, flood control, forestry and agricultural soils, wildlife habitat and connections. This Natural Services Network (NSN) approach can be considered at both the local and regional level in natural resources planning. A variation of the NSN approach is currently being used in the State of New Hampshire's Seacoast Coastal Conservation plan. This approach can also be considered as a tool in future natural resources studies for the Southern New Hampshire region.

GOALS FOR OPEN SPACE & RECREATION

The purpose of this chapter has been to identify and describe the existing protected lands, state parks and recreational facilities in the region, as well as to emphasize the importance of land conservation and community open space planning in order to protect the natural resources that have been prioritized for protection in the future. Some of the major open space and recreation objectives for the region should be to continue to identify and protect the most important natural resource and large undeveloped tracts of land remaining; to foster linkages between existing protected areas and state parks and forests; and to guide communities to consider the regional importance of open space and recreation in their community planning efforts.

In addition to these objectives is the broader goal of protecting the most important open space lands in the region from future development. To foster this goal, the following recommendations are suggested to direct future open space planning activities of the SNHPC, as well as assist communities in creating local land conservation strategies. Many of these recommendations are included in the Regional Open Space Plan prepared by Rockingham Planning Commission (March 2000) and have been adapted for use here.

Goal 5-4: Improve Access to Recreation

Improve use of and access to public spaces, parks, playgrounds, and recreation facilities, including after-hour access to school facilities for public use.

Goal 5-5: Educate the Public of Existing Resources

Provide a community public space map on town website, in town office and in town annual report to promote the use of public parks and recreational facilities.

Goal 5-6: Encourage Local Recreation Programs

Establish or enhance recreation programs for all age groups in the community.

RECOMMENDATIONS FOR OPEN SPACE & RECREATION

Recommendation 5-13: Protect Regional Significant Natural Resources

Areas that contain unique habitat and/or are ecologically important from a regional perspective should be a top priority for open space and land conservation planning. These areas and their associated values are described in more detail in the Natural Resources Chapter of this plan.

Recommendation 5-14: Promote Interconnections of Protected Open Space

The fragmentation of forests and open spaces into increasingly small and isolated pockets is a natural outcome of a sprawling development pattern. This leads to a reduction in wildlife habitat and the loss of open space. It is apparent when reviewing Map 5-7 prepared for this chapter that most of the existing protected lands within the region are widely dispersed, and with few exceptions, not connected. Many of the protected lands within the region were acquired based on the needs, priorities and opportunities of individual municipalities or conservation organizations that have concerns for specific natural resource areas.

From a regional perspective, open space is most effective when it is interconnected to maximize natural resource and wildlife habitat protection. Therefore, it is important to consider the proximity and character of existing protected lands as well as the feasibility of connecting areas of open space when planning for future protection. This is also true when considering the local resource protection priorities identified by each municipality.

Perhaps one of the easiest and most effective means to promote interconnections among protected open space is to establish greenways and buffers along many of the rivers and streams in the region. These natural corridors should be used to enhance connectivity between the various green spaces, parks and trails in the region.

Recommendation 5-15: Protect Large and Contiguous Tracts of Land

Contiguous blocks of undisturbed and undeveloped land are disappearing rapidly within the region. Large blocks of land are illustrated on the wildlife habitat maps prepared by New Hampshire Fish and Game as part of the Natural Resources chapter. Regional and local efforts for land protection and recreation need to be aimed at the largest blocks of undisturbed land that still remain undeveloped in the region. All levels of local, state and federal government as well as appropriate land trusts and conservation organizations need to be involved in developing strategies for protecting these areas.

As noted above, greenways can be used as one method to help promote the importance of interconnecting contiguous large blocks of open space, and to garner public support for increased enjoyment of open space and recreation within the region. Greenway planning is an exceptional planning and resource management technique. It can be conducted at all levels of government.

The State of Maryland's Open Space and Green Print Program is a nationally recognized program providing dedicated funds for Maryland's state and local parks and conservation areas. This program is aimed at protecting the most valuable remaining ecological lands that are

becoming fragmented within the state due to development. Most of these lands are located along the state's major rivers and streams. These areas have been identified as high priorities for protection in order to maintain biologically diverse landscapes and enable natural processes like filtering water and cleaning the air, to take place.

Recommendation 5-16: Promote Development through “Conservation Development”

Many of the planning boards in the region have adopted conservation development ordinances designed to promote permanent protection of open space. Often, some of the best conservation development occurs within low and moderate density zone areas and when there is a requirement that 50 percent or more of the property remain permanently protected. How and where this open space is protected within the development, however, remains a constant struggle.

When developing open space or conservation development ordinances, local planning boards should require that the development proposals include plans and/or easements for interconnected protected open space in neighboring developments. In addition, site design considerations pertaining to open space and natural resources should be made more integral to the development review process. This requires greater flexibility be provided in determining actual lot sizes, lot lines, as well as road and building locations. Subdivisions can be created to blend into the landscape if the development is designed to accommodate the site rather than to simply satisfy zoning requirements. Stone walls, fields, agricultural structures, and tree lines should be maintained. Consideration should also be given to protecting scenic landscapes and views.

Recommendation 5-17: Promote Inter-municipal Cooperation in Land Protection and Recreation

Inter-municipal cooperation in land protection efforts and recreation planning should be more strongly encouraged. River corridors, aquifers, wetlands, hills and mountain ranges cross municipal boundaries. Conservation commissions and planning boards among neighboring communities need to talk and meet with each other and share information about pending development proposals, land protection and recreation efforts.

Recommendation 5-18: Concentrate Public Infrastructure Investment in Developed Areas

Often one of the causes that lead to sprawl and untimely loss of open space is the public investment in facilities that are located away from existing urban centers. Examples of this are the premature and linear extension of water and sewer facilities in rural areas and the placement of public buildings such as schools, post offices, and safety complexes away from downtown areas. Such practices not only tend to encourage dependence on the automobile, but also attract additional development to “leapfrog” away from already developed areas. This problem can be addressed, in part, by establishing public policies, which strongly favor smart growth and the development of public infrastructure, facility and transportation investment in town centers and other already developed areas.

Recommendation 5-19: Increase Public Awareness

In order to garner local and regional support for open space and recreation, citizens must be made aware of the benefits of land conservation. Public education is a key factor in the sound management and protection of natural resources and recreation planning. Promoting public awareness about the work of Conservation Commissions, local land trusts, and other environmental organizations are very important in order to enlist public support and enhance public participation.

Recommendation 5-20: Establish Consistent Funding for Open Space and Recreation Priorities

Communities and local conservation and recreation groups should work to establish a significant and consistent funding source for land protection. Communities need to be ready for unexpected offers, and may need a dedicated land purchase or conservation fund ready to help leverage support for purchasing or conveying an easement on an important parcel. There are a variety of mechanisms that communities should consider, including local appropriations, capital improvement program, bonding, supplying unexpected funds into the conservation fund, donations from private landowners, concerned citizens and businesses, foundation support, fees from local programs, grants, tax liens, and proceeds from timber harvest on town forests. Communities should also request 100 percent of the current use penalty proceeds be placed in their conservation fund. In addition, there are a number of private non-profit conservation organizations and state and federal protection and acquisition programs which can help by providing monies to leverage local land conservation efforts (see a description of some of these programs in the appendix).

Recommendation 5-21: Increase Public Access to Surface Waters and Land Resources

One of the primary purposes of providing open space and recreation is for public enjoyment. Public access should be a consideration when formulating open space and recreation plans. As more land in the region is developed, public access to the region's lakes, ponds and rivers is becoming less available. Communities and local conservation organizations, however, need to be careful when deciding to increase public access, particularly if water quality or habitat values are threatened. Different situations require different types of access and making this distinction is important.

Recently, the New Hampshire House voted to keep planning boards from requiring developers to allow public access to open space as a condition of plan approval (see House Bill 1366). While this issue has not been resolved or addressed at the local level, it should be very simple that when open space is held in private or common ownership (such as a homeowner's association), public access to such open space should be determined by the landowners and not the planning board. However, if the open space is to be dedicated to the municipality or placed into a conservation easement, public access should be allowed to the land, if appropriate.

Recommendation 5-22: Review and Update Local Inventories and Master Plans

Many communities within the region do not have up-to-date inventories of town-owned lands, protected lands, and/or natural resources. An updated master plan and an updated Natural Resource Inventory is something that all communities should have available at their fingertips. Conservation Commissions should be directed to undertake these inventories and there are a variety of grant programs available to help fund this work. Once inventories are completed, local open space, conservation and recreation plans should be developed which should also include detailed review of adjacent communities' land protection plans. Each plan should include a five and ten-year action plan with identified priorities and funding mechanisms such as the CIP incorporated.

Recommendation 5-23: Review and Reform Planning and Zoning Regulations

It is of utmost importance that a community's planning and zoning regulations actually lead toward the goals of the master plan and natural resource inventory. Planning boards and conservation commissions should take time to review their master plan to ensure the regulations as written and interpreted address the goals stated. This generally should be completed every five years or whenever the master plan is updated and anytime the community's land use regulations are amended.

Recommendation 5-24: Develop a Local Open Space or Recreation Plan

Communities within the region without local open space or recreation plans should take appropriate steps to develop one. This can be accomplished as a separate plan or as a chapter in the master plan. These plans are important in establishing local goals and protection priorities as well as for future grant funding opportunities. Additional planning tools that should be considered include completing a community wide "build out" study. The implications of population projections and development trends become much clearer when a picture of the future growth of the community is provided when the community is built out to the maximum density allowed by existing zoning regulations.

Recommendation 5-25: Work with Large Landowners

While current use is an effective tool for reducing financial pressure on landowners to sell or develop their land, it does not afford any measure of permanent protection. Permanent land conservation measures are essential in order to retain significant open space for future generations. Communities should pay attention to the desires and intentions of large landowners and establish lines of communication about the benefits and tax advantages of open space and recreation. Many landowners may hope to pass the land on to the next generation, but may be unaware of the various financial and estate planning tools available to help facilitate this.

Recommendation 5-26: Prepare a Regional Conservation Plan

This comprehensive plan should be viewed as a resource guide that can be presented to communities to assist local planning and conservation efforts. However, after review and discussion, it might be useful if a more detailed plan is developed which establishes a regional conservation framework and identifies region and statewide priorities for land protection and natural resource management. Such a plan could help establish partnerships between local watershed and river associations as well as a number of federal/state multi-jurisdictional natural resource projects, occurring in the region. In addition, it could help set up an environmental framework for greenway planning at the local, region and state level similar to the Maryland model as a means for addressing future growth predicted to result from the I-93 widening project. Lastly, it could be modeled somewhat after the Conservation Plan being undertaken in the Seacoast Region.

Recommendation 5-27: Provide Technical Assistance in Adopting Conservation Development Ordinances

The SNHPC should also be available to provide assistance to interested communities to refine their conservation development ordinances and other ordinances, which promote compact development, smart growth, and encourage the protection and interconnection of open space.

Recommendation 5-28: Provide Regional GIS Analysis Tools

SNHPC should also provide GIS analysis and maps of the region's changing land use patterns, open space, protected lands and natural resources to focus conservation activities and to protect and restore important habitat throughout the region. Consideration should also be given to the idea of a regional build out analysis using digital tax map information to better understand the potential amount, density and general location of future development that would be permitted in the region, under current zoning regulations. This could be incorporated into a regional conservation plan.

Recommendation 5-29: Support Local Land Trusts

SNHPC should organize and facilitate a forum on Open Space and Recreation planning for the region and work collaboratively with local land trusts and conservation organizations to establish a support group for targeting future open space and recreation planning. This forum should also serve to ensure that all communities within the region are covered by at least one private land conservation organization that can accept conservation easements from private landowners.

GOALS FOR AGRICULTURAL RESOURCES

The primary goal for agricultural resources is to protect lands for agriculture for existing and future generations to continue providing a sustainable food supply for the residents of the region and to allow and promote for small scale agriculture in inner-city and suburban areas.

Municipalities within the SNHPC Region can take specific actions to support agriculture and enhance community life in three areas: reducing development pressure for productive agricultural land, integrating agriculture into the local economy, and ensuring the farmer's right to farm.

RECOMMENDATIONS FOR AGRICULTURAL RESOURCES

Recommendation 5-30: Establish Local Agriculture Commissions

All municipalities should organize an Agriculture Commission. Initially these commissions were established to give farmers a voice and raise public awareness. Eventually they have evolved in to much more. They can collaborate with other town boards to mitigate issues facing the town through the voice of the farmers, help resolve farm-related problems, protect farmland, and assist with natural resource management.

Agricultural commissions can:

- create an agricultural overlay district as a community bylaw
- organize agricultural incentive agreements
- promote on-farm energy creation
- collaborate with land trusts and open space conservation organizations to get more land into farming
- forecast impacts on future food supplies

Recommendation 5-31: Reduce Development Pressure on Agricultural Lands Currently in Use

Communities can reduce development pressure on existing agricultural lands by:

- Purchasing development rights
- Limiting infrastructure improvement (sewer and water) in agricultural areas
- Using zoning to guide growth away from farms
- Creating zoning regulations to protect prime farmland soils and soils of statewide importance.
- Budgeting money for agricultural conservation easements, supplemented with funds from state and federal programs.
- Increasing efforts to protect farmland through conservation, and applying to grants for financial assistance.

Recommendation 5-32: Enhance Integration of Agriculture into the Local Economy

Communities can integrate agriculture into the local economy by:

- Supporting farmers and enable legislation regarding state tax issues that directly impact their operations (tax credits for working agriculture)
- Including opportunities for agricultural expansion in future economic development initiatives
- Establishing a “buy local” program
- Establishing a community education program to teach the social and economic benefits of agriculture.
- Promoting and supporting the establishment of a farmers’ market in a commercially attractive location to help create new markets for locally grown agricultural products.
- Encouraging the expansion of current Community Supported Agriculture operations to meet existing demand.
- Enhancing and encouraging agriculture-related tourism such as Apple Way in Londonderry.
- Increasing signage for farms, farm stands, and farmers’ markets, and reduce restrictions for temporary or seasonal signage for these purposes.
- Working directly with farmers and agricultural property owners to enhance viability of agriculture in the town.

Recommendation 5-33: Ensure the Right-to-Farm

Communities can work to ensure residents have the right-to-farm by:

- Removing impediments to agriculture in zoning ordinances through measures to
 - i. Encourage agricultural activity anywhere in the community unless a specific safety or health hazard can be documented
 - ii. Provide flexibility in zoning, subdivision, and site plan review regulations for agricultural uses.
 - iii. Permit a wide range of farm-based enterprises by removing impediments to home-based business or other subordinate or accessory farm activity.
- Exempting agriculture or clearly differentiate subdivision and site-review requirements for agricultural enterprises from those regulating commercial, industrial, and residential.
- Requiring developers to buffer new non-agricultural development from existing or potential farm locations to prevent or minimize negative interactions.
- Educating town officials and farmers about existing grant money and facilitate the application process.

The New Hampshire Coalition for Sustaining Agriculture (NHCSA) and the University of New Hampshire Cooperative Extension have produced a comprehensive resource kit for planners entitled “Preserving Rural Character through Agriculture” that specifically addresses the needs of New Hampshire agricultural operators and local governments. The kit contains specific zoning guidelines to help planners encourage agriculture in their municipalities. Some of these guidelines include: Allow agriculture in more than one zoning district; Use zoning definitions of agriculture in a

broad and inclusive manner; and Allow non-traditional or retail-based farm business in agricultural zones. Local officials and municipal planners are encouraged to access the resource kit at the following website: https://extension.unh.edu/resources/files/Resource000023_Rep23.pdf.

Agricultural operations can benefit greatly from farm-friendly zoning regulations, local food marketing, and community involvement. “We need to emphasize that agricultural producers need everybody,” says Linda Langdell of the USDA Farm Service Agency. The University of New Hampshire should be the beacon for this progress in the region. UNH has the greatest potential of all New England land grant universities with its 1100 acres of farms and woodlands within six miles of campus, a setting in an area of significant interest in demand for local food from Portland to Boston, and its long distinguished history of agricultural research.

Today the key is for UNH to honor its claims as leaders in sustainability and take full advantage of its opportunity. A community educated about the local agricultural industry will understand the economic and social benefits of agriculture well beyond the success of individual farmers. The SNHPC Region already ranks high in community involvement in agricultural sales, as evidenced by Hillsborough and Rockingham Counties’ high national ranking of direct sales. The continued integration of agriculture in the community will ensure the agriculture’s place at the heart of the region’s identity, despite the loss of farmland. It will be up to communities in the region to protect and encourage a variety of sustainable agriculture practices.

APPENDIX A: NATURAL RESOURCES

PONDS AND LAKES WITHIN THE REGION

Regionally significant ponds of 50 acres or more (including Little Massabesic Lake at 49.5 acres) as identified by NH DES in the SNHPC Region are shown below by municipality.

Auburn

Calef Lake	27.9 acres
Little Massabesic Lake	49.5 acres
Clark Pond Dam	58.1 acres
Massabesic Lake	2,900 acres

Bedford

Sebbins Pond	19.8 acres
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Candia

Tower Hill Pond	158 acres
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Deerfield

Spruce Pond	21.7 acres
Beaver Pond	58.4 acres
Freeses Pond	82 acres
Pleasant Lake	493.5 acres

Derry

Ezekiel Pond	10.3 acres
Upper Shield Brook	11.3 acres
Beaver Brook	40 acres
Ballard Pond	120.9 acres
Beaver Lake	133.6 acres
Island Pond	497.9 acres

Goffstown

Uncanoonuc Lake I	24 acres
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Hooksett

Pinnacle Pond	18.6 acres
Clay Pond	28.9 acres
Head's Pond	51.7 acres

Londonderry

Kendall Pond	11.4 acres
Little Cohas Brook	18.2 acres
Scobie Pond	26.6 acres

Manchester

Stevens Pond	15.5 acres
Nutt Pond	16.1 acres
Dorrs Pond	17.6 acres
Crystal Lake	18.6 acres
Long Pond	28.3 acres

New Boston

Still Pond	11.4 acres
Beard Pond	11.9 acres
Dennison Pond	12 acres
Dodge Pond	12.5 acres
Bailey Pond	14.2 acres

Raymond

Dead Pond	10.8 acres
Norton Pond	11.4 acres
Governor's Lake	52.2 acres
Onway Lake	192 acres

Weare

Ferrin Pond	14.7 acres
Mount William Pond	33.1 acres
Perkins Pond March	55 acres

Windham

Canobie Lake	373.4 acres
Cobbett's Pond	344.7 acres

NEW HAMPSHIRE WILDLIFE ACTION PLAN, SPECIES OF GREATEST CONCERN

Invertebrates	Amphibians	Birds (continued)
<i>Freshwater Molluscs</i>	Blue-spotted salamander (RC)	Peregrine falcon (E)
Brook floater (E, RC)	Fowler's toad (SC)	Pied-billed grebe (E, RC)
Dwarf wedgemussel (E, FE)	Jefferson salamander (SC, RC)	Piping plover (E, FT)
Eastern pondmussel (RC)	Marbled salamander (E)	Purple finch
<i>Insects</i>	Mink frog	Purple martin (E)
Barrens ilame	Northern leopard frog (SC, RC)	Purple sandpiper
Barrens xylotype	<i>Reptiles</i>	Red shouldered hawk (SC)
Broad-lined catopyrrha	Black racer	Roseate tern (E, FT)
Cobblestone tiger beetle (T)	Blanding's turtle (SC, RC)	Ruffed grouse
Cora moth	Eastern box turtle (RC)	Rusty blackbird (SC)
Frosted elfin butterfly (E)	Eastern hognose snake (T, RC)	Salt marsh sharp-tailed sparrow (SC, RC)
Karner Blue Butterfly (F, FE)	Ribbon snake (RC)	Seaside sparrow (SC)
Persius duskywing (E)	Spotted turtle (SC, RC)	Sedge wren (E, RC)
Phyllira tiger moth	Smooth green snake (SC)	Semipalmated sandpiper
Pine barrens zanclognatha moth (T)	Timber rattlesnake (E, RC)	Spruce grouse
Pine pinion moth (T)	Wood turtle (SC, RC)	Three-toed woodpecker (T)
Puritan tiger beetle (FT)	<i>Birds</i>	Turkey (BGP)
Ringed boghaunter (E)	American bittern (RC)	Upland sandpiper (E, RC)
Sleepy duskywing	American black duck	Veery ²
White Mountain arctic	American pipit (SC)	Vesper Sparrow
White Mountain fritillary	American woodcock	Whip-poor-will (SC, RC)
Vertebrates	Arctic tern (T)	Willet (SC)
<i>Fish</i>	Bald eagle (E, FT)	Wood thrush
Alewife	Bay-breasted warbler	<i>Mammals</i>
American brook lamprey (RC)	Bicknell's thrush (SC, RC)	American marten (T)
American eel	Black guillemot (SC)	Black bear (BGP)
American shad	Canada warbler (RC) ²	Bobcat (SC)
Atlantic salmon	Cerulean warbler (RC)	Canada lynx (E, RC, FT)
Atlantic sturgeon (RC)	Common loon (T)	Eastern pipistrelle (SC)
Banded sunfish (RC)	Common nighthawk (T)	Eastern red bat (SC, RC)
Blueback herring	Common tern (E, RC)	Eastern small-footed bat (E, RC)
Bridle shiner (RC)	Cooper's hawk (T)	Hoary bat (SC, RC)
Burbot	Common moorhen	Indiana bat (FE)
Eastern brook trout	Eastern meadowlark	Moose (BGP)
Finescale dace	Eastern Towhee	New England cottontail (SC, RC)
Lake trout	Golden eagle (E, RC)	Northern bog lemming (SC, RC)
Lake whitefish	Golden-winged warbler (SC, RC)	Northern myotis
Northern redbelly dace	Grasshopper sparrow (T)	Silver-haired bat (SC, RC)
Rainbow smelt	Great blue heron	White-tailed deer (BGP)
Redfin Pickerel	Horned lark	Wolf (FT)
Round whitefish (RC)	Least bittern (SC)	Codes:
Sea lamprey	Least tern (E, RC)	T = NH threatened
Shortnose sturgeon (E, FE)	Nelson's sharp-tailed sparrow (SC)	SC = NH species of special concern
Slimy sculpin	Northern goshawk	RC = Regional conservation concern
Sunapee trout (E)	Northern harrier (E, RC)	FE = Federally endangered
Swamp darter	Osprey (T)	FT = Federally threatened
Tessellated darter	Palm warbler	BGP = Only included in NH Big Game Plan

Source: NH Wildlife Action Plan

CHANGES IN WATERSHEDS IN THE U.S. DUE TO INCREASING HOUSING DENSITY

TABLE 5-17: WATERSHEDS WITH THE LARGEST PROJECTED DECREASE IN WATER QUALITY

Numerical Rank	Watershed	State	Water Quality Index	Private Forest to Experience Increased Housing Density (percent)
1	Piscataqua-Salmon Falls	Maine, Massachusetts, New Hampshire	74.6	63
2	Contoocook	New Hampshire	75.5	55
3	Etowah	Georgia	68.1	51
4	Merrimack	Massachusetts, Maine, New Hampshire	66.3	50
5	Seneca	North Carolina, South Carolina	68.5	46
6	Deep	North Carolina	74.4	35
7	Coosawattee	Georgia	65.8	45
8	Haw	North Carolina	65.1	46
9	Upper Bear	California	63.7	47
10	Upper Cape Fear	North Carolina	61.3	51
11	Upper Broad	North Carolina, South Carolina	69.9	36
12	Saluda	North Carolina, South Carolina	70.9	34
13	Upper Neuse	North Carolina	60.6	50
14	Four Hole Swamp	South Carolina	69.1	35
15	Rivanna	Virginia	68.3	36

Water quality indices are based on a combination of factors including the percentage of each watershed in private forest and the percentage of all forest that is private.

Source: U.S. Department of Agriculture³⁴

³⁴ Private Forests, Public Benefits: Increased Housing Density and Other Pressures on Private Forest Contributions. 2009. http://www.fs.fed.us/openspace/fote/benefits_download.html

TABLE 5-18: WATERSHEDS WITH THE LARGEST PROJECTED DECREASE IN TIMBER VOLUME

Numerical Rank	Watershed	State	Estimated Private Timber Volume (million cubic feet)	Private Forest to Experience Increased Housing Density (percent)
1	Merrimack	Massachusetts, New Hampshire	1,867	50
2	Piscataqua-Salmon Falls	Maine, Massachusetts, New Hampshire	1,094	63
3	Puget Sound	Washington	1,754	42
4	Etowah	Georgia	1,103	51
5	Lower Potomac	Maryland, Virginia	1,229	47
6	Saco	Maine, New Hampshire	1,134	45
7	Upper Catawba	North Carolina, South Carolina	1,319	40
8	Haw	North Carolina	1,048	46
9	Contoocook	New Hampshire	919	55
10	Upper Broad	North Carolina, South Carolina	1,378	36
11	Saluda	North Carolina, South Carolina	1,439	34
12	Upper Neuse	North Carolina	853	50
13	Upper French Broad	North Carolina, South Carolina, Tennessee	1,346	34
14	Presumpscot	Maine	797	55
15	Hiwassee	Georgia, North Carolina, Tennessee	1,008	38

Source: U.S. Department of Agriculture³⁵

³⁵ Private Forests, Public Benefits: Increased Housing Density and Other Pressures on Private Forest Contributions. 2009. http://www.fs.fed.us/openspace/fote/benefits_download.html

F

(ECONOMIC DEVELOPMENT)

MOVING SOUTHERN NH FORWARD

VOLUME 2:
Economic Development



2015-2035

Regional Comprehensive Plan 2015



Southern New Hampshire Planning Commission works to make our region better by facilitating cooperative and long term decision making. We believe a promising future can be achieved through fiscally sound and responsible planning and development decisions that improve the economy, efficiency and health of our region.

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ECONOMIC DEVELOPMENT

PURPOSE

The purpose of this component is to review existing and future economic development conditions and trends within the SNHPC Region and identify key economic development issues, strategies and projects that will enhance economic growth and vitality.

VISION

This Economic Development Chapter is founded upon the following Vision Statement:

Community and Economic Vitality



Residents treasure the strong bonds in their communities and want to ensure that they address the needs of seniors, attract youth, and serve every child and adult in between. They value the community strength that comes from quality schools, enhanced job creation and expanded economic development opportunities, including small business growth and local agriculture.

KEY ISSUES AND CONCERNS

Some of the key economic development issues and concerns identified and discussed with the Leadership Team are summarized as follows:

1. The region's economy is currently showing signs of improvement, but growth is still slow;
2. Unemployment in the state and region is decreasing, but the region still has few high paying jobs;
3. Many workers in the region have to commute to work out of the region and state;
4. Property values are showing signs of improvement and are increasing again;
5. Building permits and development are still down, but not back to pre-2008 levels;
6. Population growth in the state and region is slow – some towns in the region are losing people;
7. Limited municipal funding is available for services and improvements. Federal and state aid is also declining, which is constraining local budgets and capital improvement needs;
8. Good signs – wages and incomes are up and the region is economically diverse and resilient;
9. There is a continuing widening of the income gap – squeezing the middle class;
10. The region's overall cost of living is relatively high compared to the rest of the country, but better than Boston;
11. NH continues to have one of the highest percentages of high school students leaving the state for college (48 percent); and
12. NH and the SNHPC Region's population and workforce are continuing to grow older....

PUBLIC SURVEY RESULTS

In 2013, the University of New Hampshire (UNH) conducted a statewide telephone survey of New Hampshire residents. A total of 2,013 adults were surveyed on values and priorities among the nine planning regions. The statewide response rate was 37 percent and the margin of sampling error for the survey is +/- 2.2 percent.

THE SURVEY FOUND THE SNHPC REGIONAL RESPONSES LARGELY REFLECT STATEWIDE RESULTS. RESIDENTS VIEW NEARBY JOB OPPORTUNITIES AS HIGHLY IMPORTANT, WITH 89 PERCENT OF RESPONDENTS INDICATING IT IS FOSTER LOCAL EMPLOYMENT. OTHER IMPORTANT ASPECTS OF A COMMUNITY INCLUDE HAVING NEARBY SMALL AND RETAIL STORES (85 PERCENT), GROCERY STORES (83 PERCENT) AND CULTURAL AND RECREATION FACILITIES (82 PERCENT), ALL OF WHICH CAN CONTRIBUTE TO THE LOCAL ECONOMY. IN ADDITION TO JOB OPPORTUNITIES, 77 PERCENT OF THE RESIDENTS SURVEYED THINK FUTURE DEVELOPMENT SHOULD OCCUR IN AREAS THAT ARE DEVELOPED, WHILE ONLY 26 PERCENT SUPPORT DEVELOPMENT IN UNDEVELOPED AREAS AND 7 PERCENT DID NOT KNOW (SEE

Figure 6-2).

FIGURE 6-1: IMPORTANCE OF NEARBY JOB OPPORTUNITIES IN SNHPC REGION

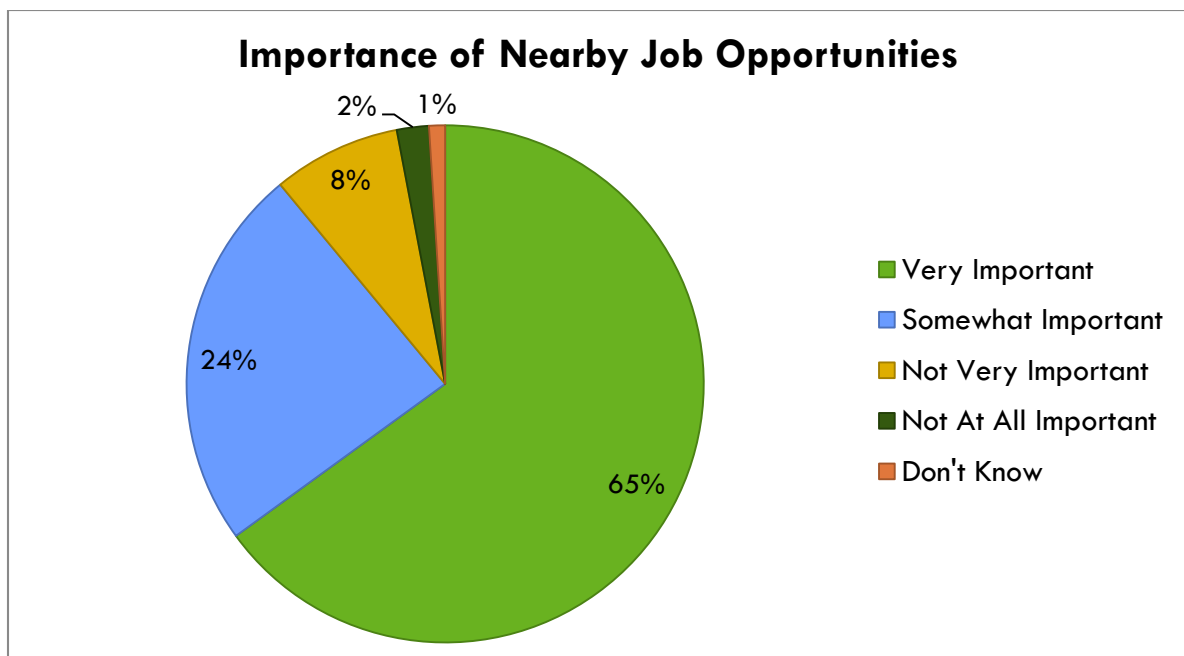
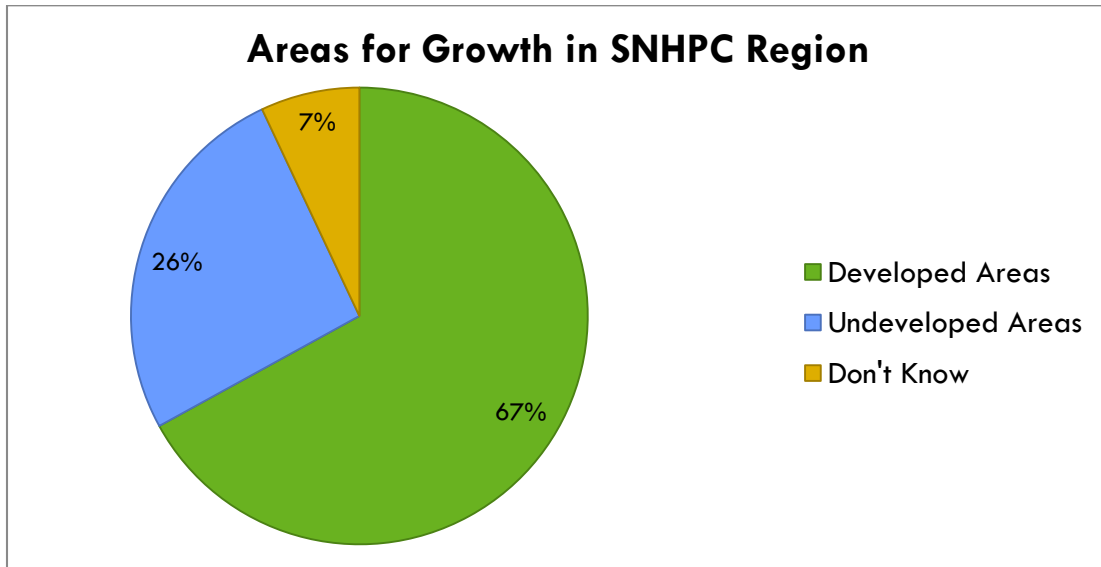


FIGURE 6-2: WHERE SHOULD FUTURE DEVELOPMENT OCCUR?

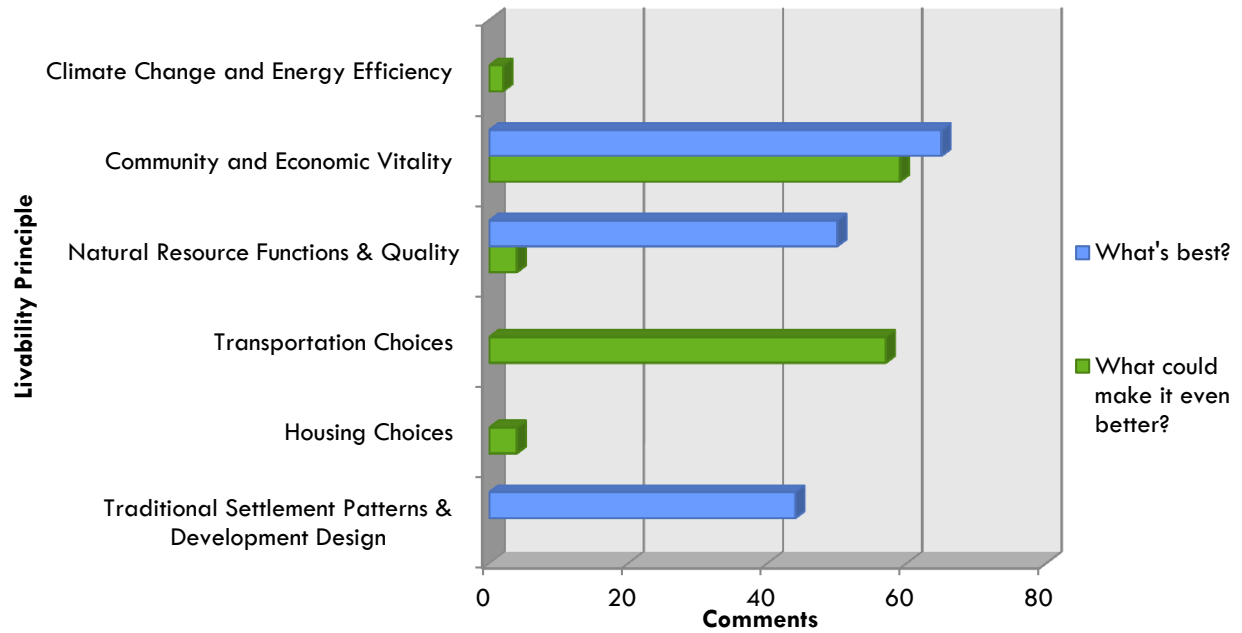


COMMENTS ON THE GENERAL OUTREACH QUESTIONS REGARDING **WHAT'S BEST? AND WHAT COULD MAKE [THIS BETTER?** WERE ALSO COLLECTED FROM THE WEBSITE AND COMMENT CARDS.

Figure 6-3 captures the results of the overall input from all comments on *what's best and what to make even better* in Southern New Hampshire.

FIGURE 6-3: SNHPC PUBLIC OUTREACH SURVEY RESULTS

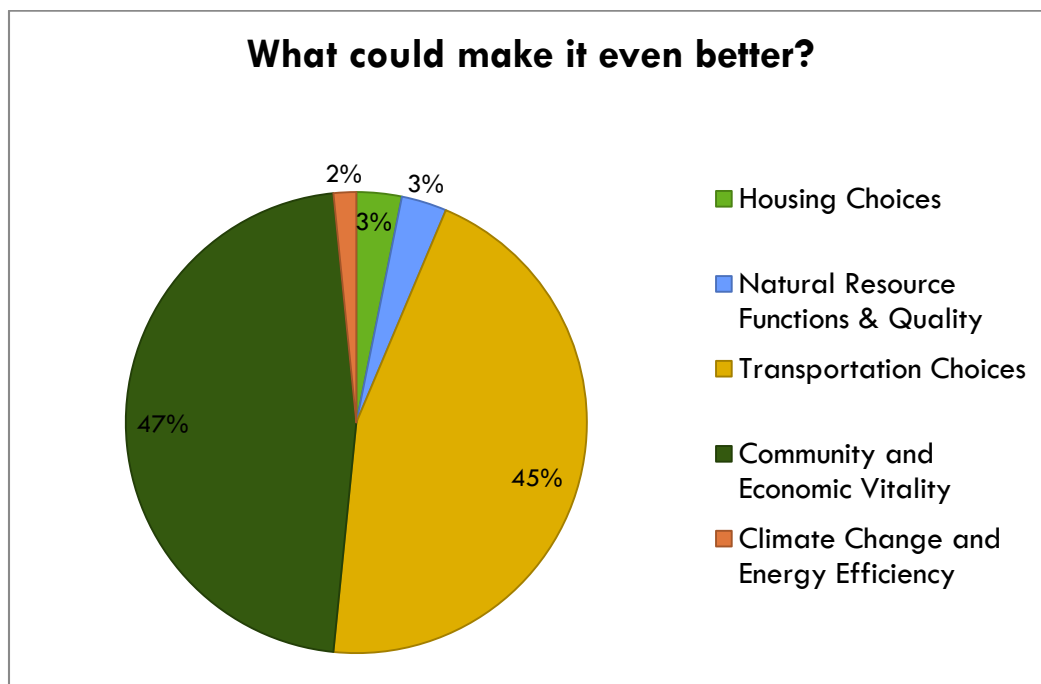
What's best and What could make it even better?



While respondents did agree that the Community and Economic Vitality aspects of the SNHPC Region were “best”, they did think there was room for improvement (See **Figure 6-4**). The Community and Economic Vitality livability principle received the most overall feedback. Some of the specific comments on *What Could Make the Region Even Better?* included:

- Better roads for bicycling in the community. More stable jobs. More manufacturing. Lower business taxes and regulations.
- Better public transportation, more pedestrian amenities to make places more walkable, more economic development and focus on job creation.

FIGURE 6-4: WHAT COULD MAKE IT EVEN BETTER?



EXISTING CONDITIONS

As the Southern New Hampshire Planning Commission (SNHPC) Region continues to grow in population, economic development is increasingly important for two reasons. First, the provision of goods, services and jobs is essential to sustain a greater number of residents. Second, the region needs to attract and maintain businesses that provide the tax base to fund schools, roads, and other municipal services. Given the SNHPC Region's prime location in Southern New Hampshire and close proximity to Boston and the coast, the region is an attractive area for businesses to locate. Additionally, New Hampshire has a relatively low overall tax burden and a high quality of life that can attract economic growth.

REGIONAL ECONOMIC HISTORY AND BACKGROUND

Due to its large population and diversity of commerce and industry, economic development of the SNHPC Region revolves around the City of Manchester. While many of the towns surrounding the city have developed as bedroom communities, the towns of Hooksett, Bedford, Londonderry and Derry have grown into centers of commerce in their own right.

Prior to 1810, Manchester was primarily an agricultural and small manufacturing community until the arrival of the Amoskeag Cotton and Woolen Manufacturing Company which transformed the character of the city, employing up to 16,000 people at its peak after World War I. By the 1960s, the Amoskeag Millyard was in serious disrepair. A joint Urban Renewal effort between federal and local governments preserved and revitalized the industrial area into large manufacturing facilities with appropriate amenities and transportation improvements necessary to modernize 19th century mills.¹ The region experienced tremendous growth and a rise in business in the 1980s. Due to a recession in the late 1980s and early 1990s, manufacturing jobs substantially declined, resulting in a loss of 19,600 jobs from across New Hampshire's manufacturing sector from 1990 to 2005.² The economy has since shifted from manufacturing to primarily financial, retail, technology, and business services.



Weare Center Store

Over the past two decades, towns surrounding Manchester have experienced significant increases in residential development. This new residential growth has, in turn, increased the demand for commercial and industrial development within the region for several reasons. Many towns are eager to create a more balanced and diversified tax base from a mixture of residential and non-residential development.

Over the course of the past decade the number of people employed in the region has risen by 1.8 percent. After peaking in 2005, total employment within the SNHPC Region fell by 2 percent by 2009.³ This is largely attributable to the recession of the late 2000's. While job gains between 2005 and 2009

¹ For more information, see Manchester Master Plan 1993 and the Manchester Housing Authority Redevelopment Office 1982.

² FDIC New Hampshire State Profile, 2005: <http://www.fdic.gov>

³ SNHPC Region Economic Development Plan, 2010

have been slow, most towns in the region experienced some increase in employment between 2000 and 2009. These towns include:

- Auburn (71.3 percent)
- Chester (46 percent)
- New Boston (34 percent)
- Weare (26.9 percent)
- Candia (25.6 percent)

The towns of Derry and Raymond and the City of Manchester, however, all experienced declines over this 10-year period.⁴

During the late 1980s and the 1990s, the SNHPC Region experienced increased commercial development, often in the form of retail strip development on previously rural roads. Large retailers have reached out beyond Manchester and the process of expansion continues today as major supermarkets, department stores, and discounters are now located in almost every town in the region. This trend may explain why some of the greatest percentage of population and job growth in the region is located in rural communities.

The manufacturing that once dominated the region has today helped to attract high technology, software development, corporate headquarters, and legal and financial business support services. The occupations projected to grow the most in the next decade are health care professionals and social assistance. Other recent developments in Greater Manchester include new opportunities in the arts, culture, and sports, as well as related support industries and businesses.

The diverse ethnic populations immigrating to the area through the United States Refugee Resettlement Program will also diversify the region's economy through small business growth and development. Many ethnic populations are already opening new shops and restaurants throughout Manchester.

Also, growth in the transportation sector (particularly future development around the airport as a result of the I-93 expansion and upgrade) will increase the region's potential to host national or international businesses as well as many smart warehousing type facilities and businesses. These uses are already springing up in the Londonderry area.

While Manchester remains a viable economic center for the SNHPC Region and the state's economy, surrounding towns within the region need more economic diversification to provide for financial well-being. Residential development can increase the cost and demand for public services, while business development often helps to increase tax revenues to pay for increased services. If properly planned, the development of a diverse, vibrant economic base in smaller towns can enhance quality of life, alleviate transportation problems, and provide greater tax revenues. This can also allow municipalities to take a greater role in helping to preserve the rural character of the region.

One of the greatest challenges facing many of the region's bedroom communities is maintaining their rural character, while at the same time, promoting economic growth. Most towns in the region have encouraged strip development, commerce and industry to concentrate in areas away from their most valued open space. New Hampshire's smart growth principals which promote mixed-use zoning and livable and walkable communities offer communities the tools they need to better protect their valuable open space and rural character. Another possibility is eco-industrial parks, in which industries collaborate or maximum

⁴ Note: these figures represent the number of jobs housed in each community, not the number of its residents with jobs

efficiency and minimum pollution. To maintain a balance between rural character and economic development, the region should look towards creative, innovative ideas to diversify.

Economic development is also closely linked with other goals, including infrastructure development, affordable housing, and recreational facilities. All of these features can help attract business. For the region to promote and maintain successful economic development, local officials need to work together to modernize infrastructure and other quality-of-life amenities. A large part of this challenge is finding the funding to accomplish this.

COMMUTING PATTERNS

One of the major economic development concerns facing the region is the large number of residents who commute to jobs outside of the region. Commuting to work outside of New Hampshire generally draws local dollars to other locations outside of the region and state. This can negatively impact economic growth and place additional strains on our transportation systems to expand to handle the additional traffic. Most of the labor force in the region commutes to the City of Manchester, the center and hub of employment in the SNHPC region. From 2000 to 2010 the percentage of the labor force commuting out of town dropped from 66.32 percent to 58.76 percent, which could reflect the effects of the economic recession from 2007-2009, and an increase in unemployment rates associated with those effects. It could also be indicative of a trend toward greater preference to live near work opportunities and reduce commuting time.



The intersection at Merrimack and Elm Street remains busy with downtown workers.

For information and data pertaining to regional commuting patterns, including the percent of labor force commuting out of each town and the communities most commonly commuted to, see Chapter 2: Housing.

WAGES AND INCOME

In 2009, New Hampshire's per capita personal income of \$42,831 ranked 8th highest among all 50 states. However, this was a decrease of \$592 from 2008; the first time that New Hampshire experienced a decline in per capita personal income since the data was first collected in 1969.⁵ The 2009 Median Household Income for the three counties that comprise the SNHPC Region (Hillsborough, Merrimack and Rockingham) is \$68,527. This is higher than both the state of New Hampshire (\$63,033) and the United States (\$51,425).

According to the 2010 U.S. Census, Bedford has the highest median household income in the region, followed by Windham and Chester. Manchester has the lowest annual household median income, followed by Raymond and Derry. Along with a high relative income, the State of New Hampshire currently has one

⁵ NHES, ELMB, Road to Recovery, New Hampshire's Economy 2010, June 2010.

of the lowest poverty rates in the nation, with only 8.0 percent of the population living below the poverty line, compared with 14.3 percent in the US.⁶ Most of the towns in the SNHPC Region have only a small percentage of families living at or below the poverty level (see **Table 6-1**). The City of Manchester has the highest poverty rate in the region, with 13.8 percent of residents living at or below the poverty line. This rate is higher than the state average.⁷ For an expanded discussion and review of data related to wages and income, see Chapter 2: Housing.

TABLE 6-1: POVERTY RATES BY SNHPC COMMUNITY

Municipality	Percent of All Individuals Below Poverty Level
Auburn	1.7%
Bedford	3.2%
Candia	4.2%
Chester	3.9%
Deerfield	2.9%
Derry	6.3%
Goffstown	4.1%
Hooksett	3.1%
Londonderry	2.3%
Manchester	13.8%
New Boston	2.4%
Raymond	5.9%
Weare	1.5%
Windham	1.2%
SNHPC Region	7.7%
New Hampshire	8.0
United States	14.3

SOURCE: 2007-2011 AMERICAN COMMUNITY SURVEY

The towns with the highest average weekly wages paid in the SNHPC Region in 2012 are Bedford at \$1,040 and the City of Manchester at \$976. The Town of Deerfield has the lowest average weekly wage at \$605, followed by the towns of Goffstown at \$694 and Chester at \$717. The regional average is \$888 (See

Figure 6-5).⁸

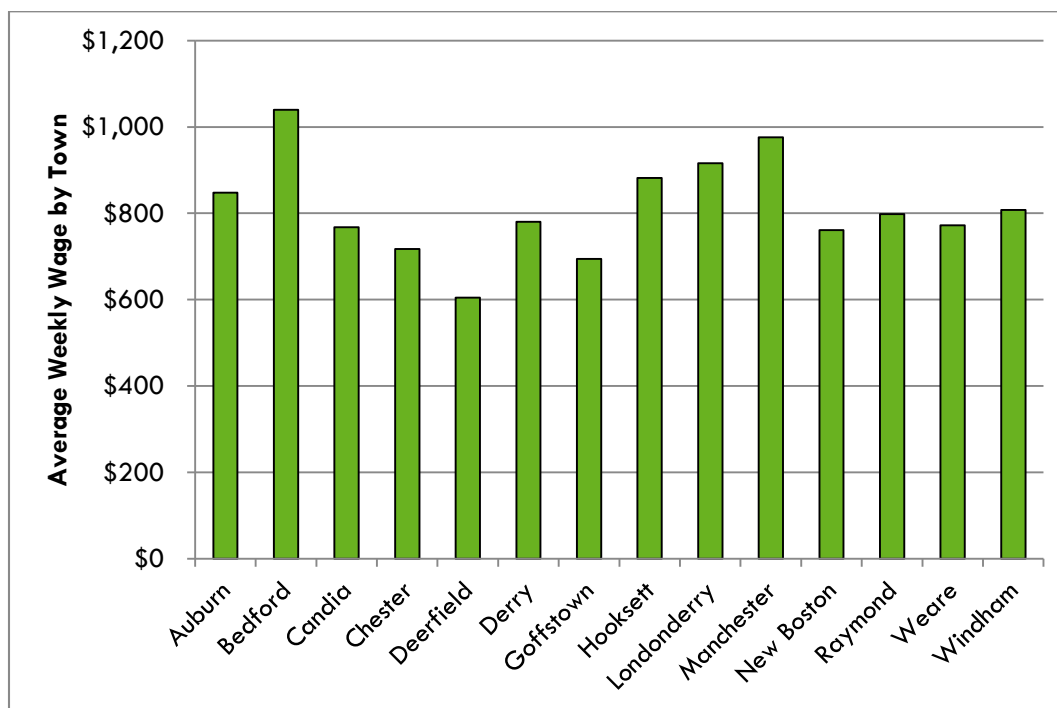
⁶ 2009-2011 ACS, U.S. Census

⁷ Ibid.

⁸ Economic and Labor Market Information Bureau of New Hampshire Employment Security, NHetwork.

According to the Economic and Labor Market Information Bureau these figures represent the weekly wages paid by out by employers to their employees, not what residents of the town make. For example, Manchester

FIGURE 6-5: AVERAGE WEEKLY WAGE BY TOWN FOR THE SNHPC REGION (2012)



SOURCE: ECONOMIC AND LABOR MARKET INFORMATION BUREAU OF NEW HAMPSHIRE EMPLOYMENT SECURITY.

EDUCATION

Table 6-2 illustrates the educational attainment levels for each town in the SNHPC Region. As of 2009, New Hampshire ranks 10th nationally in the percent of population over 25 years old with a college degree. A total of 89.6 percent of the SNHPC Region's residents have earned a high school diploma while 29.3 percent have a bachelor's degree or higher, both of which are above the national average.⁹ The educational attainment of the region's workforce is a positive factor in attracting higher-paying industries and businesses to the region.

The region is also home to many colleges, universities, and technical or vocational schools all of which are in Manchester. These include University of New Hampshire Manchester; Southern New Hampshire University; New Hampshire Community Technical College; Mount Washington College (formerly Hesser College); Saint Anselm College; New Hampshire Institute of Art; Massachusetts College of Pharmacy and Health Sciences (See **Map 6-1**). Most of these schools have programs connecting students to local employers through recruitment and internships, which encourages many students to find local employment upon graduation.

employers pay out the second highest weekly wages, but Manchester residents earn the lowest median annual household income in the region.

⁹ 2000 U.S. Census.

TABLE 6-2: EDUCATIONAL ATTAINMENT FOR THE SNHPC REGION, 2009

	Percent H.S. Degrees	Percent Bachelor's Degrees
Auburn	93.6%	32.5%
Bedford	95.8%	55.5%
Candia	95.5%	33.4%
Chester	93.6%	42.5%
Deerfield	89.6%	30.9%
Derry	90.9%	26.6%
Goffstown	89.1%	26.4%
Hooksett	91.9%	33.5%
Londonderry	94.4%	39.4%
Manchester	85.8%	25.1%
New Boston	95.1%	41.0%
Raymond	87.4%	18.0%
Weare	92.3%	26.4%
Windham	96.1%	47.4%

SOURCE: 2009 ACS

At the SNHPC's 2010 annual meeting, the University Council reported that New Hampshire currently has one of the highest percentages of student populations leaving the state (48 percent) to pursue higher education.¹⁰ The New England average is 39 percent. Additionally, many recent graduates of New Hampshire colleges and universities are leaving the state after they finish school. Steps need to be taken to retain recent graduates and maintain New Hampshire's advantages as an attractive state for businesses requiring highly skilled professionals to locate.

Another problem regarding the loss of the younger, highly educated workforce is the fact that the state and region's population is aging and growth is declining. An analysis of the SNHPC region population by age group reveals there has been a significant increase in the 45-54 and 55-64 age cohorts, whereas there has been a significant decrease in the 25-29 and 30-34 age cohorts. Additional age cohorts that decreased from 2000-2010 include the 10-14 age cohort, 5-9 age cohort and under 5 years age cohort. For information and data regarding the change in the region's population by age group, see Chapter 2: Housing.

One step that has been taken to address these concerns is the 55 Percent Initiative, a collaborative effort launched in 2007 to encourage more New Hampshire college students to live and work in the state after they graduate. However, as recently reported by the New Hampshire Employment Security, Economic and

¹⁰ Personal Speech

Labor Market Information Bureau (ELMB), the current state of the economy – both nationally as well as for New Hampshire - has changed considerably since the 55 Percent Initiative was launched in 2007.¹¹

In the past, out-migration of younger adults did not significantly impact the state's economy, as experienced workers with high educational attainment tended to migrate into the state. Now that population growth and in-migration has slowed, New Hampshire has to rely more heavily on those graduating from educational institutions in the state to become the educated workforce of the future. This makes the 55 percent Initiative that much more of an economic development imperative.

EMPLOYMENT

The available workforce in the SNHPC Region is diverse and ranges from unskilled, minimum wage workers to highly trained workers in specialized fields. This is an attractive mix that appeals to a variety of commercial and industrial businesses entering the region. However, job growth is critical to sustaining and improving the appeal of the region.

Eight of the SNHPC Region's 14 communities appeared in the most recent listing of the state's top 50 employment centers. Manchester ranked first in the state along with Bedford, Londonderry, Derry, Hooksett, Goffstown and Raymond and Windham.¹² Between 2000 and 2011, the SNHPC Region experienced a 4.16 percent growth in employment.¹³ For labor force and employment data by individual community, see Chapter 2: Housing.

Future employment projections released by the New Hampshire Department of Employment Security indicate total employment within the region is expected to grow from 149,288 in the year 2015 to a total of 209,330 by the year 2040, a percentage increase of 40.2. The largest percentage change in employment at 11.31 percent is expected to occur between 2015 and 2020.¹⁴

Nearly all new jobs in the state are expected to be concentrated in the service-providing industries, while job gains in goods-producing industries and Manufacturing jobs are projected to shrink, except for primary metals manufacturing, chemical manufacturing, and fabricated metals product manufacturing which are projected to experience job gains. Retail trade, the state's largest single employment sector, and the Educational services sector are also projected to see job gains. Jobs in health care and social assistance is projected to surpass all industry sectors by 2018.¹⁵

The SNHPC Region's seasonally adjusted July 2013 unemployment rate of 4.73 percent is less than the New Hampshire's unemployment rate of 5.1 percent as of September 2010, and the United States rate of 7.7 percent for the same time period.

HOUSING MARKET

¹¹ For more information on the 55% Initiative see University System of New Hampshire at: http://www.usnh.edu/media/press/20090316_charter_partners.html

¹² Economic and Labor Market Information Bureau, NH Employment Security

¹³ NHetwork, Labor Force, Employment and Unemployment Data

¹⁴ New Hampshire Department of Employment Security (NHDES), 2005 baseline data and SNHPC projections

¹⁵ New Hampshire Department of Employment Security (NHDES) Economic and Labor Market Bureau

Building construction within the SNHPC Region, like most places in New Hampshire and across the nation, has slowed considerably due to the recession of the late 2000s. There has been a steep drop across the board in the issuance of residential building permits in the region from historic peaks around 1,600 permits in 1998, 2002 and 2004 to just over 400 permits in 2008. For the four-year period between 2004 and 2008 there was a drastic decline of 25 percent, or on average decline of 6.25 percent per year. For a detailed analysis of housing trends in the region, such as median home values, median gross rent and purchase price of primary homes, see Chapter 2: Housing. New housing development is considered an economic stimulant. Growth in housing construction generates jobs and increases the available labor force.

KEY STRATEGIES AND PROJECTS

LOCAL ECONOMIC DEVELOPMENT INITIATIVES

Table 6-3 shows which communities in the SNHPC Region have economic development strategies in their master plans, a specific economic development board, council or committee, and have a dedicated economic development section on their website. All communities in the region with the exception of Candia and Raymond have an economic development strategy specified in their master plans; however, very few towns have on staff an economic development professional. All the communities within the region should strive to have or share an economic development professional to advise the municipality and recruit and maintain business growth. All of the 14 communities in the region address economic development in at least one of the three categories.

It is also possible for communities to take steps beyond these measures. For instance, Moving Derry Forward (MDF) is a local public/private committee charged with advancing economic development and revitalization measures in Derry. Made up of about 50 local business owners, town and school officials and community activists, the group serves as a forum for community members to discuss ways to improve Derry's downtown and attract and retain businesses to the area. MDF is but one example of how a community can take steps to promote and facilitate economic development measures.

CURRENT ECONOMIC DEVELOPMENT STRATEGIES

In early 2011, the Southern New Hampshire Planning Commission released the first ever Regional Economic Development Plan. The purpose of the plan is to offer a vision and to provide a framework for putting into place an economic development planning process for the region that can be carried out now and in the future. The vision statement – the core goals, key actions and priorities, including recommendations and new strategic initiatives, projects and programs – is the most important element of the plan. The elements that make up the vision statement can be used to improve the region's economy and advance the health of the region and its municipalities. These are the key elements of the plan and are meant to guide economic development and growth into the future. Elements of the plan and its recommendations are included in the following sections.

TABLE 6-3: ECONOMIC DEVELOPMENT MEASURES BY MUNICIPALITY, SNHPC REGION

Municipality	Has an Economic Development Strategy in Master Plan	Has a Specific Economic Board, Council or Committee	Addresses Economic Development on Website
Auburn	Yes	Yes	Yes
Bedford	Yes	Yes	Yes
Candia	No	No	Yes
Chester	Yes	No	No
Deerfield	Yes	No	No
Derry	Yes	Yes	Yes
Goffstown	Yes	Yes	Yes
Hooksett	Yes	Yes	Yes
Londonderry	Yes	Yes	Yes
Manchester	Yes	No	Yes
New Boston	Yes	No	No
Raymond	No	No	Yes
Weare	Yes	Yes	Yes
Windham	Yes	Yes	Yes

SOURCE: SNHPC

ACCESS GREATER MANCHESTER

Access Greater Manchester is a regional economic development partnership between the SNHPC, the Greater Manchester Chamber of Commerce and the New Hampshire Business Resource Center. Access Greater Manchester seeks to facilitate economic development at a regional level by encouraging communities to look beyond their borders in order to collectively market the entire region's assets as a desirable place to live, work and play. Access Greater Manchester:

- Serves as a voice and advocate for regional economic development and the infrastructure needs that are important to the communities of the Access Greater Manchester region.
- Facilitates regional economic development and planning by providing technical assistance to volunteer boards in their pursuit of better strategies and local economic development.
- Markets the region's assets generally, as well as promotes specific sites to expanding companies, investors, and site selectors.
- Conducts educational workshops, seminars, forums, and networking opportunities for community and economic development officials from across the region through a series of annual events.
- Additionally, Access Greater Manchester worked collaboratively with SNHPC to develop the Regional Economic Development Plan.

FUNDING STRATEGIES

The initial investment of public infrastructure required to bring new business into a town can often be a financial burden to the local government. The New Hampshire Department of Resources and Economic Development (DRED) recommend municipal officials contact their staff to better navigate and successfully

obtain grants and technical assistance. The following is a short review of some of the federal, state and local resources and strategies available to ease these costs.

- Economic Development Administration (EDA) provides grants to municipalities that have in place a Comprehensive Economic Development Strategy (CEDS) plan for the community or as part of a larger region. Grants are provided under the following categories: Public Works, Economic Adjustment, Partnership Planning, Trade Adjustment Assistance for Firms, University Centers, Research and National Technical Assistance, and Local Technical Assistance. An important consideration with EDA funding is that many of these programs require that the project be part of the CEDS. Currently, the City of Manchester has in place a CEDS process just for the city. The towns of Hooksett, Goffstown, New Boston, Bedford and Weare are participating in a larger CEDS region with towns located in Merrimack County. The rest of the towns located within the region in Rockingham County are part of the Rockingham Economic Development Center's CEDS.
- USDA Rural Development provides financial and technical resources in rural areas in order to support community and economic development opportunities, as well as improve quality of life issues. Programs and services include small business loan guarantees; grants for energy efficiency improvements and energy equipment purchases; and grants and loan funds for nonprofit economic development organizations and municipalities serving small business development.¹⁶ (See: http://www.rurdev.usda.gov/RD_grants.html.)
- Community Development Finance Authority (CDFA): The CDFA was established by legislation (RSA 162-L) in 1983 to address the issues of affordable housing and economic opportunity for low and moderate income New Hampshire residents. Today, it administers and manages several grant programs totally around \$57 million in funding resources, which includes a combination of state tax credits and federal Community Development Block Grant (CDBG), Neighborhood Stabilization, and Energy Reduction Funds. See the CDFA website at: <http://www.nhcdfa.org/>.
 - CDBG Program funds projects that benefit low- to moderate-income populations.¹⁷ The grants are allocated to states and large cities through the U.S. Department of Housing and Urban Development. All eligible municipalities and counties can apply up to \$500,000 in CDBG funds per year. There are three grant categories: housing, public facilities, and economic development. CDFA distributes these grants to New Hampshire cities, towns and counties. A nonprofit agency may also apply through its municipality or county as a sub-recipient of CDBG funding.
 - Tax Credit Program. Also known as the Community Development Investment Program (CDIP), CDFA gives a 75 percent state tax credit against a donation made to any approved project. The tax credit may be applied against the New Hampshire business profits tax, business enterprise tax, and/or insurance premium tax. The donation also may be eligible for treatment as a state and federal charitable contribution. In most cases, businesses only pay about 11 cents on the dollar for their contribution. It lets businesses vote with their dollars about which programs mean the most to them and their communities.
 - Neighborhood Stabilization Program. The NSP is designed to address the effects of abandoned and foreclosed properties in certain communities and neighborhoods in order to put them back into service for the benefit of rehabilitation and extended affordability. NSP communities work with the private sector to obtain abandoned properties and, in

¹⁶ For more information on the numerous USDA Rural Development programs available, visit NH Business Resource page at: http://www.buzgate.org/8.0/nh/fh_listing.html?id=10002&lid=5522&cb=nhecon

¹⁷ 80 percent or less of an area's median household income.

many cases, rehabilitate the homes and make them available to low-to-moderate income residents.

- Housing Futures Fund. The HFF offers grants, through the Tax Credit Program, to assist community-based nonprofit housing organizations. HFF grants are intended to build the capacity of participating nonprofits to investigate opportunities, secure financing, and test innovative new solutions for area residents. The HFF also provides operational grants and technical assistance to its grantees (nonprofit housing organizations). The operational grant program enables grantees to focus on housing development and educational outreach to individuals and families in need of qualified affordable housing. The technical assistance aspect of the HFF program is implemented by the New Hampshire Community Loan Fund. It provides grantees with several areas of assistance including: supplying needed capital and related technical assistance for projects undertaken for which financing from other sources is unavailable, enhancing the grantees technical capacity, and affordable housing advocacy efforts to create a political climate that is user-friendly for nonprofit affordable housing developers.
- Job Retention Fund. The CDFA Job Retention Fund helps New Hampshire businesses without access to existing credit or equity resources. Loans are made to qualified economic development entities (EDEs), such as the ten Regional Economic Development Corporations, to meet the immediate needs of area businesses. These EDEs then make loans or offer lines of credit to be used solely to assist businesses in keeping open and operating.
- NH Department of Resources and Economic Development (NHDRED). DRED is the primary state government economic development agency: <http://www.nheconomy.com>. There are a number of important DRED programs:
 - Economic Revitalization Zone Program (formerly Community Reinvestment and Opportunity Program [CROP] Zones) is an incentive for new and existing businesses to relocate, expand or create new jobs in New Hampshire in an effort to encourage revitalization and create jobs. The ERZ Business Tax Credit Program allows tax credits to be used against Business Profit and Business Enterprise Taxes. Qualifying ERZ zone projects must create new jobs and expand the economic base for the state. Projects can range from the creation of new facilities to the rehabilitation of existing structures. Both communities and employers may take advantage of New Hampshire's Economic Revitalization Zone Program.¹⁸
 - Job Training Fund. Talent development is a major component of New Hampshire's economic vitality and businesses large and small realize the importance of a skilled and educated workforce. That's why the New Hampshire Job Training Fund was created, designed to enhance worker skills and help communities stay competitive in the global marketplace.
 - Loans. Industrial Revenue Bonds: This program is only for companies that manufacture or produce tangible personal property in New Hampshire. At least 75 percent of bond proceeds must be spent on core manufacturing space and equipment. Storage, office and R&D space must be excluded from this calculation. To be cost effective, loans must be between \$1.5 and \$10 million. This interest rate is about 70 percent of prime and can be used for the purpose of land, buildings and capital equipment.
 - Other Programs. Loan Guarantees: For companies that need credit enhancement, the state offers the Capital Access Program. Working Capital Line of Credit Guarantee

¹⁸ NH Business Resource Center, <http://www.nheconomy.com/>

and Guarantee Asset Program. Import/Export Loans: The state also offers Foreign Buyer Credit, Export-Import Bank of the United States and other sources.

- RSA 79E: If the provisions of RSA 79E are adopted by Town Meeting, the Board of Selectmen have the authority to delay any increase in taxes for property owners in the downtown or village center of their community if they replace or substantially rehabilitate their property. Its goal is to encourage the rehabilitation and active use of under-utilized buildings.

How it works:

- In a municipality that has adopted this enabling legislation, a property owner who wants to substantially rehabilitate a building located in a designated district may apply to the local governing body for a period of temporary tax relief.
 - The temporary tax relief, if granted, would consist of a finite period of time during which the property tax on the structure would not increase as a result of its substantial rehabilitation. In exchange for the relief, the property owner grants a convenient ensuring there is a public benefit to the rehabilitation.
 - Following expiration of the finite tax relief period, the structure would be taxed at its full market value taking into account the rehabilitation.
- Capital Region Development Council (CRDC): CRDC is a local non-for-profit economic development organization set up to assist municipalities and businesses located primarily within Hillsborough and Merrimack counties in NH. Their primary purpose is to assist business with funding, but they also provide clean up funds for brownfields. A brownfield is a site that, through actual or perceived contamination is difficult to develop (they are present in nearly every NH community). CRDC also administers a revolving low interest rate loan fund for business start-up and expansion and assists in administering the SBA 504 Program. This loan program is designed to work in conjunction with commercial banks to provide 90 percent long-term, fixed-rate financing for small to medium-sized businesses in owner-occupied buildings that provide employment opportunities. For more information about CRDC's programs see their website at: <http://www.crdc-nh.com/>.
 - Regional Economic Development Center of Southern New Hampshire (REDC): REDC is a sister economic development organization providing and offering similar programs and incentives as the CRDC but only to municipalities and businesses located within Rockingham County in NH. For more information about REDC's programs see their website at: www.redc.com.
 - Tax Increment Financing (TIF) Districts can be established by towns to use revenue gained through taxation of new development to pay for public improvements within the district (RSA 162-K: 9-10). The incremental taxes that result from new development, expansion, or renovation in the district can be earmarked specifically for infrastructure, parking, or other public needs. All previously existing taxes are distributed as standard (to schools, the county, and the town). TIF districts come with several restrictions, such as specifications on renovations, developments, and use of funds collected.

BUSINESS OUTREACH

Many municipalities work to attract specific types of businesses to their communities that will increase wages for residents and offer greater employment opportunities. Some of these strategies include conducting cluster and target industry studies and evaluating the basic economic components of the community. To gain a better understanding of a town's economic base, it is helpful to understand the types of existing businesses already operating within the community. These include:

1. *Identify prime businesses.* Using town demographic characteristics, an existing economic profile, and/or surveys of community businesses and residents, the town can determine what types of businesses it wishes to attract. Some characteristics to consider include number of employees, salary, education level of employees, and type of industry.
2. *Build a business database.* With the existing statistical compilation of the ideal business profile, the town can begin to compile contact information for businesses meeting specifications within the state, sub-region, region, etc. The database could be adjusted in size according to the town's commitment to preparing mailings.
3. *Promotional outreach.* Prepare promotional materials advertising the quality of life and area attractions in the town to send to businesses in a series of monthly mailings. Each mailing would include a personalized letter and offers of economic development information. Those businesses that request further information would be invited to town for a guided visit.

REGIONAL STRENGTHS AND WEAKNESSES

In order to reach out to potential new businesses, it is vital to know exactly which industry types your specific community should be looking to attract. The SNHPC Regional Economic Development Plan, released in early 2011, included a Target Industry Analysis performed by Moran, Stahl and Boyer (MS&B) Site Selection and Economic Development Consultants. The Target Industry Analysis involved both a macro level review of the three counties making up the SNHPC Region along with a focus on the types of economic opportunities that are available for each community within the region.

MS&B performed an in-depth analysis of numerous factors pertaining to economic growth and development in the region in order to prepare their final Target Industry Analysis. As part of the final product, the analysis identified the following resources, opportunities, strengths, and weaknesses within the SNHPC Region which are important factors in attracting these and other industries to the region.

Strengths:

- There is strong local interest within the region to expand existing employers and attract additional back office/financial/insurance operations.
- There is currently a favorable supply of college graduates with business and IT skills within the region.
- Companies may select the region for low operating cost, low personal income tax or for life style preferences.
- The region offers opportunities for both "home-based" businesses in relatively remote areas with larger office buildings and industrial parks to more urban/suburban settings.

- Manufacturing and machine building has been a core industry of the SNHPC Region since the mid-19th century. There are many companies with a highly trained labor force skilled in machine building and manufacturing of parts, components, and specialized tools and equipment.
- The SNHPC Region is innovative and there is frequently ongoing product enhancement and new product development. Examples include the Segway Personal Transporter, High Speed Technologies (metalworking machinery), Infinity Constructors (construction machinery), and Insight Technologies (night vision weapons and detection systems), etc.
- The SNHPC Region has a broad spectrum of high value services/specialties that can be delivered remotely as long as there is access to broad band internet and access to Manchester/Boston Regional Airport.
- The SNHPC Region has many smaller “knowledge-based” micro businesses and professional, technical and scientific services that have either spun off from an existing company or relocated to the region for quality of life and lower taxes.
- As the region grows, there is potential to expand regional big box/mall retail in Hooksett and in the Bedford/Londonderry area.
- There is potential to expand regional distribution in Raymond and Londonderry (near the airport).
- Current growth and expansion of the region’s major hospital facilities, as well as installation of local clinics and walk-up services in more remote areas is a strong economic driver. This industry sector is projected to continue to grow in the future as the “baby boom” population ages.
- There are also many opportunities in the region to develop outdoor focused destination tourism operations and packages.

The SNHPC Region is also well suited to grow and expand local agricultural economies including establishing farmers markets, community agricultural services to sell products locally, and small farms as destination attractions. Other major strengths of the SNHPC Region include:

- Regional airport and air access;
- Adequate utilities in developed areas;
- Adequate and expanding broadband infrastructure;
- Strong local schools and higher educational systems;
- Strong existing business support services;
- Favorable quality of life;
- Favorable work force both skilled and non-skilled;
- Favorable access to and close proximity to major transportation routes; and
- A significant number of ideal development sites, locations and major land parcels available throughout the SNHPC Region that are at different levels of readiness and cost.

Weaknesses:

- While there is strong local interest within the region to expand existing employers and attract additional back office/financial/insurance operations, the service industry as a whole is still recovering from the recent recession.
- It is expected that as the economy expands in the future, there will be increased competition and the supply of business/IT talent. In addition, the region’s skilled labor is aging and engineering staff recruiting can be very competitive with few sources and schools in the state for replacements.
- The SNHPC Region should embrace potential new headquarters operations, but few communities have placed it on their list of high strategic targets.

- As the region grows, developable land will become scarce. Communities will need to be cautious as to what land and where additional regional retail and big box operations are placed. This will be true particularly in developing large tracts near limited access highway exits.
- Distribution hubs for the region have traditionally come from southern states. The region is ideally suited to attract warehousing operations in the future, particularly in proximity to the Manchester Boston Regional Airport and along the I-93 corridor.
- As the health care industry grows and expands, there will be a continuing need to sustain a pool of skilled talent to support this growth and to provide health care services at affordable costs.
- The SNHPC Region lacks an inventory of “shovel ready” building sites and available buildings within the region and in close proximity to interstates and other limited access highways.
- While utilities are adequate in developed areas, many of the region’s smaller towns and rural areas do not have these services.
- There are very few monetary incentives available in New Hampshire and the region to promote and attract economic development. Establishing local Economic Revitalization Tax Credit Zones through N.H. DRED can provide significant business tax credits.

Table 6-4, which is a result of the 2011 target industry analysis, makes recommendations as to which industries each town in the SNHPC region should focus on for future growth. The Town of Windham was not a member of the SNHPC region when this analysis was conducted and therefore is not included in Table 7 below. In addition, while not included in the table below, the Town of Derry is home to several regional back office support services for large medical practice and regional health care as well as a local hospital.

TABLE 6-4: TARGET INDUSTRY ANALYSIS RECOMMENDATIONS

Industry/Economic Segment	Auburn	Bedford	Candia	Chester	Deerfield	Derry	Goffstown	Hooksett	Londonderry	Manchester	New Boston	Raymond	Weare
Back Office, Shared Service and Customer Interface	■	■				■	■	■	■	■			
Headquarters Operations		■							■	■			
Manufacturing of Parts, Components and Assemblies	■		■	(1)	(1)	■	■	■	■	■	(1)	■	(1)
Manufacturing of Machinery and Equipment	■		■	(1)	(1)	■	■	■	■	■	(1)	■	(1)
Professional, Technical and Scientific Services	■	■	■	(1)	(1)	■	■	■	■	■	(1)	(1)	(1)
Regional Retail		■					■	■	■	■			
Regional Health Care										■			
Regional Distribution									■			■	
Tourism-Related	■		■	■	■	■	■	■			■	■	■
Agriculture-Related	■		■	■	■	■	■	■			■	■	■

SOURCE: MS&B

CONCLUSIONS & RECOMMENDATIONS

Despite the current sluggish economy, the Southern New Hampshire Planning Commission region and the State of New Hampshire are among the strongest economic performers in the country. The region's many desirable attributes and skilled workforce help to sustain this performance.

When planning an economic development strategy, communities should consider their strengths and weaknesses, as well as their own local character. However, it is important to remember that economic development also occurs at a larger regional level. We should continue to market the numerous positive attributes of Southern New Hampshire in order to sustain the kind of growth that is best for the region. The core goals and strategic initiatives highlighted here should be used to maximize the region's economic development potential. Continued collaboration between the SNHPC, Access Greater Manchester and the individual communities in the region on economic development measures can help achieve these goals. Working in conjunction with the state and federal governments, area non-profits, surrounding communities and planning commissions, and other economic development-minded organizations for sources of funding, collaborative projects and ideas regarding economic development is also of critical importance.

Toward this end, SNHPC will continue to partner with Access Greater Manchester in planning economic growth and development in the region. In addition, SNHPC is currently in partnership with Central New Hampshire Planning Commission to establish a CEDS and Regional Economic Development District (REDD) for the Central and Southern New Hampshire regions. The establishment of a CEDS and REDD are required to obtain federal funding through the Department of Commerce to access Economic Development Administration grants for infrastructure and public works projects and continued economic development planning.

With the widening of I-93 and natural population growth, there is an expected influx of over 35,000 new residents between 2010 and 2030.¹⁹ This will present numerous challenges to the region, but also opportunities for economic growth, workforce development and an improved standard of living. While it will improve regional mobility, the widening project will also make it easier for the region's residents to commute out of state for work. New business growth should be compatible with the resident workforce to curb the trend of long commutes and loss of potential tax revenue. As part of this, the continued attraction of high-skilled companies to the region is highly important. Additionally, as one of the oldest states in the nation, both the state and region need to make efforts to retain its young, well educated population in order to sustain its current economic success.

The key to regional economic development success is to be proactive and to work together. The Southern New Hampshire Planning Commission region has many characteristics that encourage economic development, as well as positive indicators of economic growth for the future. By identifying and addressing the region's strengths and weaknesses and taking key steps toward future growth, the region will continue to maintain a vibrant and sustainable economy.

The core goals and key actions help to define the region's economic agenda and identify and prioritize projects that can best promote economic development in the region. They were developed based on the strengths and weaknesses identified above.

¹⁹ Source: NH OEP and NH DOT 2005, updated 2010

GOALS

The core goals, listed below, are broken down into ten categories and in some cases further subcategories. The core goals are:

Goal 6-1: Transportation

- **Airport:** Strengthen and expand the aviation capacity of Manchester-Boston Regional Airport, as well as the role of the Airport as a multi-modal transportation facility and an economic driver for local and regional business growth.
- **Highway/Alternative Modes:** Place a high priority and focus on highway improvements and other alternative modes of transportation that will enhance and strengthen the region's accessibility, mobility and economic growth.
- **Public Transport/Multi Modal:** Develop a comprehensive multi-modal transportation strategy and explore the feasibility of establishing a public transit authority for the region to expand service routes and connections to communities and key destinations within the region.
- **Passenger/Freight Rail:** Bring about the delivery of safe, reliable and efficient passenger and freight rail service along the New Hampshire Capitol Corridor between Manchester and Boston.

Goal 6-2: Infrastructure

- **Water/Wastewater:** Place a high priority on upgrading, expanding and funding public water and sewer systems, including a regional approach to the provision of such services within the region.
- **Communications/Broadband:** Staying "well connected" through telecommunication and broadband services is critical to the region's economic development, expanding business opportunities, retaining college graduates, and maintaining public safety.

Goal 6-3: Land Use

- **Smart Growth:** Seek balanced growth and development that broadens the local tax base and respects and strengthens quality of life, community character, and the environment.

Goal 6-4: Labor/Workforce Development

- **Strengthen the region's workforce and vocation training programs and improve the integration of apprenticeship training and education in the workplace.**

Goal 6-5: Education

- **Colleges/Universities:** Strengthen the region's colleges, universities and professional schools and place a high priority on the importance of increasing the number of college graduates that stay, work and live within the region.

Goal 6-6: Energy

- New England has some of the highest energy costs in the United States. Renewable, environmentally friendly and lower cost forms of energy such as solar should be considered and developed within the region.

Goal 6-7: Economic Development

- Planning/Job Creation and Financial Resources: Promote economic development opportunities among all the core goals of this plan.

Goal 6-8: Entrepreneurship

- Business Support and Development: Implement programs to support start-up of small companies, incubator resources, innovative businesses, and the creative arts and sustainable/agricultural economy.

Goal 6-9: Real Estate Development

- Site Readiness: Work with Access Greater Manchester, local Chambers of Commerce and municipalities, and the professional commercial real estate and brokerage community to promote available sites and buildings for economic development and redevelopment purposes.
- Target Industries: Create working groups of planners and economic development professionals to assure the resources are available to expand and attract target industries to the region.

Goal 6-10: Funding Resources

- Economic Development: Pursue funding opportunities to support Access Greater Manchester, SNHPC, municipalities and stakeholders in promoting these core and key actions. By working together in promoting the region nationally and internationally, every municipality benefits through regional collaboration in economic development.

RECOMMENDATIONS

The twelve strategic initiatives listed below are intended to demonstrate a commitment to and implementation of the aforementioned core goals and key actions and to bring about enhanced economic growth and development for the region. Many of the recommended initiatives are important catalytic projects that will have significant benefits, not only for the SNHPC region, but statewide. These strategic initiatives are ranked in order of priority and include:

Recommendation 6-1: Promote the Regional Certified Sites Program

A Certified Site Program facilitates economic growth by certifying that specific land parcels and buildings that have been approved by a municipality (i.e. sites that are zoned for industrial, office use or mixed-use) have met established specifications and guidelines which define whether a site is “ready” or more precisely “shovel ready” for development purposes.

Recommendation 6-2: Develop a Water/Wastewater Plan for the Region

There has never been a comprehensive and long range water and sewer plan for the SNHPC region that identifies growth and capacity needs as well as system improvements and funding needs. Such a study could be undertaken with federal, state and municipal support and participation.

Recommendation 6-3: Best Planning Practices/Innovative Regional Model Ordinances

These model ordinances would enable municipal planning boards to establish expedited review procedures and provide for enhanced development assurances and greater predictability.

Recommendation 6-4: Regional Incubator Development

A business incubator study was conducted to introduce the various types of business incubators and their benefits as well as to identify and establish a new creative business accelerator (CBA) program for the region. This new CBA would be established through collaboration with the region’s municipalities and existing colleges and universities, including the existing Amoskeag Business Incubator in the City of Manchester.

Recommendation 6-5: Comprehensive Economic Development Strategy

A CEDS is a federally approved comprehensive economic development planning process designed to bring together the public and private sectors in the creation of an economic roadmap to diversify and strengthen regional economies. A Planning Organization is typically charged and funded by the US Department of Commerce, Economic Development Administration (EDA) to develop a CEDS. The Public Works and Economic Development Act of 1965, as amended, requires a CEDS in order that municipalities can apply for public works related funding through the EDA. The REDC provides a CEDS plan for all municipalities

within the SNHPC Region located within Rockingham County. Similarly a CEDS plan is available for all municipalities located in Hillsborough and Merrimack counties, through a joint CEDS planning process currently in progress between SNHPC and the Central NH Planning Commission.

Recommendation 6-6: Expand Local and Regional Brownfields Program

SNHPC, through US EPA funded brownfields grants, has established a successful brownfields program for the region. This initiative would continue to expand this existing program through additional EPA grants and to work with the region's municipalities and existing regional economic development organizations by moving sites from assessment studies to clean up and ultimately to redevelopment.

Recommendation 6-7: Develop a Comprehensive Region-wide Sustainability Plan/Energy Plan

There is currently no comprehensive or long range plan for the region which addresses sustainable growth patterns and renewable and alternative forms of energy and energy conservation.

Recommendation 6-8: Conduct a Feasibility Study in Establishing a Regional Public Transit System/Authority

In order to bring about systematic public transit services to outlying communities and other rural areas within the region, a regional transit authority will be needed. This study would explore these options and evaluate the region's overall transit needs as a NH DOT-TIP funded project.

Recommendation 6-9: Expand I-93 Commuter Bus Service throughout the Region

This initiative would involve implementing and expanding intercity and commuter bus service within the region and the Manchester Boston Regional Airport through the NH DOT I-93 Commuter Bus Service Project.

Recommendation 6-10: NH Capitol Corridor Passenger Rail

Restoring passenger rail service through the NH Capitol Corridor Passenger Rail Project linking Concord, Manchester, the airport and Nashua with Boston is recognized as an important economic development initiative for the SNHPC Region.

Recommendation 6-11: Conduct a College/University Economic Impact Study

There is a regional need for a comprehensive economic impact study that measures the impact that the region's colleges/universities provide. Recently, an economic impact study was conducted for UNH Manchester and it determined that this program contributes more than \$65 million every year to the

Greater Manchester area and the state. This initiative would conduct a similar study, but for all colleges, universities and professional schools within the region.

FUTURE GROWTH FACTORS

As noted earlier, a key piece of the economic development puzzle is access and infrastructure. Therefore some of the major transportation projects in the SNHPC region, built in response to population growth and congestion, will have secondary impacts on the economic development of Southern New Hampshire. The expansion of I-93 and the Airport Access Road will serve to increase the accessibility and marketability of the region's economy, but also could ease the commute to Boston, thereby having the potential to drain the region of its workforce. Strategic planning in concurrence with these projects can focus economic development to take advantage of these new infrastructure improvements.

A 2008 economic impact study indicated that the Manchester airport contributed an estimated \$1.24 billion of total economic impact to the local New Hampshire community. The airport provided 3,820 total jobs in 2008. This figure includes 1,900 on-site employees with an annual payroll of \$75.8 million and 1,920 off-site employees (businesses related to airport activity) with an annual payroll of \$77.1 million. Out of state passengers using Manchester-Boston Regional Airport spent \$752.8 million on lodging, food/beverage, retail purchases, transportation and entertainment, spending an average of \$458.84 during their visit.²⁰ The industries with the greatest airport-related impact in terms of payroll and expenditures were government agencies, airlines (passenger and cargo), rental car companies, and terminal concessionaires. The airport's high noise levels make industrial endeavors the best suited developments for this area.

In addition to the airport itself, the new Airport Access Road, which opened to traffic in November 2011, is expected to continue to attract and support existing land use and development patterns increasing demand for new retail, and industrial development in the area. The new road connects the Everett Turnpike in Bedford over the Merrimack River to the airport in Londonderry. This measure will alleviate congestion on Brown Avenue in Manchester. Access to commercial/retail areas in Bedford will also increase, but traffic along Brown Avenue will be diverted through the new access road.

The Airport Access Road will also provide many economic development opportunities for Bedford, Londonderry and South Manchester. For instance, Londonderry plans to open its largest parcel of industrial land at over 1000 acres and create over 4.6 million square feet of new construction. The vacant land in the vicinity of Pettengill Road is considered among the best industrial property in Southern New Hampshire.²¹ Additional industrial projects are expected in Manchester and expanded retail is forecasted in Bedford for the areas around the new road.

Manchester, Bedford and Londonderry rank first, sixth and ninth, respectively, on the list of New Hampshire's top 50 employment centers. As the economic engine of the region and its largest city by far, Manchester is largely built out. Developed earlier than surrounding towns there is little land available for future development. However, the city is home to many of the region's most established businesses and highly skilled, professional jobs and there are many redevelopment opportunities.

Bedford is home to a large number of regional and state corporate headquarters in the commercial district along Route 3, such as IBM and State Farm Insurance. The high levels of office employment also attract workers from outside the town. In addition, there is a high concentration of retail activity. However, Bedford has little remaining undeveloped land, offering less potential for future development. Instead,

²⁰ Manchester-Boston Regional Airport, <http://www.flymanchester.com/about/news.php?id=57>

²¹ Londonderry News, <http://www.londonderrynh.net/?tag=airport-access-road>

Bedford might see a shift in its current occupants of office parks as access to the airport and traffic through the town increases.

Londonderry has had the fastest growth rates of any community in New Hampshire since the 1980s, both in terms of jobs and population. Londonderry is one of the more attractive locations in the region for industrial employers due to its large tracts of undeveloped land around and its proximity to the airport and I-93, as well as its relatively lower wages. The town houses several major cargo businesses, including UPS, Federal Express, and Airborne, along the Airport perimeter as well as several regional distribution centers, including Coca-Cola and Stonyfield Farms.

Additionally, Woodmont Commons, a planned residential and commercial development at exit 4 off of I-93 is poised to bring new economic development opportunities to the town and region. The project is slated to add 650,000 square feet of retail, 700,000 square feet of commercial space and three new hotels as well as 1,200 new homes on 600 acres over the next 10 to 20 years.

FUTURE EMPLOYMENT GROWTH

Continued growth, combined with the I-93 expansion, will have significant changes in the economic conditions of the region by 2015. Hillsborough, Rockingham, and Merrimack Counties are expected to experience employment growth rates of approximately 15 to 20 percent.²² Growth is spread throughout nearly all industries, with the greatest gains in information, professional and technical services, arts, entertainment, and recreation.

Future employment projections for the SNHPC Region based on New Hampshire Department of Employment Security data indicate that total employment within the region is expected to grow from 149,288 in the year 2015 to a total of 209,330 by the year 2040, a percentage increase of 40.2. The largest percentage change in employment at 11.31 percent is expected to occur between 2015 and 2020.

While growth is forecasted to slow to 6.08 percent between 2035 and 2040, the City of Manchester is expected to add the most jobs with 19,213 followed by Londonderry with 13,123 and Bedford with 9,245. New Boston looks to add the fewest jobs with only 347, while the towns of Deerfield and Chester are projected to add only 369 and 492, respectively.

As previously mentioned, most new jobs in the state are expected to be concentrated in the service-providing industries. Goods-producing industries and manufacturing jobs are projected to shrink. Retail trade and the Educational services sector are also projected to see job gains. However, over the course of the next decade the health care and social assistance industry are expected to grow the most as the state's population ages.

Despite the overall decline in manufacturing, the New Hampshire Employment Security Economic and Labor Market Bureau (NHES ELMB) reports that navigational, measuring, electro medical, and control instruments (generally defense related technologies) gained 300 jobs during 2009. This gain represents a positive outlook that some of the state's highly advanced manufacturing industries will come out of the current recession even stronger than before. Strength of manufacturing in New Hampshire is significant because unlike retail trade, manufacturing jobs in the state pay above average wages.

²² NH Employment Projections by Industry and Occupation, 2002-2012

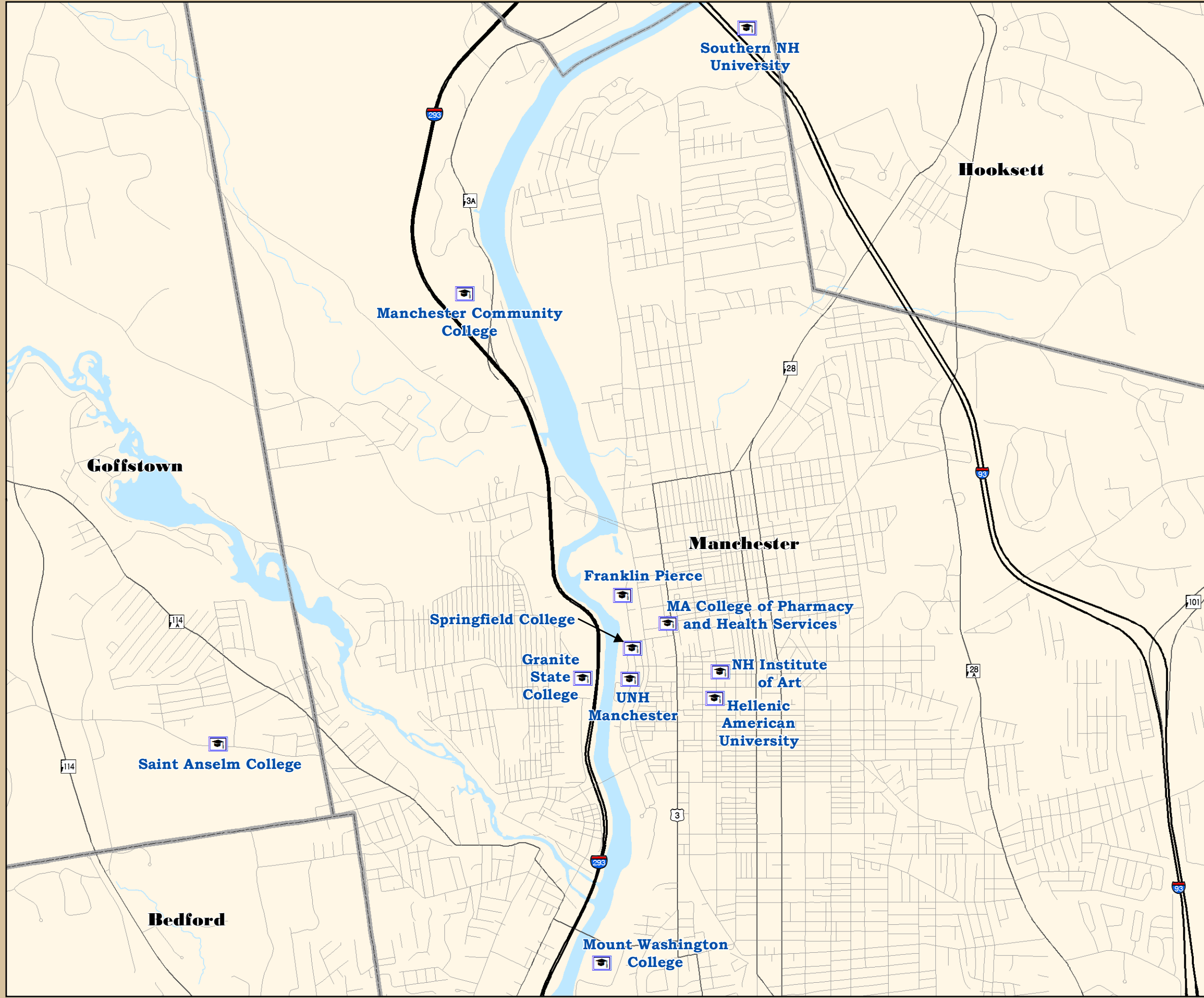
Large industry sectors which have been hard hit during the recent economic recession include Construction, which lost close to 4,300 jobs -- a decline of close to 15 percent between December 2008 and December 2009. Generally, almost every industry section in the state experienced employment losses during this time period. During 2009 the NHES ELMB reported that trade, transportation and utilities, and other service industries had job gains of 400 and 300 respectively (this was partly due to the federal stimulus funding provided to the state and local governments). In addition, despite the current downturn, education and health services added 2,600 jobs over the year.

Among the 14 municipalities in the SNHPC Region, the following industries had the highest employment numbers: Health care and social assistance, retail trade, local government and manufacturing, respectively. For the Manchester labor market area, health care and social assistance was the largest industry followed by retail trade, manufacturing and local government. Some of the largest current employers in the region include Elliot Hospital, Catholic Medical Center, FairPoint Communications, Public Service of New Hampshire (PSNH), Citizens Bank, TD Bank, and Insight Technologies, each providing over 1,000 jobs.

TABLE 6-5: FUTURE EMPLOYMENT PROJECTIONS

Municipality	2015		2020		2025		2030		2035		2040		2015-2040
	Total Employed	Percentage Change	Total Employed	Percentage Change	Total Employed	Percentage Change	Total Employed	Percentage Change	Total Employed	Percentage Change	Total Employed	Percentage Change	Total Percentage Change
Auburn	1,929	19.29%	2,239	16.07%	2,550	13.89%	2,860	12.16%	3,171	10.87%	3,482	9.81%	80.51%
Bedford	18,243	11.29%	20,092	10.14%	21,941	9.20%	23,790	8.43%	25,639	7.77%	27,488	7.21%	50.68%
Candia	990	14.06%	1,113	12.42%	1,236	11.05%	1,359	9.95%	1,481	8.98%	1,604	8.31%	62.02%
Chester	644	17.52%	740	14.91%	836	12.97%	932	11.48%	1,028	10.30%	1,124	9.34%	69.28%
Deerfield	632	12.66%	708	12.03%	781	10.31%	854	9.35%	927	8.55%	1,001	7.98%	58.39%
Derry	9,856	6.81%	10,485	6.38%	11,114	6.00%	11,742	5.65%	12,371	5.36%	12,999	5.08%	31.89%
Goffstown	5,102	9.23%	5,531	8.41%	5,960	7.76%	6,390	7.21%	6,823	6.78%	7,252	6.29%	42.14%
Hooksett	10,164	10.49%	11,129	9.49%	12,095	8.68%	13,060	7.98%	14,025	7.39%	14,990	6.88%	47.48%
Londonderry	18,889	16.14%	21,513	13.89%	24,138	12.20%	26,763	10.87%	29,387	9.80%	32,012	7.69%	69.48%
Manchester	75,357	5.37%	79,200	5.10%	83,042	4.85%	86,885	4.63%	90,727	4.42%	94,570	4.24%	25.50%
New Boston	713	10.89%	782	9.68%	852	8.95%	921	8.10%	991	7.60%	1,060	6.96%	48.67%
Raymond	4,644	17.04%	5,321	14.58%	5,998	12.72%	6,675	11.29%	7,351	10.13%	8,028	9.21%	72.87%
Weare	2,123	17.68%	2,443	15.07%	2,762	13.06%	3,081	11.55%	3,401	10.39%	3,720	9.38%	75.22%
Windham													
Total	149,288	5.55%	161,296	11.31%	173,256	7.42%	185,312	6.96%	197,323	6.48%	209,330	6.08%	40.22%

Source: New Hampshire Department of Employment Security (NHDES), 2005 baseline data and SNHPC projection










Map # 6 - 1

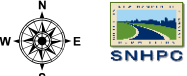
Granite State Future



Economic Development
Higher Education
Institutions

-  Universities and Colleges
-  Interstates
-  State and US Routes
-  Local Roads
-  Town Boundary
-  Rivers
-  Lakes

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities



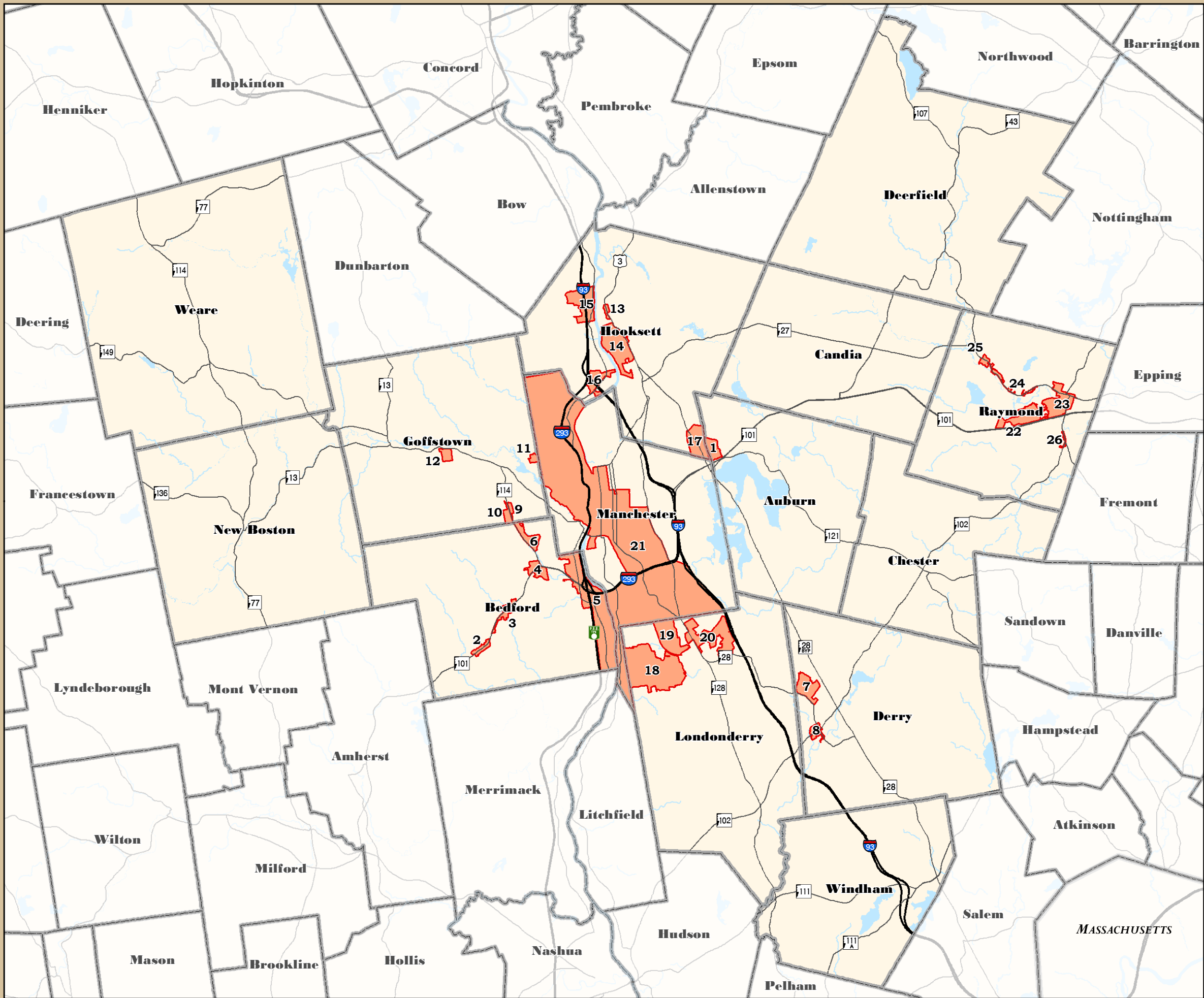
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Map # 6 - 2

Granite State Future

Economic Development Revitalization Zones

Approved Economic Revitalization Zone

Interstates

State and US Routes

Town Boundary

Rivers

Lakes

Name	Zone
Wellington Business Park - Auburn	1
Route 101 West - Bedford	2
Route 101 Central - Bedford	3
Route 101 East - Bedford	4
South River Road - Bedford	5
Route 114 - Bedford	6
Route 28 & Manchester Rd - Derry	7
Downtown - Derry	8
Benchmark - Goffstown	9
Gentle Slopes - Goffstown	10
Pond View - Goffstown	11
Tatro Drive - Goffstown	12
Former Restaurant - Hooksett	13
The Valley - Hooksett	14
Exit 11 - Hooksett	15
Exit 10 - Hooksett	16
Londonderry Tpk - Hooksett	17
Airport Access Rd and Pettengil Rd - Londonderry	18
Pettengill Rd - Londonderry	19
Jacks Bridge Road - Londonderry	20
Manchester	21
Exit 4 - Raymond	22
Exit 5 - Raymond	23
Old Southside Rd (South) - Raymond	24
Old Southside Rd (North) - Raymond	25
Chester Rd - Raymond	26

Data Sources:

Granit Digital Data (1:24,000)

NH Department of Transportation

All SNHPC Communities

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Granite State Future



Economic Development
Comprehensive Economic
Development Strategy

Existing CEDs Planning Areas

- Merrimack & Hillsborough County Municipalities
- City of Manchester
- Rockingham County Municipalities
- Proposed Regional Economic Development District
- County Boundary
- Town Boundary
- Rivers
- Lakes

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
All SNHPC Communities

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